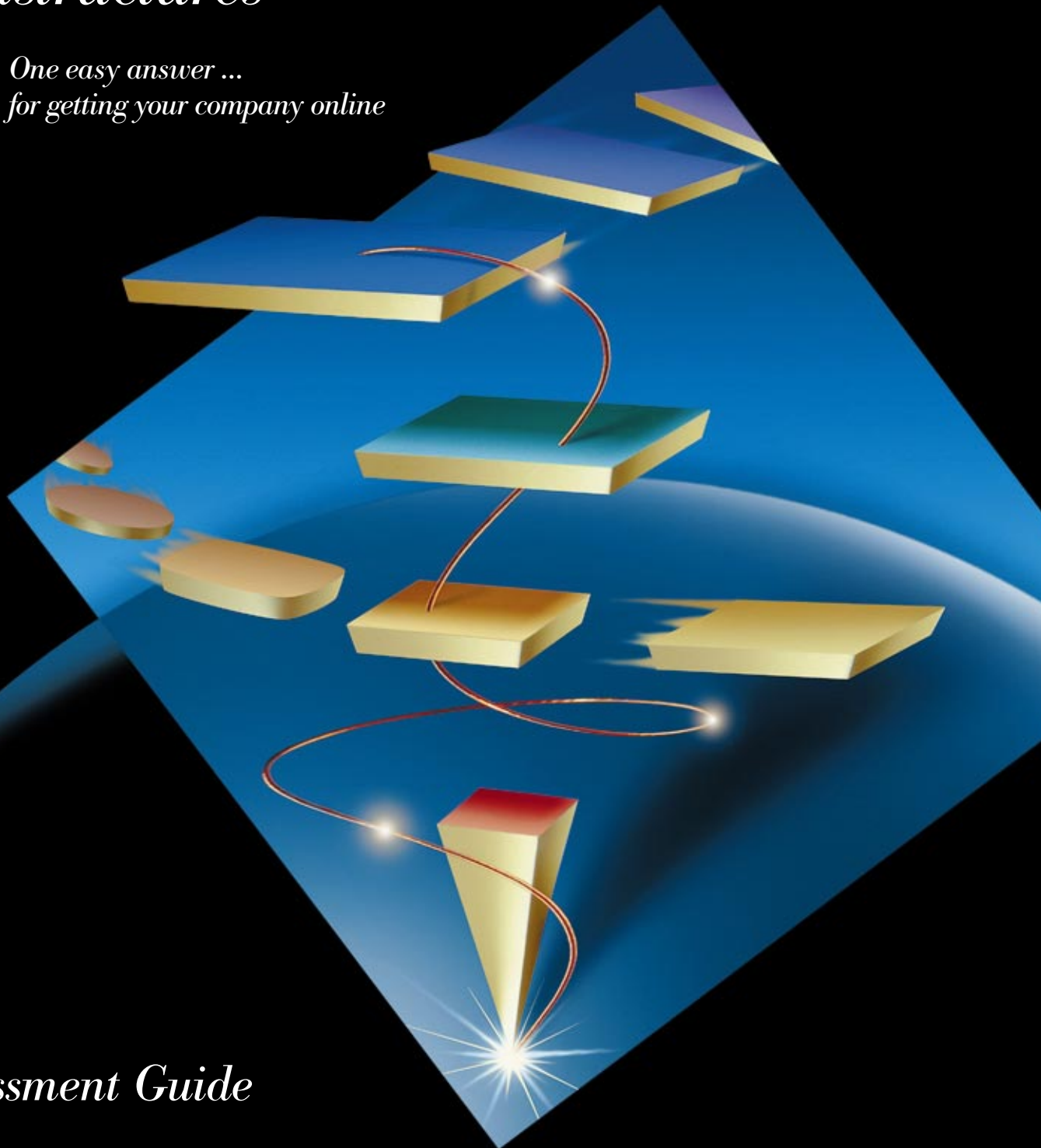




Solutions for Internet and Intranet Infrastructures

*One easy answer ...
for getting your company online*



Assessment Guide

Introduction

The IBM eNetwork Software product line provides comprehensive Internet and intranet solutions that can sharpen your competitive edge and reduce your operating costs by:

- Enabling worldwide corporate access for you and your customers, regardless of your network
- Maintaining and expanding access to all business-critical applications and data regardless of operating platform or network
- Integrating your current software, hardware, and network investment

This guide provides a conceptual understanding of the wide range of Internet and intranet solutions this product line was designed to address. Four hypothetical scenarios are provided to help you better understand how different members of the product line can be used to address the specific needs of different business organizations.

This document contains hypothetical estimates of the potential cost savings to a business enterprise resulting from the proper use of certain IBM Software. It is not a promise or guarantee on the part of IBM that any associated savings will result. The hypothetical estimates are based on assumed costs and/or business practices for "average" businesses, and assume proper installation, use and maintenance of IBM software, and do not take into account potential negative interaction with hardware or software provided from non-IBM sources, or different personnel costs and needs.

Customers or potential customers of IBM should perform an independent estimate of the potential costs and savings to their enterprises which might result from implementation of IBM software or an IBM solution, and should not rely on anything in these business cases as a guarantee of performance or costs/savings. IBM representatives who deal with customers should not use these charts to make any performance or savings promise or guarantee, and should provide each customer with whom these charts are discussed with the assumptions underlying such IBM estimates.

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The conceptual view

Internet, intranet, Web, open standards, online commerce – you’ve heard it all. But what does it really mean to you and your business? Day by day the marketplace becomes more competitive, and the competition is no longer just driven by product offerings.

Your customers, armed with their PCs and Internet connections, clamor for online services. Your staff must collaborate easily within your business and with outside vendors to decrease your time to market. Your sales force must be on the road *and* well-informed to seize client opportunities before your competition.



Your access to information and the information that you can provide your customers defines your competitive edge.

All these challenges, all these network types. All this time, all this money. Right? Wrong! IBM Internet and intranet solutions enable your company to take advantage of network computing advances – like information access, electronic commerce, and collaboration – made possible by Internet communication standards. With network computing diverse networks can communicate with one another.

What does this mean to you? It means that you can bring specialized knowledge to every customer situation, real or virtual. You can offer customers more flexible services, 24 hours a day, 7 days a week. Your employees can collaborate and share information with one another, with your customers, and with your suppliers. You can choose applications based on your business needs, not on your network. And IBM Internet and intranet solutions enable network managers to easily integrate networks.

IBM Internet and intranet solutions sharpen your competitive edge, get your company online, and protect your current network investment.



The IBM eNetwork Software product line offers Internet and intranet solutions to meet the communication needs of today and tomorrow. The product line includes servers and clients to satisfy every communication challenge your company faces. Based on the strengths you expect from IBM – reliability, open standards, scalability, and security – these products place information access and interoperability within the reach of all technology users, including those outside your organization. From the board room to the sales floor to your customer's living room, users can choose applications that fit their needs and can interconnect despite diverse platforms and network configurations.

With the IBM eNetwork Software product line technology incompatibility is becoming obsolete. That means Internet, intranet, and beyond, regardless of your operating system or network type. The best of all worlds! So, your company can meet all the challenges of the information revolution and continue to improve the bottom line.



Customer scenarios

The following pages provide four hypothetical scenarios to help you understand how the IBM eNetwork Software Internet and intranet solutions can enable universal communications for your company. These particular scenarios were chosen for their broad applicability across industries. Each scenario describes the:

- Critical business issues faced by a specific department or division
- Specific networking environment and the role that the IBM eNetwork Software products played in resolving the Internet and intranet deployment challenges associated with those business issues
- Cost/benefit estimate associated with the solution

Regardless of your business, you will be able to relate the general requirements, configurations, and cost/benefit estimate worksheets to your own situation.

... checks, files, and customer smiles

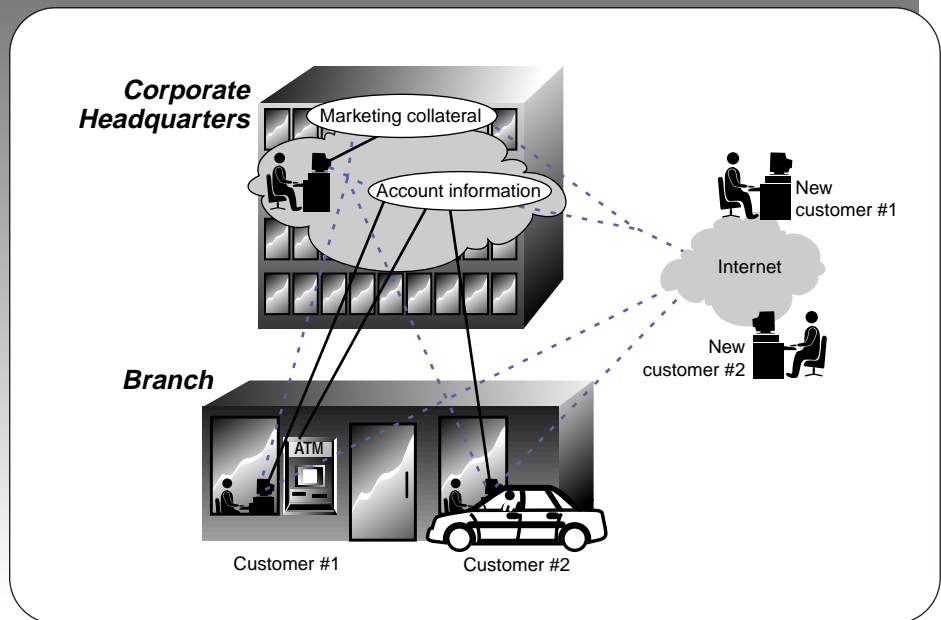
Customers are choosing to do business anytime, anywhere. The Internet adds a new dimension to account access. But, banks require a predictable, secure environment for delivering these online, real-time services. With IBM Internet and intranet solutions we can meet these new challenges and maintain the quality of service that our customers depend on.

*- Vice President of
Electronic Commerce*

As the number of Internet users grew exponentially, the Vice President of Electronic Commerce at a financial institution saw an incredible opportunity. Like many astute business people, he examined ways his company could use the Internet to enhance its business offerings.

The institution's Web site offered basic customer relations and marketing collateral. The Vice President imagined business and home banking customers reconciling accounts, transferring funds, requesting service transactions, and much more from the Web site. Many business customers had also asked for credit card processing on the Internet. So many possibilities! The only limits seemed to be their imagination – and the network's connectivity and security.

The bank's current system is stable, reliable, secure, and in place. To offer Internet services, did the bank really need to replace the current system? To respond to customer inquiries and research the bank's competition, the employees would need Internet access, too. Wouldn't this require at least a temporary disruption of business? The Vice President needed a solution that could transparently Internet-enable the current network.



Luckily for him, IBM did more than imagine when they developed Internet and intranet solutions. The existing central site server could easily handle the additional Internet banking traffic. Parallel servers at corporate headquarters would provide customers Internet access to their account information on the banking system and connect employees to the Internet. Servers at each branch could connect the branch employees to the bank system, employees at other locations, and customers on the Internet.

Employees can share information electronically with intranet web sites and e-mail. They can publish documents for public distribution directly to the bank's Web site. E-mail provides a new way for customers to directly access bank employees and for bank employees to work with one another. And a Web browser makes competitive research only a point-and-click away.

What automatic tellers and proprietary online services started, Internet access could elevate to the next level. Internet banking could enhance the institution's quality of service and decrease unnecessary in-bank visits.

An IBM Internet and intranet solution extends customer and employee access to business-critical information.

Previous environment

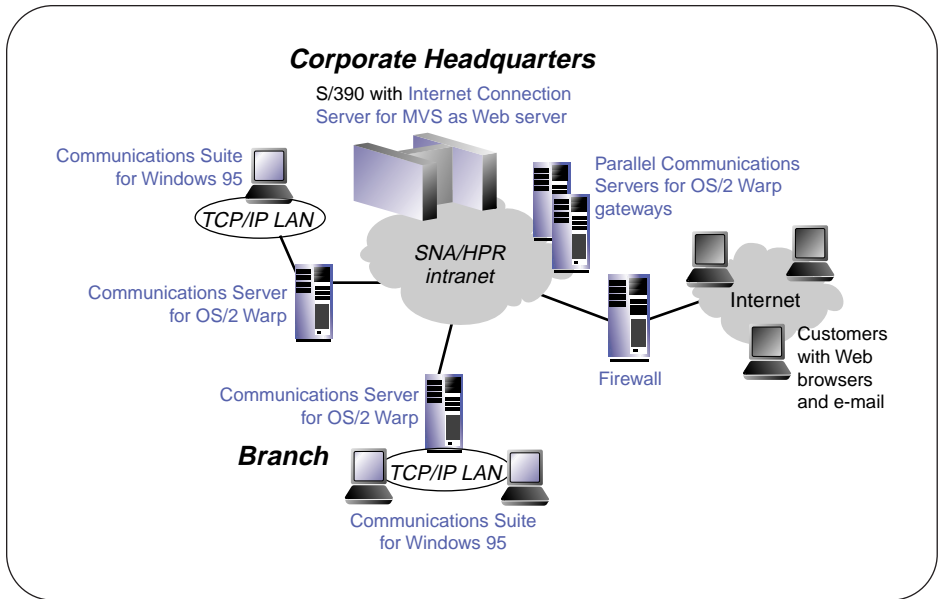
- Customers access account information with mail, phone, fax, ATM, or bank visits.
- Employees at different branches communicate by postal mail, fax, or phone.
- Branch offices use TCP/IP LANs.
- The central site provides an SNA backbone network which uses High-Performance Routing (HPR) that connects the central banking system on the S/390 to 300 branch offices.

Customer requirements

- Implement a solution without interrupting business.
- Provide customers with secure Internet access to account information.
- Improve employee access to the central banking system and enable enterprise-wide Internet access.
- Enable employees at all locations to electronically collaborate on documentation and to easily reuse documentation for publishing on the Web site.

Solution

- 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 on the S/390 as a Web server.
- Install parallel Communications Servers for OS/2 Warp for customer access.
- 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.



The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2 systems. IBM eNetwork Software clients are available for Windows NT, Windows 95, Windows 3.1, and OS/2 systems. See page 16 for more specific information.

Major advantages

- Improved corporate image and increased electronic commerce
Offering advanced Internet services helps the bank create an image as the provider for current and future financial needs, offline and online.
- No major network changes
By eliminating the need to build a separate, parallel TCP/IP network, the company can avoid new network charges and reduce complexity and maintenance.
- Reduced content production time and cost
Electronic communication on projects – like developing marketing collateral, financial reports, and customer support documentation – improves collaboration and allows the bank to provide a higher level of service than other banks. This reduction decreases cost, serves customers better, and increases revenue.
- Cost savings
See the Cost/benefit estimate on the next page!

Cost/benefit estimate¹

The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2, and clients for Windows 3.1, Windows NT, Windows 95, and OS/2. Although products may be substituted based on operating system preference, prices may vary.

Projected benefits and costs² associated with this scenario are defined below. In this case, the savings associated with the benefits were calculated for a two-year period, although the benefits and this implementation will endure far beyond that period of time. Additional savings can be realized by using the intranet to distribute additional corporate documentation. Note that this estimate does not include the costs associated with document conversion, network integration, or maintenance.

Total benefits	\$9,638,000
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- Increased productivity savings
- Projected revenue benefits9,600,000
 Increase projected revenue by 8 percent, with increased customer satisfaction and market share, decreased customer visits and calls, and reduced time to complete documentation projects
8 percent increase x \$60,000,000 initial revenue/year x 2 years = \$9,600,000
- Other benefits38,000
 Reduce document distribution costs
\$0.04/page x 80 pages/employee/year x 5000 employees x 2 years = \$32,000
 Move Web site from an external vendor to the central site system
\$3,000/year x 2 years = \$6,000

Total implementation costs	\$5,976,947
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- Hardware implementation costs3,280,000
 OS/2 Warp servers, includes operating system (*303 x \$10,000 = \$3,030,000*)
 Firewall server, includes operating system (*1 x \$50,000 = \$50,000*)
 Web server, central site S/390 additional MIPS (*10 MIPS x \$20,000/MIP³ = \$200,000*)
- Software implementation costs2,216,947
 Communications Server for OS/2 Warp (*303 x \$699 = \$211,797*)
 Communications Suite for Windows 95 (*5,000 x \$399 = \$1,995,000*)
 Firewall (*1 x \$10,000 = \$10,000*)
 Web server, upgrade S/390 to Communications Server for MVS/ESA and install Internet connection server (*no charge*)
 Web authoring tool (*1 x \$150 = \$150*)
- Other implementation costs480,000
 Employee Internet and intranet training
4 hours/representative x \$15/hour x 6000 representatives = \$360,000
 Web content development and management (*1 x \$60,000/year x 2 years = \$120,000*)

Savings (Benefits – Implementation Costs) =	\$3,661,053
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¹ This estimate is hypothetical and based on assumed IT and personnel costs and needs, which may be different for each customer. Each potential customer should perform an independent estimate of the costs and benefits for any particular installation. This is not a promise or guarantee of costs or savings for any particular business and should not be so construed.

² All figures provided in this estimate are in U.S. dollars.

³ MIP cost is specific to the customer's environment. Contact your sales representative or reseller to determine MIPS savings.

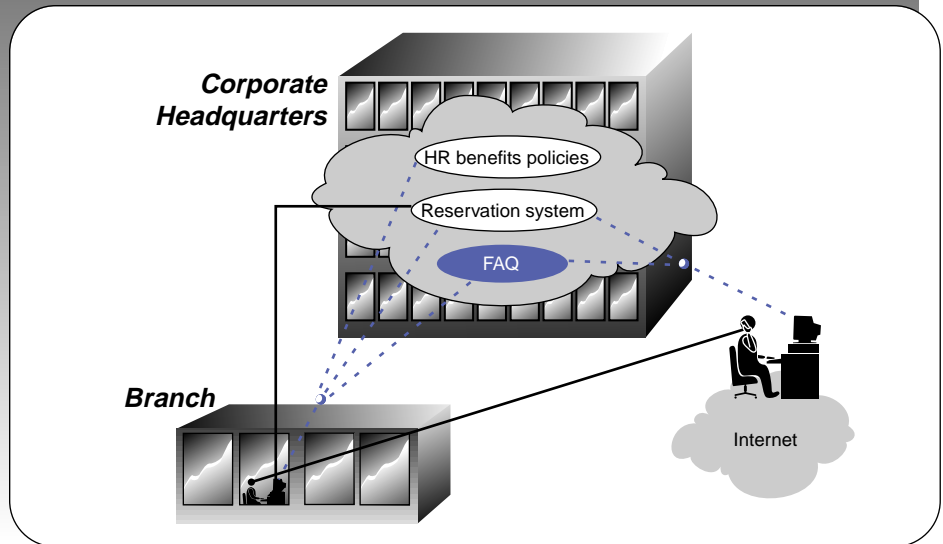
... turning paper money into gold

You know you've been successful in bringing a business to its competitive edge when you hear a production manager explain to her jogging partner about surfing the company's intranet. With all the hype around intranets, we were hesitant to just jump on the bandwagon. But with an IBM intranet solution, how can you lose? With the customer service representatives' enthusiasm and the productivity results so far, we may be able to move forward with telecommuting ahead of schedule. After all, everything they need is on our web!

– Director of Customer Service

With the increasing cost of paper and global environmental awareness, a transportation corporation mandated that all departments reduce paper use by at least 25 percent within the fiscal year. So, the Director of Customer Service searched for ways to improve document distribution to the customer service representatives, while maintaining their access to the reservations system at the company's central site.

As part of training and orientation, each representative receives a printed copy of the answers to frequently asked questions (FAQ) and human resources information. As the FAQ is revised, each representative receives an updated copy. When benefits or corporate policy change, Human Resources provides Customer Service with a copy of the changes for distribution.



With the high visibility of Internet technology, the director saw a corporate intranet as a logical distribution avenue. The company could publish documentation on a Web site at the central office. Unlike paper, Web sites are interactive. A searchable FAQ could help representatives locate answers more quickly and serve more customers in less time. Web newsgroups and e-mail reduce training time by facilitating online peer education and allowing representatives at every branch to work together to improve the FAQ. The company could also publish the searchable customer service FAQ on the external Web site, so customers could avoid needless customer service calls. Customers can also price travel arrangements before calling.

An intranet was a simple, yet elegant solution made possible by the Enterprise Communications product line. A Web server at the central site would provide access to information for representatives and customers. Servers installed at each branch would enable the representatives to access the reservations system and the intranet. With a standard Web browser, representatives can view online what once required reams of paper. A server at the central site also enables customers to access information with any Web browser.

Processing reservations with a computer is nothing new. Using a corporate intranet to enhance productivity, reduce costs, and strengthen customer service globally, however, is news.

Using an IBM Internet and intranet solution, this company can easily update and distribute corporate documentation and improve customer service.

Previous environment

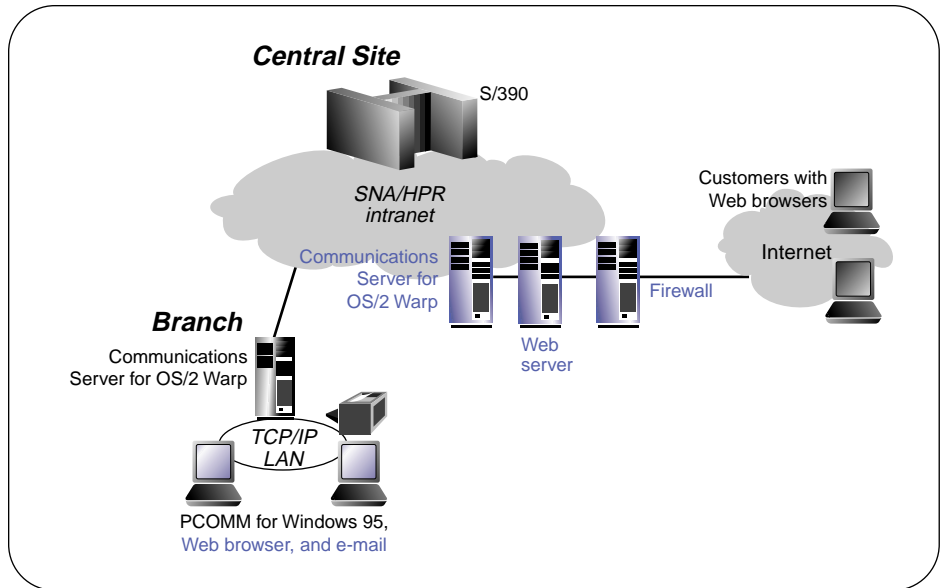
- Documentation is distributed on paper.
- Customers call service representatives to make reservations and ask questions.
- PCOMM for Windows 95 and Communications Servers for OS/2 Warp at branches provide representatives access to the CICS-based reservations system on the S/390 which uses HPR.
- Branch offices use TCP/IP LANs.

Customer requirements

- Efficiently distribute critical business documentation to representatives.
- Reduce time per transaction for customer service representatives.
- Offer customers Internet access to customer support information.
- Implement a solution without disrupting access to the reservations system.

Solution

- Install a Web server at the central site.
- Use the existing Communications Servers at each branch to enable Internet and intranet access.
- Install a standard web browser so representatives can access the Web site.
- Install a Communications Server for OS/2 Warp at the central site to provide Internet access.
- Install a firewall for Internet security.



The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2 systems. IBM eNetwork Software clients are available for Windows NT, Windows 95, Windows 3.1, and OS/2 systems. See page 16 for more specific information.

Major advantages

- Improved access to corporate content and expanded commerce
An intranet can significantly reduce distribution costs by reducing reliance on paper and instantly providing changes to the entire corporation. Easy-to-use, interactive documents allow customers and representatives to quickly access the information needed to answer questions and complete transactions.
- Enhanced training and collaboration
Improving communication channels using e-mail and newsgroups allows busy professionals to answer questions at their convenience, facilitating peer mentoring and continuing education. Questions asked on WWW threaded newsgroups and in e-mail help improve the FAQ.
- No major network changes
By eliminating the need to build a separate, parallel TCP/IP network, the company can avoid new network charges and reduce complexity and maintenance.
- Cost savings
See the Cost/benefit estimate on the next page!

Cost/benefit estimate¹

The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2, and clients for Windows 3.1, Windows NT, Windows 95, and OS/2. Although products may be substituted based on operating system preference, prices may vary.

Projected benefits and costs² associated with this scenario are defined below. In this case, the savings associated with the benefits were calculated for a two-year period, although the benefits and this implementation will endure far beyond that period of time. Additional savings can be realized by using the intranet to distribute additional documentation, to enhance corporate communications, to facilitate project management in other departments, and much more. Note that this estimate does not include the costs associated with document conversion, network integration, or maintenance.

Total benefits	\$18,987,225
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- Increased productivity savings18,947,625
 - Savings of 2 minutes per transaction using searchable FAQ, applicable to 15 percent of transactions
 $0.033 \text{ hours/call} \times \$15/\text{hour} \times 0.15 \text{ applicability} \times 373,000 \text{ calls/day} \times 250 \text{ days/year} \times 2 \text{ years} = \$13,847,625$
 - Savings from 2 percent reduction in customer calls, since customers have Internet access to the FAQ and pricing information
 $0.1 \text{ hours/call} \times \$15/\text{hour} \times 0.02 \text{ reduction} \times 340,000 \text{ initial calls/day} \times 250 \text{ days/year} \times 2 \text{ years} = \$5,100,000$
- Other benefits39,600
 - Savings from reduction in document distribution costs (includes paper, reproduction, and distribution)
 $\$0.04/\text{page} \times 60 \text{ pages/representative/year} \times 7,000 \text{ representatives} \times 2 \text{ years} = \$33,600$
 - Move Web site from an external vendor to the central site system
 $\$3,000/\text{year} \times 2 \text{ years} = \$6,000$

Total implementation costs	\$1,012,699
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- Hardware implementation costs110,000
 - OS/2 Warp server, includes operating system ($1 \times \$10,000 = \$10,000$)
 - Firewall server, includes operating system ($1 \times \$50,000 = \$50,000$)
 - Web server, includes operating system ($1 \times \$50,000 = \$50,000$)
- Software implementation costs362,699
 - Communications Server for OS/2 Warp ($1 \times \$699 = \699)
 - Firewall ($1 \times \$10,000 = \$10,000$)
 - Web server, includes authoring tools and search engine ($1 \times \$2,000$)
 - Web browser with e-mail client ($7,000 \times \$50 = \$350,000$)
- Other implementation costs540,000
 - Employee Internet and intranet training
 $4 \text{ hours/representative} \times \$15/\text{hour} \times 7,000 \text{ representatives} = \$420,000$
 - Web content development and management ($1 \times \$60,000/\text{year} \times 2 \text{ years} = \$120,000$)

Savings (Benefits - Implementation Costs) =	\$17,974,526
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¹ This estimate is hypothetical and based on assumed IT and personnel costs and needs, which may be different for each customer. Each potential customer should perform an independent estimate of the costs and benefits for any particular installation. This is not a promise or guarantee of costs or savings for any particular business and should not be so construed.

² All figures provided in this estimate are in U.S. dollars.

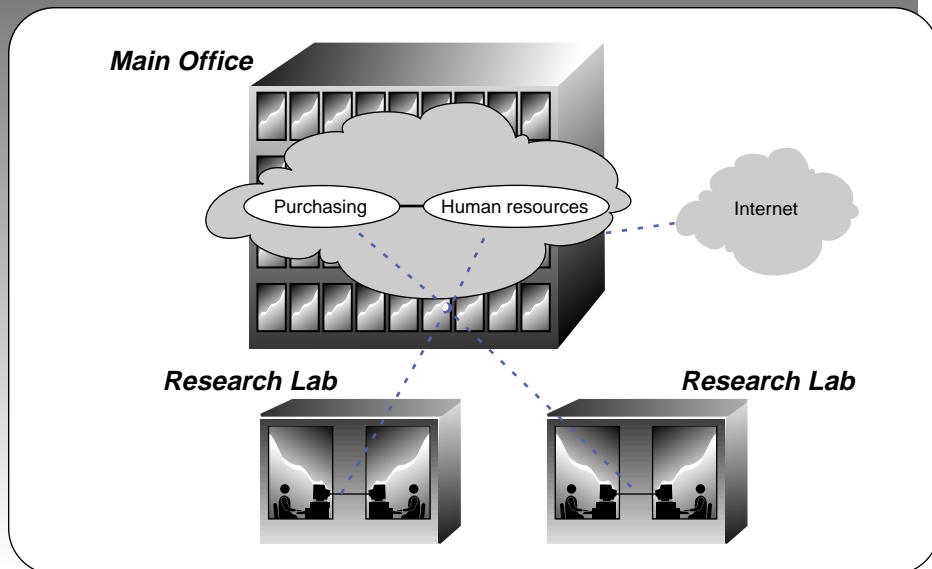
... a source and sync for deep think

As a company grows you must be careful to keep the channels of communication open. Our researchers are busy people, and we like them that way. With our intranet, we were able to improve their access to the information they need and keep the channels of communication open.

- Director of Research and Development

When a company's research laboratories were all in the same building, overseeing all the development projects was much simpler for the Director of Research and Development. As the company grew and opened laboratories in remote locations, the *drop-by-my-office* method of project management and collaboration lost its effectiveness. Similarly, it became more difficult for the researchers to submit purchase requisitions and follow-up with purchasing agents when they needed to expedite materials for their projects.

The director expected growing pains to accompany the rapid growth. However, she needed to ensure that growing pains did not cramp the company's progress. Her commitment to innovation helped the company excel in their research endeavors. This commitment also influenced her assessment of new project management methods and connectivity options. Perhaps the company could deploy a solution that would capitalize on the new Internet technology and network computing advances that she read about in the trade journals. After all, the researchers were



already comfortable with the Internet. They used the Internet to keep informed in their field and to access information at university research libraries and standards organizations.

Each research laboratory was connected with an internal network. A system at the main office supported the Purchasing Department. If the disparate networks could talk to one another, an intranet could help manage projects and improve corporate communication. A web site for each research team could include project specifications, milestones, contingency issues, meeting minutes, and other mission critical information. A top-level corporate web site could provide links to human resources information, a corporate directory, and topics of general interest.

A server installed at the main office would connect the office network to the Web server and, thus, to the laboratories. This same server would also connect the main office to the Internet. Using a Web browser, the employees could access the intranet and Internet. An intranet print server at each lab allowed the researchers to print timely Internet articles for review and discussion. E-mail allowed the project managers to communicate more efficiently with the Director and researchers.

Internet technology provides the relief growing companies need to ease their growing pains. They can stay focused on their critical business issues, not on how to communicate.

An IBM intranet solution provided online project management and access to critical business applications.

Previous environment

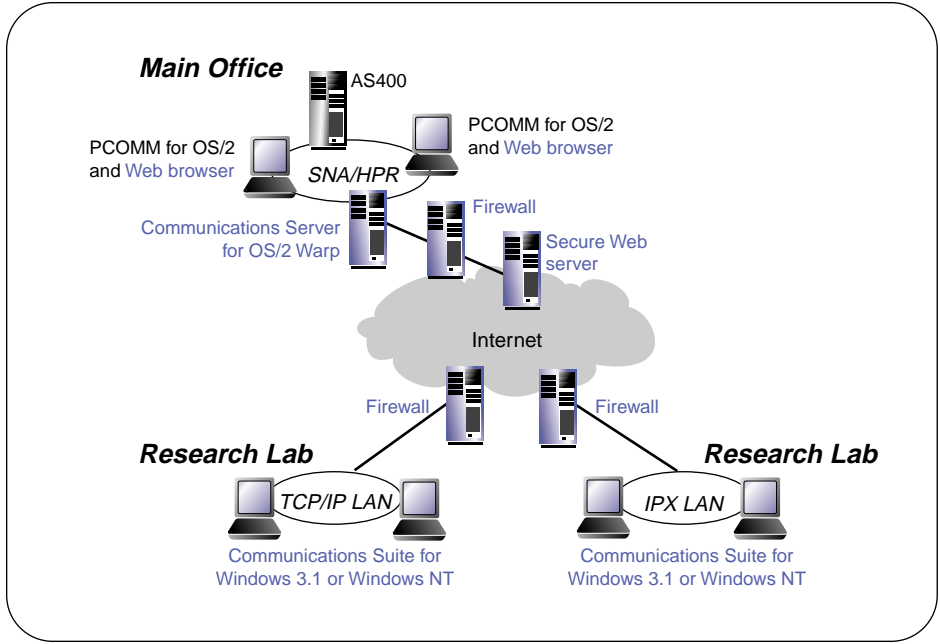
- Research laboratories access the Internet through a local Internet service provider (ISP).
- Researchers at remote laboratories use diverse operating systems that are on different LAN types.
- The purchasing system is on an AS/400 system at the main office.
- Employees at the main office access the AS/400 with PCOMM for OS/2.

Customer requirements

- Provide more sophisticated remote project management and collaboration tools.
- Connect the researchers to the purchasing system.
- Expand corporate communication and collaboration channels.
- Ensure that the solution is multifunctional, scalable, and secure.

Solution

- Install a secure intranet web server for the intranet.
- Install Communications Server for OS/2 Warp at the main office.
- Install Communications Suite on each research laboratory desktop for intranet access and emulation.
- At the main office, install Web browsers that will be launched from PCOMM for OS/2 clients to provide access to the intranet web site.
- Install a firewall to secure the intranet.



The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2 systems. IBM eNetwork Software clients are available for Windows NT, Windows 95, Windows 3.1, and OS/2 systems. See page 16 for more specific information.

Major advantages

- Cost-effective intranet project management and collaboration
Using secure Internet technology and existing Internet connections, the company can avoid additional network and dedicated line costs. The Communication Suite provides essential, secure, and uniform Internet communications tools to enhance enterprise communication and teamwork.
- Improved time to market through ease of access
A corporate intranet provides *drop-by-my-office* ease of access for employees at remote sites.
- No major network change
By eliminating the need to build a separate, parallel TCP/IP network, the company can avoid new network charges and reduce complexity and maintenance.
- Cost savings
See the Cost/benefit estimate on the next page!

Cost/benefit estimate¹

The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2, and clients for Windows 3.1, Windows NT, Windows 95, and OS/2. Although products may be substituted based on operating system preference, prices may vary.

Projected benefits and costs² associated with this scenario are defined below. In this case, the savings associated with the benefits were calculated for a two-year period, although the benefits and this implementation will endure far beyond that period of time. Note that this estimate does not include the costs associated with document conversion, network integration, or maintenance.

Total benefits	\$2,416,680
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- Increased productivity _____
- Projected revenue benefits2,400,000
 Increase projected revenue by decreasing time to market
 $3 \text{ percent increase} \times \$40,000,000 \text{ initial revenue/year} \times 2 \text{ years} = \$2,400,000$
- Other benefits16,680
 Reduce document distribution costs
 $\$0.04/\text{page} \times 60 \text{ pages/employee/year} \times 350 \text{ employees} \times 2 \text{ years} = \$1,680$
 Eliminate need for additional training for engineers who already use the Internet
 $4 \text{ hours/engineer} \times \$37.50/\text{hour} \times 100 \text{ engineers} = \$15,000$

Total implementation costs	\$494,099
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- Hardware implementation costs260,000
 OS/2 Warp server, includes operating system ($1 \times \$10,000 = \$10,000$)
 Firewall server, includes operating system ($4 \times \$50,000 = \$200,000$)
 Web server, includes operating system ($1 \times \$50,000 = \$50,000$)
- Software implementation costs94,099
 Communications Server for OS/2 Warp ($1 \times \$699 = \699)
 Communications Suite ($100 \times \$399 = \$39,900$)
 Firewalls ($4 \times \$10,000 = \$40,000$)
 Secure Web server, including authoring tools ($1 \times \$1,000$)
 Web browser with e-mail client ($250 \times \$50 = \$12,500$)
- Other implementation costs140,000
 Main office employee Internet and intranet training
 $4 \text{ hours/employee} \times \$20/\text{hour} \times 250 \text{ employees} = \$20,000$
 Web content development and management ($1 \times \$60,000/\text{year} \times 2 \text{ years} = \$120,000$)

Savings (Benefits - Implementation Costs) =	\$1,922,581
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¹ This estimate is hypothetical and based on assumed IT and personnel costs and needs, which may be different for each customer. Each potential customer should perform an independent estimate of the costs and benefits for any particular installation. This is not a promise or guarantee of costs or savings for any particular business and should not be so construed.

² All figures provided in this estimate are in U.S. dollars.

...interaction wins satisfaction

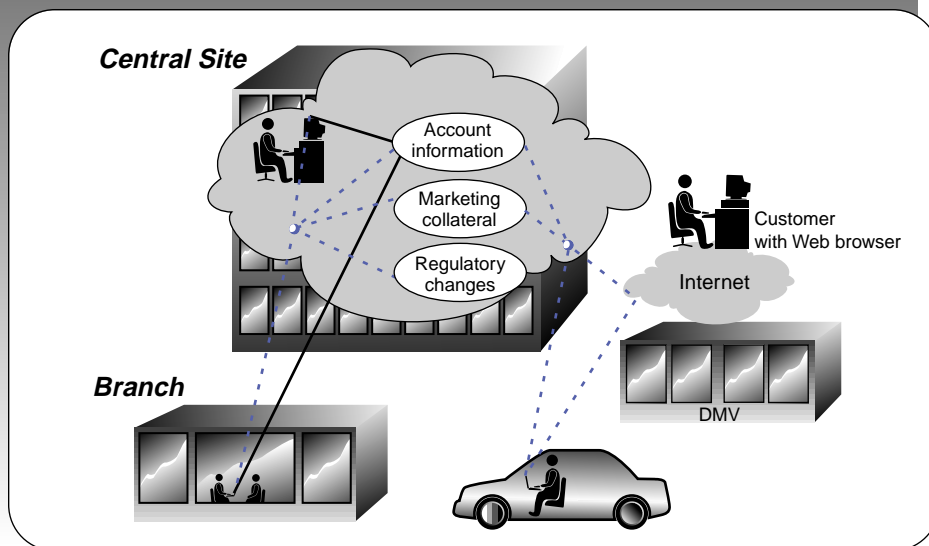
Our agents couldn't tell you how our IBM solution helps them, but they spend more time really talking to their customers and less time accessing data. Our customers appreciate the added attention and the agent can better assess insurance needs. So, it's what the agents don't have to do that helps them serve our customers better.

- Vice President of Information Technology

Connectivity means access. And in our information age, access means a competitive edge. No one at an insurance company understands the business significance of connectivity better than the Vice President of Information Technology (IT). He knows the implications from cost to benefit, from hassle to applause.

Years ago when the vice president first connected agents to the Department of Motor Vehicle's (DMV) computer, the response was wonderful. But now agents and customers alike were unimpressed with the long connection times and limited flexibility. And at a client's office, an agent couldn't access this information or close a deal without tying-up the client's phone line — not an ideal situation! The agents needed better connectivity. Response to an online questionnaire on the corporate Web site indicated that customers also wanted direct access to their account information.

The Internet and wireless technology offered a perfect opportunity to extend access for both agents and customers, enable early processing of claims, and enhance customer service. A few well-placed servers could connect the entire company to the accounts system and insurance regulation database at the cen-



tral site and to the Internet, including the DMV. Because the server at the central site could handle the additional traffic, the company could move its Web site to the company's own large server. Providing account information from the corporate Web site allowed customers to quickly and easily review their accounts without calling an agent. Using e-mail, they could conveniently request policy amendments.

The Communications Suite provides high-performance emulation and the essential Internet tools, including a Web browser, e-mail client, FTP, print, and file servers and clients, and much more, to fully Internet-enable any company. Because the Suite fully capitalizes on the multitasking operating system on the agents' ThinkPads, this solution not only improves access, but also increases productivity. If an agent required access at the customer site, a wireless solution would provide connectivity and allow them to use the same communication tools as in the office. And the IBM solution could reduce data transfer as much as 90 percent, reducing connection costs and ensuring economical connectivity.

An integrated IBM Internet, intranet, and wireless solution sharpens this company's competitive edge.

Previous environment

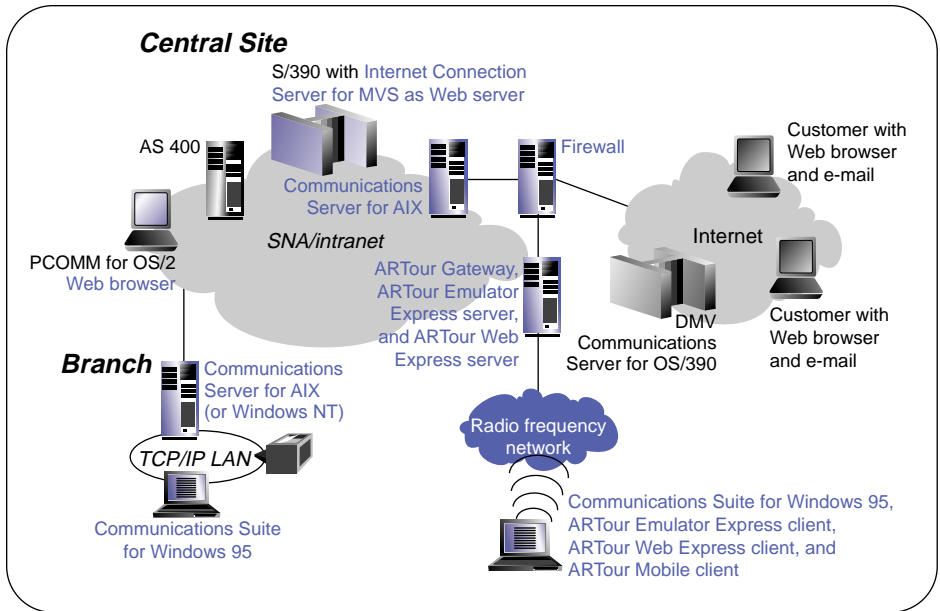
- Data is on an S/390 and an AS/400 at the central site and on an S/390 at the DMV.
- Employees at the central site access the S/390 and AS/400 applications with PCOMM.
- Agents must dial-in directly to the DMV system.
- An SNA backbone network connects the central site to 180 branch offices.
- Branch offices rely on predominantly TCP/IP networks of ThinkPads running Windows 95.

Customer requirements

- Improve agents' productivity by enhancing their connectivity with customers, applications at the central site, the DMV, and the Internet.
- Provide customers secure Internet access to their account information.

Solution

- Upgrade VTAM and TCP/IP for MVS on the S/390 to Communications Server for MVS/ESA.
- Install Internet Connection Server for MVS/ESA 5.2 on the S/390 as a Web server.
- Install Communications Servers for AIX (or Windows NT) at central site and each branch office.
- Install Communications Suite for Windows 95 on the ThinkPads.
- Install ARTour Gateway, ARTour Emulator Express Server, and ARTour Web Express Server at the central site.



The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2 systems. IBM eNetwork Software clients are available for Windows NT, Windows 95, Windows 3.1, and OS/2 systems. The ARTour products will include the AIX Gateway, Emulator Express and Web Express servers for Windows NT, AIX, and OS/2, and clients for Windows 3.1, Windows 95, Windows NT, and OS/2. See page 16 for more specific information regarding availability.

- Install ARTour Mobile clients, ARTour Emulator Express clients, and ARTour Web Express clients on mobile ThinkPads to enable Internet and intranet communication, Web-based applications, and 3270-based applications.
- Install wireless modems for mobile agents.
- Install a firewall for Internet security.

Major advantages

- Easy, improved productivity and connectivity enhancements
The Communications Suite capitalizes on the multitasking OS, provides easy access to SNA-based applications with PCOMM, and includes essential Internet and intranet tools.

- Customer access to account information for improved service and call reduction
From the corporate Web site, customers can review account information any time, without calling an agent. They can also correspond with their agent with e-mail.
- Connectivity on the road that enables electronic commerce
Agents who travel to customer sites can access all the information they need to close the deal. Early processing of claims also saves the company money.
- No major network changes
By eliminating the need to build a separate, parallel TCP/IP network, the company can avoid new network charges and reduce complexity and maintenance.
- Cost savings
See the Cost/benefit estimate on the next page!

Cost/benefit estimate¹

The IBM eNetwork Software product line includes communications servers for Windows NT, NetWare, AIX, OS/390, and OS/2, and clients for Windows 3.1, Windows NT, Windows 95, and OS/2. The ARTour products will include the AIX Gateway, Emulator Express and Web Express servers for Windows NT, AIX, and OS/2, and clients for Windows 3.1, Windows 95, Windows NT, and OS/2. Although products may be substituted based on operating system preference, prices may vary.

Projected benefits and costs² associated with this scenario are defined below. In this case, the savings associated with the benefits were calculated for a two-year period, although the benefits and this implementation will endure far beyond that period of time. Note that this estimate does not include the costs associated with document conversion, network integration, or maintenance.

Total benefits	\$24,008,640
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- Increased productivity
- Projected revenue benefits 24,000,000
 Increase projected revenue by 2 percent, with improved customer satisfaction, increased market share, and improved employee productivity (2 percent increase x \$600,000,000 initial revenue/year x 2 years = \$ 24,000,000)
- Other benefits 8,640
 Reduce document distribution costs (\$0.04/page x 60 pages/representative/year x 1,800 agents x 2 years = \$8,640)

Total implementation costs	\$5,074,901
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- Hardware implementation costs 3,146,000
 RS/6000 server at central site, includes operating system (1 x \$50,000 = \$50,000)
 RS/6000 (or Windows NT) servers, includes operating system (180 x \$15,000 = \$2,700,000)
 Firewall server, includes operating system (1 x \$50,000 = \$50,000)
 Web server, central site S/390 additional MIPS (10 MIPS x \$20,000/MIP³ = \$200,000)
 RS/6000 for ARTour Emulator Express server, ARTour Web Express server, and ARTour Gateway, includes operating system (1 x \$20,000 = \$20,000)
 Radio modems (180 x \$700 = \$126,000)
- Software implementation costs 1,373,421
 Communications Server for AIX (or Windows NT), with unlimited application sessions and TN3270 sessions (\$849 base + \$6,590 + \$62,592 = \$70,031)
 Communications Servers for AIX (or Windows NT), with 10 concurrent application sessions and TN3270 access [180 servers x (\$849 base + \$642 + \$985) = \$445,680]
 Communications Suite for Windows 95 (1,800 x \$399 = \$718,200)
 Firewall (1 x \$10,000 = \$10,000)
 Web server, upgrade S/390 to Communications Server for MVS/ESA and install Internet Connection for MVS (no charge)
 Web authoring tool (1 x \$150 = \$150)
 ARTour Gateway with 180 client access and clients (1 x \$15,000 + 180 x \$159 + 180 x \$30 = \$49,020)
 ARTour Emulator Express server with 180 clients (1 x \$7,500 + 180 x \$249 = \$52,320)
 ARTour Web Express server with 180 client access and clients (1 x \$3,000 + 180 x \$109 + 180 x \$30 = \$28,020)
- Other implementation costs 555,480
 Employee Internet and intranet training (4 hours/agent x \$25/hour x 1,800 agents = \$180,000)
 Wireless access costs
 \$1,200 setup + \$1,595/month line and modem x 24 months + \$50/month airtime x 180 users x 24 months = \$255,480
 Web content development and management (1 x \$60,000/year x 2 years = \$120,000)

Savings (Benefits — Implementation Costs) =	\$ 18,933,739
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¹ This estimate is hypothetical and based on assumed IT and personnel costs and needs, which may be different for each customer. Each potential customer should perform an independent estimate of the costs and benefits for any particular installation. This is not a promise or guarantee of costs or savings for any particular business and should not be so construed.

² All figures provided in this estimate are in U.S. dollars.

³ MIP cost is specific to the customer's environment. Contact your sales representative or reseller to determine MIPS savings.

Internet and intranet opportunities — it's not just surfing!

The numbers are staggering. Research shows that over 5 million users are permanently attached to the Internet.

According to one analyst, online commerce will reach \$150 billion (U.S.) by the year 2000 — and \$1 trillion (U.S.) by 2010.

TCP/IP penetration is projected to extend to nearly 80 percent of LAN environments.

With numbers like that, corporations cannot afford to ignore Internet and intranet technology. Network differences should no longer inhibit full connectivity.

To seize the revenue and cost-saving opportunities afforded by Internet and intranet solutions, companies must add intelligence to their networks and computers.

Educating your network

When networks are smart enough to talk to each other, users can focus on the information they need, not on how to access that information. They can freely choose applications based on their critical business issues, not on network limitations. A quick estimate would suggest that either the user workstation or the server must support multiple network types to satisfy access requirements. For user (client) workstations, this is extremely resource-intensive, not only because multiple network stacks are replicated across the enterprise, but also because the stacks require significant additional network support.

The IBM eNetwork Software clients and servers can educate your computer and your network. And as shown in the previous scenarios, smart networks can enable Internet and intranet solutions that offer significant cost savings. To determine the most cost-effective deployment for any network, analyze the existing configura-

tion. Then, review employees' needs for accessing business applications, the Internet, and customers as well as customers' needs for accessing the corporation.

Meeting your enterprise communication needs

The IBM eNetwork Software product line is specifically designed to eliminate network incompatibilities in your enterprise. The IBM eNetwork Communications Servers offer a multiplatform solution that works in tandem with its client software and with other pervasive industry clients, to enhance or minimize disruption to employee productivity. The IBM eNetwork Software clients include offerings specifically tailored for cross-platform enterprise needs, wireless needs, Internet and intranet users, and users of traditional, Internet, and intranet systems.

This product line can help users — whether in the office, at home, or on the road — access critical business information and stay connected. (For more information on other solutions using the IBM eNetwork Software product line, see *IBM eNetwork Software Solutions for Any-to-Any Information Access Assessment Guide* and *IBM eNetwork Software Solutions for Network Integration Assessment Guide*.)

The ultimate quest of business technology users today is interoperability. To be successful, users need the flexibility to move data and use critical applications across their organization without being concerned with the underlying networks. Users must have easy access to data from the office, home, or on the road – without sacrificing the familiar look and feel they know and understand.

With this line of servers and clients, interoperability is within the grasp of all technology users. These products allow users to choose applications that fit their business needs and to interconnect despite diverse platform and network configurations. Technology incompatibility is becoming obsolete with the IBM eNetwork Software products.

IBM eNetwork Software Communications Servers

With the introduction of the Communications Servers, IBM has integrated the broadest array of networking functions and connectivity available – based on industry standards and optimized for the platform of choice. Several key and open technologies have been integrated into a simplified set of products.

The Communications Server product line includes solutions for OS/390, AIX, OS/2, Windows NT, and NetWare and is fully interoperable with S/390 and AS/400 networks. Fundamental to today's client/server and network computing environments, the Communications Server builds on the leading peer-to-peer networking protocols of TCP/IP and Advanced Peer-to-Peer Networking (APPN).

Communications Server for AIX

As a powerful multiprotocol, multifunction gateway which can have extra-high capacity and performance with direct S/390 channel attachment, this product succeeds IBM SNA Server for AIX, Version 3.1. As a total enterprise networking solution, its UNIX application platform extends the communication capability of the AIX Base Operating System by acting as an enterprise server for AIX and SNA networks, as well as a connectivity platform. This server was designed specifically for AIX and RS/6000 networking environments and takes advantage of the AIX system facilities to integrate applications and protocols seamlessly.

Communications Server for OS/2 Warp

An advanced gateway providing flexible, reliable communication of networks for all sizes, this product enables OS/2, Windows, and DOS workstations to communicate with S/390 and AS/400 hosts and other workstations. A significant capability of this server is that it allows IPX, NetBios, SNA, and TCP/IP applications to run unchanged over both SNA and TCP/IP communication networks. Also, this server's rich 32-bit application programming interfaces are key to the dynamic growth of new business applications required by customers, as well as the client/server and distributed applications supported with the APPN network node and end node.

Communications Server for OS/390

A critical server for the enterprise, providing the highest availability, reliability, and security, this powerful communications server connects diverse applications and network environments, and it builds on the classic strength of S/390. It is a sensible solution to the real business need for integrating ever-increasing sets of new applications into an ever-changing network without disrupting access to your mission-critical applications. The overall benefits are unmatched performance, availability, and investment protection for your S/390 applications, whether they are running on VTAM or TCP/IP.

new *Communications Server for Windows NT*

An industrial-strength multiprotocol gateway providing flexible, reliable communications, this product enables OS/2, Windows, and DOS workstations to communicate with S/390 and AS/400 hosts and other workstations. Whether it's for host terminal emulation, client/server and distributed applications, or connectivity across local and wide area networks (LANs and WANs), this server offers a robust set of communication, networking, and systems management features. Its wide variety of application programming interfaces provides compatibility with new and existing client/server applications and can be run on either client or server nodes in the network.

NetWare for SAA

A secure, reliable, and scalable platform for integrating IBM S/390 and AS/400 connectivity services with NetWare and IntranetWare, this server offers multiple LAN and WAN connectivity options for branch office and department users. This software, part of an IBM/Novell alliance, lets NetWare clients access IBM host applications and data with IPX/SPX, TCP/IP, and AppleTalk, and it provides administrators with access to Novell's industry-leading performance as well as directory, security, and management services through NetWare Directory Services.

IBM eNetwork Software Clients

IBM eNetwork Software clients can put interoperability within the reach of all technology users. Combined with communications servers, these clients optimize existing networks and platforms, while allowing for the addition of emerging high-performance applications. This line of products provides the broadest range of LAN and WAN and remote connectivity, offering the single communication source needed for home, office, and mobile use. The product line includes the following IBM eNetwork client software:

- Communications Suite for Windows 3.11
- Communications Suite for Windows for Workgroups 3.11
- Communications Suite for Windows 95
- Communications Suite for Windows NT
- Personal Communications AS/400 for OS/2
- Personal Communications AS/400 for Windows
- Personal Communications AS/400 for Windows 95
- Personal Communications AS/400 for Windows NT
- Personal Communications AS/400 and 3270 for OS/2
- Personal Communications AS/400 and 3270 for Windows
- Personal Communications AS/400 and 3270 for Windows 95
- Personal Communications AS/400 and 3270 for Windows NT
- Personal Communications Toolkit for Visual Basic
- Internet Connection Corporate Kit for Windows 3.11
- Internet Connection Corporate Kit for Windows for Workgroups 3.11
- Internet Connection Corporate Kit for Windows 95
- Internet Connection Corporate Kit for Windows NT
- Host On-Demand for any Java-enabled Web browser

Communications Suite

The Communications Suite provides all the tools customers need to meet their enterprise communication needs. From Internet and intranet access to corporate communications and terminal emulation, the Communications Suite offers the single source for market-leading communication products.

The Communications Suite includes Netscape Navigator, Version 3.0 for Web browsing and Internet applications, PCOMM 4.1 for terminal emulation, Lotus Notes Mail 4.5 for corporate communications, and FTP Software TCP/IP protocol stacks and applications. This feature-rich, multifunction solution is easy to install, easy to configure, and easy to use. And, all the applications are fully supported by IBM. With the Communications Suite, you're only one click away from the information you need!

Personal Communications (PCOMM)

With the introduction of the Personal Communications AS/400 and 3270, Version 4.1 (PCOMM 4.1), product line, customers now have one easy answer to the problem of integrating multiple users on varying platforms from multiple locations. PCOMM 4.1's consistent interface masks the complexity of information management and distribution, regardless of the underlying data source or network.

With a common look and feel across OS/2, DOS/Windows, Windows 95, and Windows NT, PCOMM 4.1 lets users move confidently from one environment to another. This can significantly lower training and application-migration costs while raising productivity.

Another significant benefit is the high-function development platform, which allows users to link application data dynamically with either custom desktop-based analysis applications or with standard decision-support suites – such as Lotus SmartSuite or Microsoft Office. Applications can be deployed across multiple diverse platforms without change and independent of transport. To obtain a no charge Personal Communications Evaluation Kit, call 1-800-901-2205, priority code 6C7ABD032

Internet Connection Corporate Kit for Windows (Corporate Kit)

Whether you manage the networks for a large corporation or a small branch office, your company can benefit from the network computing advances made possible through the use of Internet standard communication. The Corporate Kit provides the essential applications you need for complete access to your intranet and the Internet. With the Corporate Kit, your organization can share information within a department, with branch offices, with remote sites, and with mobile personnel.

The Corporate Kit provides the industry-standard TCP/IP network types and leading-edge Internet applications needed to access these resources. The program comes with industry-leading Netscape Navigator, Adobe Acrobat Reader, First Floor's Smart Bookmarks, and a wide variety of terminal emulators and file transfer and print capabilities – all to improve your organization's internal and external communication.

Easy to install and set up, the Corporate Kit includes procedures that allow you to select which applications to install on each user's desktop. And, it's even easier to get started. Simply point and click to get connected to the Internet. Prepared scripts are provided for many popular dial-up access providers and the launchpad design allows users to start a group of applications as needed to complete their tasks.

Host On-Demand

Host On-Demand is an Internet-to-SNA interconnectivity solution that provides 3270 application discovery and access through the WWW. Web users needing host applications such as public catalogs, software applications, databases, or other resources, can use Host On-Demand from inside their Java-enabled Web browsers to access central computer data. For Web-oriented users with occasional

need for central computer access, Host On-Demand provides an alternative to installing a terminal emulation program on the desktop. Host On-Demand brings network computing to the Web by enabling Web browsers to seamlessly access non-Internet-based content and services.

Host On-Demand uses the Java environment and native TN3270 and Internet protocols to provide platform-independent host access from within a Web-browser window. Host On-Demand integrates existing central computer data and resources with intranet, Internet, and Web capabilities. The result is dramatically increased availability of host-based information for Web-oriented users. Host On-Demand is available for a wide range of major server platforms, including OS/2, AIX, NetWare, and Windows NT.

IBM eNetwork Software Wireless Products

Extending the reach of new and existing business applications to the wireless environment, the Advanced Radio Communications on Tour (ARTour) product line offers a competitive business advantage. ARTour gateways and servers work in tandem with ARTour clients to minimize data traffic, reduce network costs, enhance performance, and provide affordable and effective mobile solutions.

ARTour Gateway and Servers

The ARTour Gateway for AIX extends IP connectivity across the leading international wireless packet data, cellular, and wireline networks, integrating them under a single (TCP/IP sockets) interface enabling immediate and optimized use of existing IP applications. ARTour Web Express Server for Windows NT¹, ARTour Web Express Server for AIX, and ARTour Web Express Server for OS/2 enable wireless access to intranet and Internet applications using the Web browser of your choice – without requiring any application changes. ARTour Emulator Express

Server for Windows NT, ARTour Emulator Express Server for AIX¹ and ARTour Emulator Express Server for OS/2¹ enable wireless access to SNA 3270/5250 applications, with no application modifications, thereby enabling enterprises to extend and leverage their legacy applications into the wireless environment.

ARTour Clients

The ARTour product line includes the following client software:

- ARTour Mobile Client for OS/2
- ARTour Mobile Client for Windows 3.1
- ARTour Mobile Client for Windows 95
- ARTour Mobile Client for Windows NT¹
- ARTour Web Express Client for OS/2
- ARTour Web Express Client for Windows 3.1
- ARTour Web Express Client for Windows 95
- ARTour Web Express Client for Windows NT¹
- ARTour Emulator Express Client for Windows 95
- ARTour Emulator Express Client for Windows NT¹
- ARTour Emulator Express Client for OS/2¹

ARTour Mobile Clients offer a competitive business advantage, ensuring that *all* workers can have information when they need it, where they need it! The ARTour Mobile Clients work with the ARTour Gateway for AIX to minimize data traffic, reduce network costs, and enhance performance – providing an affordable and effective mobile solution.

ARTour Web Express clients provide wireless access to intranet and Internet applications using the Web browser of your choice. Working with an ARTour Web Express server, these clients dramatically reduce the amount of data transmissions and performs various optimizations, including file caching, forms differencing, and header reduction, to enable the creation of innovative wireless solutions in the network computing environment. In addition, mobile clients can perform asynchronous and disconnected operations to optimize productivity.

Similarly, the ARTour Emulator Express clients work with an ARTour Emulator Express server to provide mobile users access to SNA 3270/5250 applications. ARTour Emulator Express filters out unnecessary data transmissions to provide an efficient and optimized mobile solution.

¹ Available 4Q'97

The next step ...

- **To request assistance in your cost/benefit estimate** if you're considering Internet and intranet solutions:

- Contact your local IBM representative
- Or contact your preferred reseller

- **To order IBM eNetwork Software products:**

- Contact your local IBM representative, or call

In Austria21145 2500
In Belgium02 225 2525
In Denmark80 311 010
In Eastern Europe ...21-145-6281
In Finland(90) 459 4224
In France36 63 36 43
In Germany0180-55090
In Greece30 1 6881460
In Ireland1850-205-205
In Israel03-1770223888
In Italy167 017 001
In Netherlands06-0220402
In Norway66 99 80 00
In Portugal791 5935
In Saudi Arabia1-405-6910
In South Africa27 11 3208 495
In Spain901 100 400
In Sweden8 793 1000
In Switzerland(01) 436 6111
In Turkey90 212 280 09 00
In United Kingdom ...01-705-49-2949
In United States1-800-IBM-CALL

- Or contact IBM Direct

For North America at 1-800-426-2255

Outside North America, call 1-800-426-4968 in the United States and request IBM Direct (tolls may apply)

- Or contact your preferred IBM reseller

- **To obtain more information** about the IBM eNetwork Software products, you can always find us on the Internet at

<http://www.networking.ibm.com/eNetwork>

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