SNA host access solutions

Industry analysts estimate that more than 50 percent of the world's corporations have SNA backbone networks. In many companies, applications supported by an SNA backbone are critical to the success of the business. Thus, rapid response times, high availability, and secure access to sensitive data are crucial.

The IBM eNetwork Software host access solution

eNetwork Communications Servers, Personal Communications clients, and Communications Suite provide industrial-strength access to host applications over SNA wide area networks. These eNetwork Software host access solutions incorporate the latest SNA technologies, such as Advanced Peer-to-Peer Networking® (APPN®), HPR, dependent LU requester (DLUR), and SNA data compression.

In peer-to-peer implementations, eNetwork Software solutions manage connectivity, using the APPN protocol. This APPN capability provides a robust, low-maintenance, networking backbone that scales easily. APPN lowers your network administration and maintenance costs by utilizing dynamic and simplified configuration, dynamic LU 6.2 session routing, and powerful application programming features. These solutions provide improved reliability and performance through support for HPR. DLUR extends these capabilities to dependent logical units, providing investment protection for existing SNA applications and devices. In addition, IBM eNetwork Software solution for host access supports compression of SNA data to optimize available bandwidth and improve network performance. The coupled value of the eNetwork Software clients and servers offers you the most robust, reliable, secure, manageable SNA host access solution in the industry.

eNetwork Software advantages

• Advanced SNA technologies for high availability, improved performance, and optimum bandwidth management

• Reduced network and administration costs

• Investment protection through APPN support for dependent SNA devices and applications
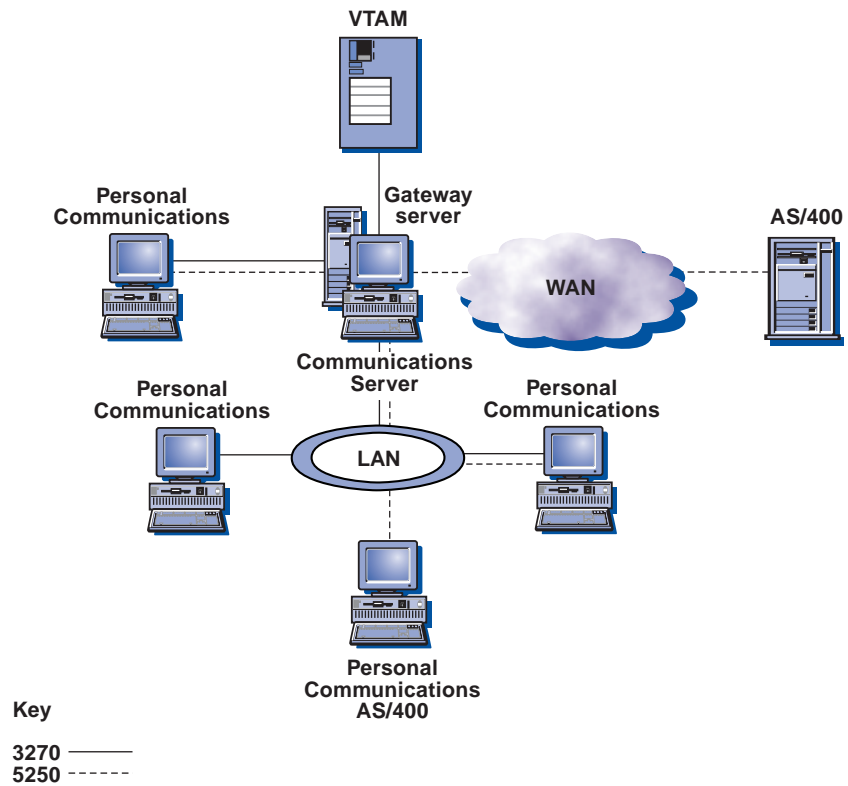
Scenario 1

3270 and 5250 emulation
In this scenario, a customer has PC workstations requiring 3270 and 5250 emulation on a LAN to access mainframe and AS/400 applications (with no APPC or APPN).

The recommended solution for this customer is to use Communications Server as a gateway and use:

• Personal Communications on desktops that need only 3270 emulation

• Personal Communications for AS/400 on desktops that need only 5250 emulation

• Personal Communications on desktops that need both 3270 and 5250 emulation
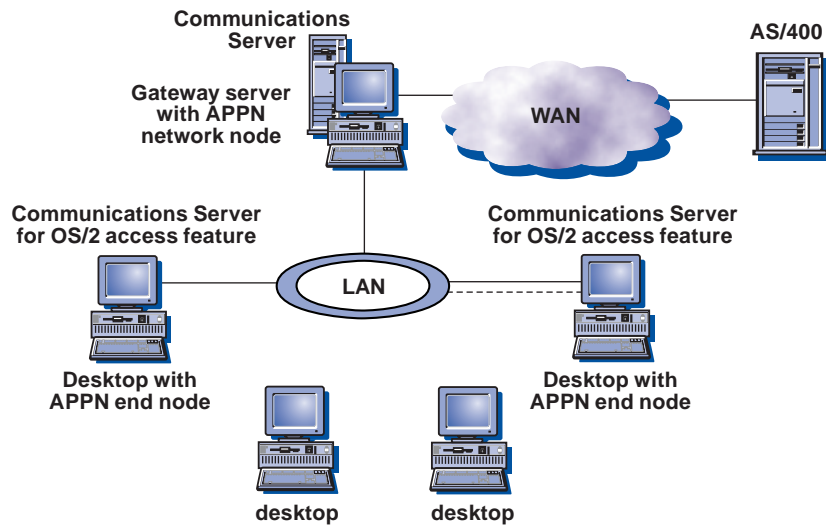
Scenario 2

32-bit APPC application on a remote LAN to an AS/400
In this scenario, a customer needs APPN connectivity from desktops to a remote AS/400. The application requiring the APPC support is a new 32-bit client/server application.

The recommended solution for this customer is to use:

• Communications Server as a gateway providing APPN

• Access feature on desktops to provide APPC because the 32-bit application requires 32-bit Application Programming Interfaces (APIs)

Communications Server

Gateway server with APPN network node

AS/400

WAN

Communications Server for OS/2 access feature

Communications Server for OS/2 access feature

LAN

Desktop with APPN end node

Desktop with APPN end node

desktop

desktop

Key

|	
APPN network traffic	———
5250	– – – – –

Scenario 3

APPC application between two LAN desktops
In this scenario, the customer has developed a custom 32-bit APPC application, running on a desktop, that interacts with another 32-bit APPC application, running on a Communications Server.

The recommended solution for this customer is to use:

• Access Feature on each desktop, running the 32-bit APPC client application

• Communications Server, running the partner 32-bit APPC server application

In this scenario, a new server was installed (in place of the existing desktop system) in anticipation of the required additional computing power for the server application.

Gateway server

**Communications
Server for OS/2
access feature**

LAN

**Communications Server
with 32-bit
APPC application**
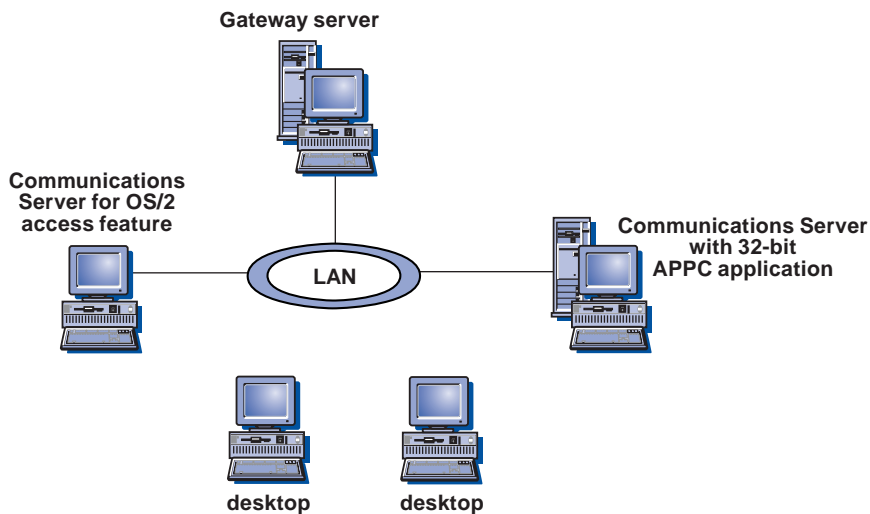
desktop   **desktop**

Key

APPN traffic ————

Scenario 4

New desktop with APPN and 3270 emulation requirements
In this scenario, the customer is adding a new desktop, primarily running a client for an AS/400 server application that uses APPN. Additionally, the user of this desktop occasionally needs to access a 3270 application.

The recommended solution for this customer is to use:

- Personal Communications, which includes APPN end node and 3270 emulation on the new desktop

- Communications Server

Key
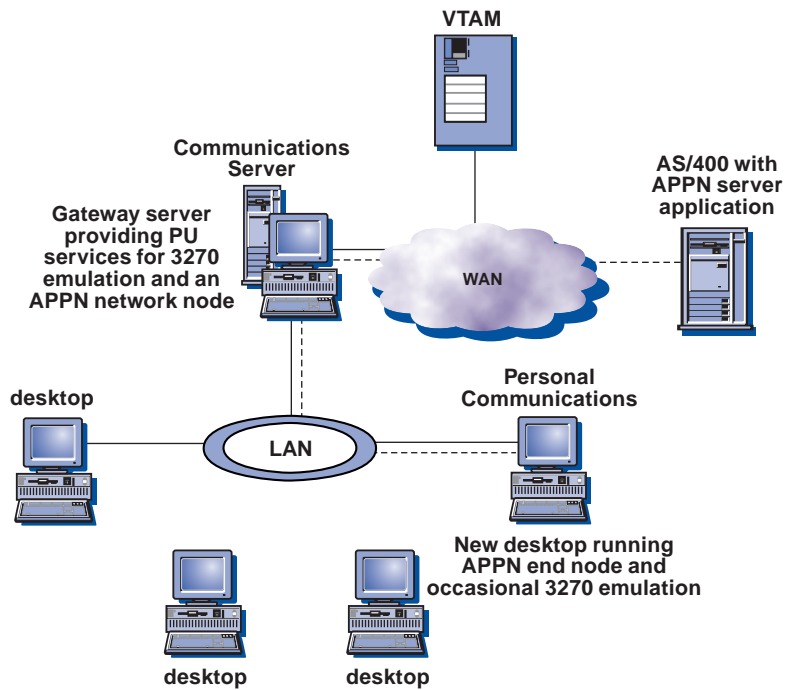
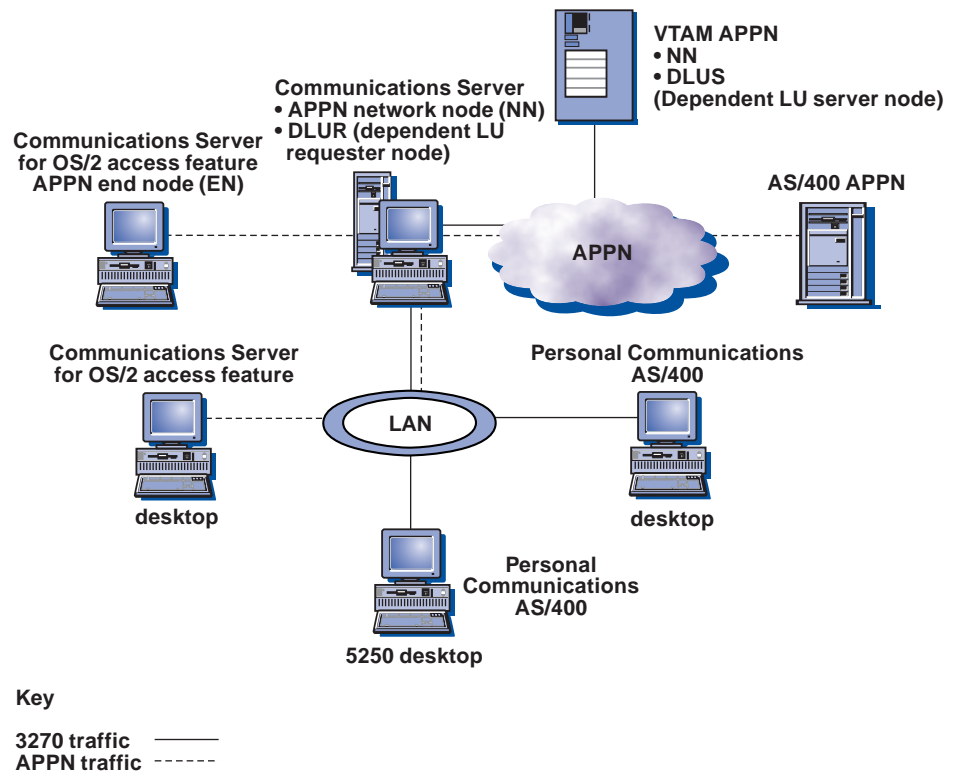**3270 traffic** ———
APPN traffic - - - - -

Scenario 5

APPN
In this scenario, the customer requires multiple logical protocols to flow over a single, common transport.

The recommended solution is to define and deploy Advanced Peer-to-peer Networking (APPN) to allow:

- A single consolidated network

- Network node (NN) auto-backup, rerouting of bad links over efficient links
(optimized for either cost-per-bit or bandwidth)

VTAM APPN
- **NN**
- **DLUS
(Dependent LU server node)**

Communications Server
- **APPN network node (NN)**
- **DLUR (dependent LU requester node)**

**Communications Server
for OS/2 access feature
APPN end node (EN)**

AS/400 APPN

APPN

**Communications Server
for OS/2 access feature**

**Personal Communications
AS/400**

LAN

desktop

desktop

**Personal
Communications
AS/400**

5250 desktop

Key

3270 traffic ———
APPN traffic - - - - - -

Scenario 6

Finance industry application
A bank is rolling out a new IT infrastructure that is positioned for growth and exploitation of new technological features that can protect its existing investment.

The recommended solution for this customer is to:

Use Communications Server as the gateway for a branch to an outside network to provide the following network support:

- 3270 gateway

- APPC gateway

- APPN network node

This solution supports today's investment and positions the customer to exploit tomorrow's new technology.
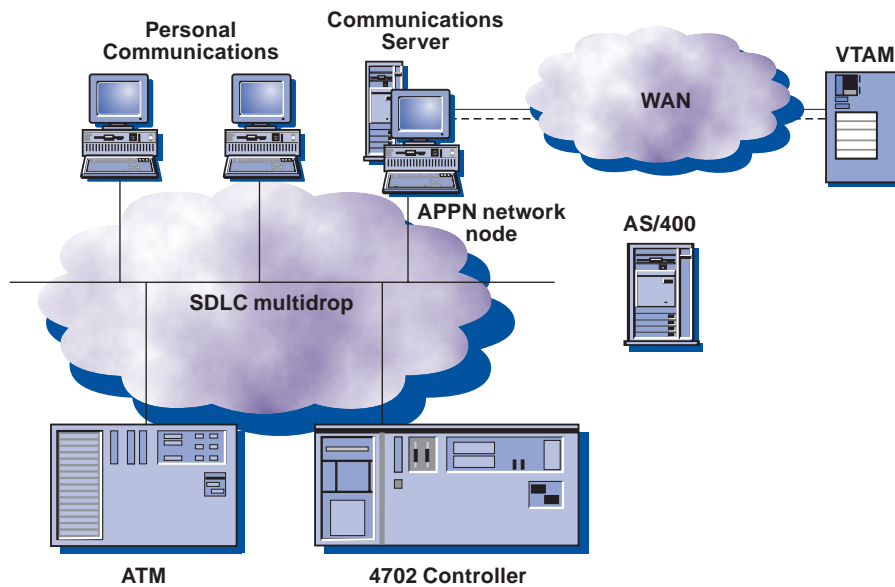
Key

3270 traffic ———————
APPN traffic - - - - - -

TCP/IP host access solutions

IBM eNetwork Software products provide access to all network resources for general-purpose clients and servers. The solution enables network computing access to diverse sources of data across multiple network types and multiple platforms. Because many new applications today are being written for TCP/IP, IBM is building on its leadership foundation to deliver enterprise-class TCP/IP networking software that is reliable, available, and scalable. For existing applications and data, the goal is to enable the same high level of access from both SNA and TCP/IP networks, so that you can choose the application that's right for your business, feeling sure the network will accommodate your application choice.

As enterprises deploy intranets, access to SNA applications over TCP/IP networks is rapidly becoming a key part of networking strategy. In support of this strategy, IBM is committed to providing the most reliable, robust, secure TCP/IP host access solution in the industry.

The IBM eNetwork Software host access solution
With eNetwork Software clients and servers, you can provide TCP/IP users easy access to 3270 applications with TN3270E server function. You can connect TCP/IP clients on OS/2, DOS, Windows, Windows 95, and Windows NT to TN3270E servers on OS/2, AIX, NetWare, and Windows NT. eNetwork Software TN3270E support is compliant with industry standard Request for Comments (RFCs) 1576, 1646, and 1647. IBM supports TN3270 in its eNetwork Communications Suite, Personal Communications, and Wireless software clients. Any other TN3270 or TN3270E client that adheres to these RFCs is also supported.

The TN3270E server enables SNA APPN connectivity to the host and TCP/IP connectivity to the clients. TCP/IP connections are mapped to SNA sessions and passed through the 3270 data stream. Because the TCP/IP connections are mapped to SNA sessions, you can take full advantage of SNA and APPN on the host side of the network, with no TCP/IP required on the host computer. The 3270 data stream coming from the TN3270 client can be transported, using dependent LU requester (DLUR).

With DLUR you get the benefit of APPN networking for older SNA devices and applications. eNetwork TN3270 support also gives you HPR from the TN3270E server all the way to the host computer, delivering nondisruptive session rerouting. eNetwork Software servers also support TN3270E IP address filtering, which gives you centralized administration of resources.

IBM is working closely with leading networking vendors to ensure interoperability of its TN3270 implementations. Combined with the multiple platform capabilities of eNetwork Software, this interoperability assures you maximum flexibility in the deployment of TCP/IP host access solutions.

eNetwork Software advantages
- Easy access from IP clients to 3270 applications and print services

- Multiplatform TN3270 server support for maximum flexibility

- Investment protection through support for SNA backbone networks, APPN, and DLUR

Scenario 1

TN3270E server
In this scenario, a customer with TCP/IP desktops can easily access 3270 applications with the TN3270E server. Either standard or extended Telnet 3270 clients can run interactive 3270 display application programs. With the Telnet 3270 standard extensions (TN3270E), users can print from 3270 applications to printers attached to their desktops, or in their TCP/IP network using LU1 or LU3 print sessions. Also, TN3270E clients can send both positive and negative responses and ATTN and SYSREQ keys.

TN3270E server supports both standard and extended Telnet 3270 clients. Personal Communications offers a rich set of functions for TN3270E clients.

The recommended solution for this customer is to install a Communications Server with TN3270E and Personal Communications for the client software.

Mainframe S/390

SNA network

Communications Server TN3270E server

TCP/IP network

TN3270E client

TN3270E client
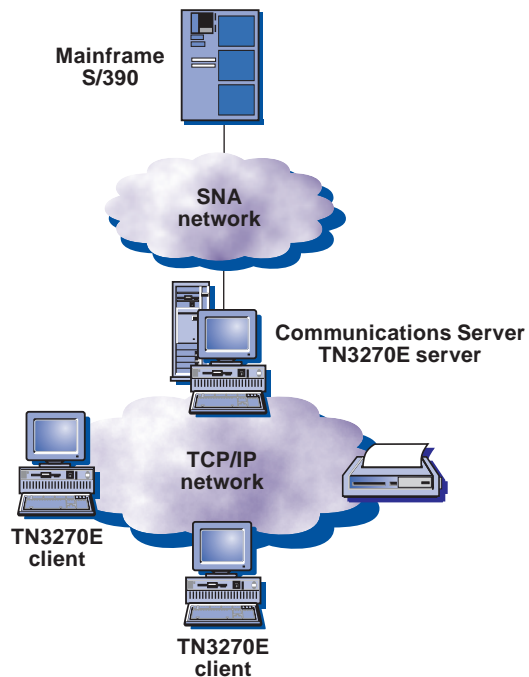
Scenario 2

Split-stack client support
In this scenario, the customer has TCP/IP-attached clients that require access to main-frame or AS/400 applications, using SNA APIs.

The recommended solution is to use Communications Server SNA API client solution that gives you the ability to run SNA applications without installing an SNA stack on each client. Because almost all SNA configuration and processing is done on the server, you can reduce DASD, memory, and processor demands on your clients. The SNA API clients provide support for CPI-C, APPC, EHNAPPC, and LUA request unit interface (RUI) APIs and are packaged with the Communications Server.
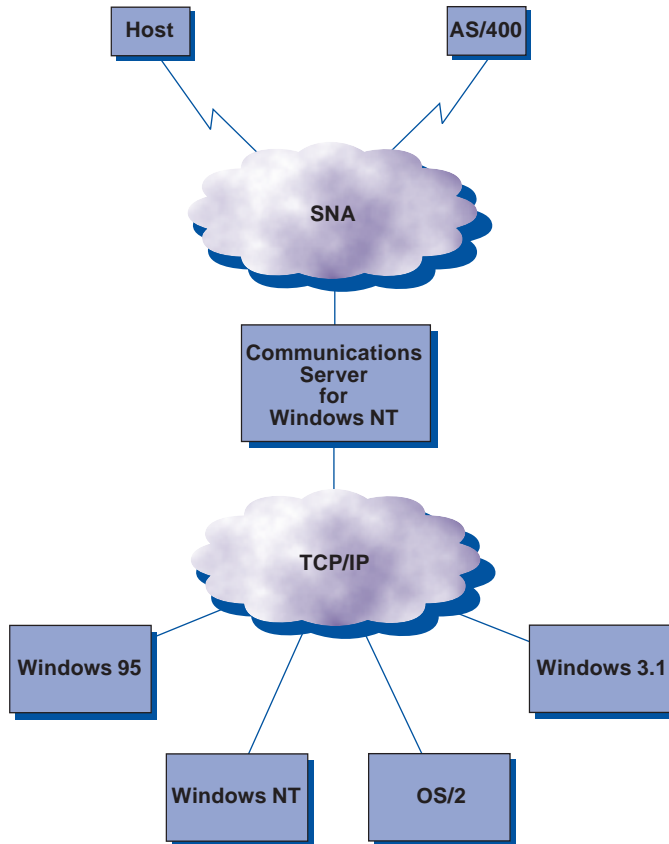
Internet host access solutions

To reach new market opportunities, companies are actively deploying intranets and extranets, and utilizing the Internet to expand the reach of existing and new business applications. Building an infrastructure to support e-business creates a unique set of problems:

• How can I provide consistent, reliable, secure host access to existing business applications and data over my intranet, extranets, and the Internet?

• How can I provide enterprise-wide access to host applications without incurring significant expenses for training, administration, and support and without rewriting my applications?

• How can I deliver my business applications over my intranet, extranets, and the Internet without costly changes to my existing network?

With IBM eNetwork Software you can find answers to these important questions.

The IBM eNetwork Software host access solution

The explosion in the use of the Internet has driven a business requirement to provide Internet access to the critical data and applications on host systems. Most businesses will want to provide this access through the browsers Internet-based users already have. This Web-to-host access can be based on traditional emulation for S/390, AS/400, or UNIX systems, or it can be based on publishing customized pages of information for the user. IBM provides both types of access as part of its solution for host access. Businesses may choose to use one or both forms of Web-to-host access depending on their particular requirements.

eNetwork Host On-Demand provides an easy-to-use 100 percent Pure Java™-based 3270, 5250, and VT terminal emulation with a standard Web browser. This provides a high-performance, cost-effective solution for intranet and Internet users who require access to host-based business applications from a Web browser. By incorporating Java™ technology, Host On-Demand offers you several key benefits:

• Operating system independence. Host On-Demand provides a consistent user interface across multiple client, server, and host environments. This allows you to reduce training expenses if your users change or upgrade their operating environment. In addition, the common look and feel between Host On-Demand and IBM eNetwork Personal Communications helps maintain user productivity.

• Reduced administration and support costs. The latest level of Host On-Demand software is automatically downloaded to your users each time they access it.

• User interfaces tailored to business needs. Host On-Demand includes the Host Access Class Library that allows you to customize user interfaces for existing host applications and data without rewriting the applications.

Complementing Host On-Demand is eNetwork Communications Server. This powerful communication gateway gives protocol and platform independence to network communication. Communications Server allows you to easily incorporate intranets, extranets, and the Internet as part of your existing network environment, without incurring major network changes. For example, using eNetwork Communications Server, you can seamlessly interconnect TCP/IP-based local area networks, an existing SNA-based intranet, extranets, and the Internet.

In addition, Communications Suite provides diverse desktop communication requirements. Communications Suite is made up of market leading products like Personal Communications, Lotus Notes Mail Client, FTP Software, Netscape Navigator, Microsoft, and Internet Explorer making it an unparalleled client offering. It is a valued member of the IBM eNetwork Software products that connect your workstation users to enterprise-wide information. Communications Suite offers advanced Interent and intranet infrastructure support to position your business for future technologies, secure connectivity options, and provide user friendly access no matter where it resides.

With eNetwork Software clients and servers, the Internet becomes simply an extension of your enterprise network.

eNetwork Software advantages
• Cross-platform Internet access to host applications and data

• Consistent user interface for increased productivity and reduced operating costs

• Easy, seamless interconnection of existing networks and the Internet

Scenario 1

Host On-Demand
In this scenario, the customer requires the power of Java™ to open the doors of your enterprise data whenever and wherever it's needed, straight from a browser. A single click launches a distinct Java™ applet to give broad access to your intranet data, with TN3270, TN5250, and VT 52/100/220 emulation in a single package.

The recommended solution for this customer is to use:

• Host On-Demand, Version 2.0

• Communications Server
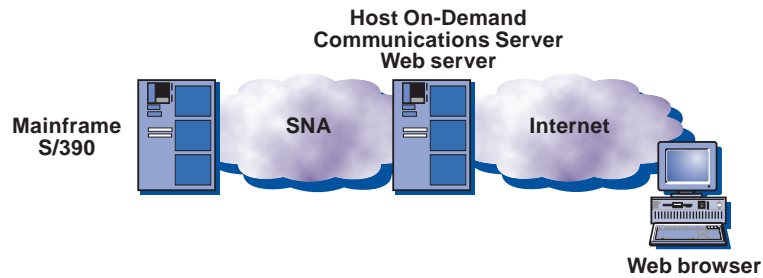
Scenario 2

Host On-Demand (enhanced security)
To protect your data from the client to the server, you can implement a virtual private technology using open standard-based IPSEC. This would provide network layer security to augment the secure sockets layer (SSL) in Host On-Demand. The AIX firewall box acts as a gateway to protect your corporate intranet from Internet hackers.
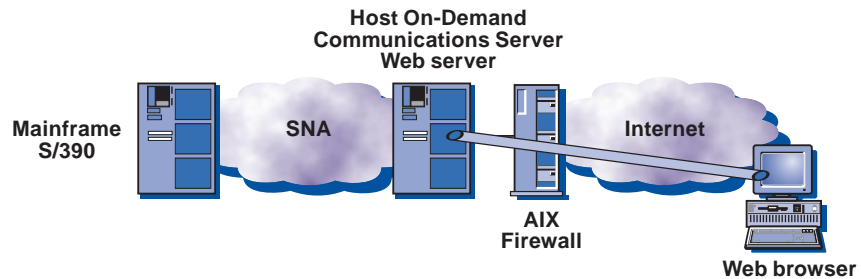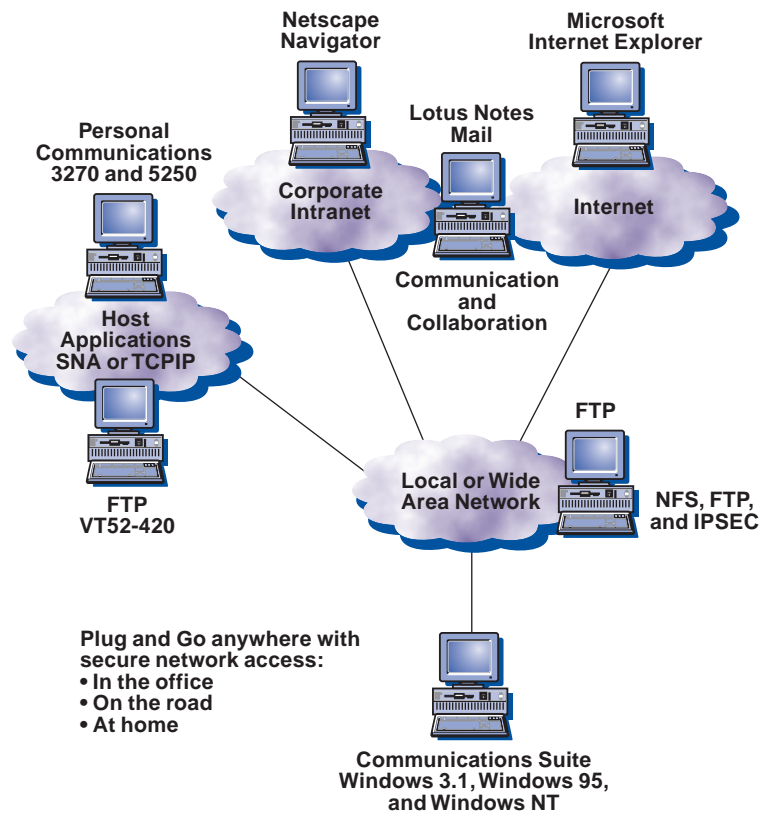
Scenario 3:

Communications Suite
In this scenario, the customer requires their clients to have access to enterprise-wide information needs, such as mainframe, AS/400, DEC, and UNIX applications, Web access, collaborate and exchange e-mail. And they need to share information with colleagues who use the latest NFS and FTP TCP/IP applications, all "plug and go" with secure network access.

The recommended solution is to install eNetwork Communications Suite on each desktop. This complete desktop communication solution provides:

• IBM Personal Communications

• Lotus Notes Mail

• FTP Software TCP/IP protocol stacks and applications

• Your choice of browsers: Netscape Navigator or Microsoft Internet Explorer

• Netscape-compatible plug-ins: FirstFloor Smart Bookmarks and Adobe Acrobat Reader

Now the clients have easy access to data on the host computer, corporate intranet, Lotus Notes®, and the Internet, all in one package.

Netscape Navigator

Microsoft Internet Explorer

Lotus Notes Mail

Personal Communications 3270 and 5250

Corporate Intranet

Internet

Communication and Collaboration

Host Applications SNA or TCPIP

FTP

FTP VT52-420

Local or Wide Area Network

NFS, FTP, and IPSEC

Plug and Go anywhere with secure network access:
• In the office
• On the road
• At home

Communications Suite Windows 3.1, Windows 95, and Windows NT

Network integration solutions
Most large networks include multiple networking technologies, such as SNA, TCP/IP, IPX, and NetBIOS. Connecting and managing these diverse technologies can be complex and expensive. You need a cost-effective way to run any application over any network type with the reliability and performance required for critical business applications.

The IBM eNetwork Software host access solution
It's in your best interest to seek a network integration solution that leverages current investments while capitalizing on a large number of new network capabilities. The IBM eNetwork Software host access solution offers integrated client and server software to address your need for:

• Seamless access to your SNA applications over IP networks, without reprogramming those applications

• Access to your sockets IP applications over SNA networks

• Bridging together networks with different protocols

Using the eNetwork Software host access solution, you can choose the network and applications that best suit the needs of your business, without compromise. The result is, you can implement networks based on criteria, such as response time, security, manage-ability, reliability, and interoperability—not on the operating system. With eNetwork Software you get an integrated multiprotocol, multiplatform solution, which enables users to access applications and data using whatever wide area network protocol is most effective for the application.

eNetwork Software advantages
• Select applications based on business needs, not networking technology

• Optimize network technologies to application requirements

• Enable any-to-any communication

Scenario 1

TCP/IP over SNA
Intranets are a very popular way for enterprises to streamline communication internally. Here is an example of how TCP/IP over SNA technology in Communications Server can be used to build an intranet in an enterprise that has an SNA and APPN backbone. The enterprise can choose the Web server platform based on the scalability of its requirements. Communications Servers on OS/390, AIX, Windows NT, OS/2, as well as OS/400® all have integrated TCP/IP over SNA support which allows a Web server to run over SNA .

Once the Web server is established, Web browsers on branch IP LANs can easily get information from the Web server on the SNA central site through Communications Server TCP/IP over SNA gateway function. With this implementation, you can easily operate almost any TCP/IP sockets-based applications, such as FTP, Telnet, SAP R/3, SNMP, and Lotus Notes.
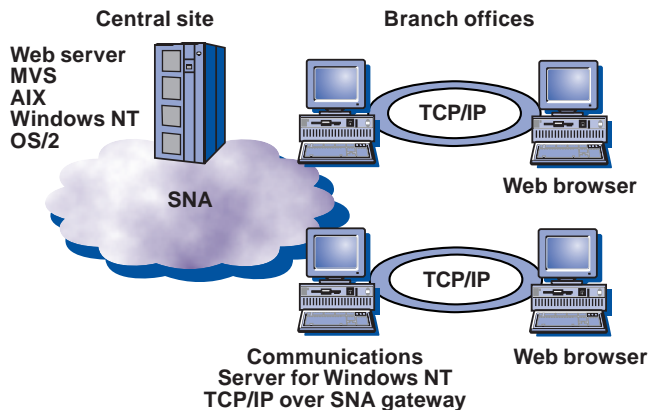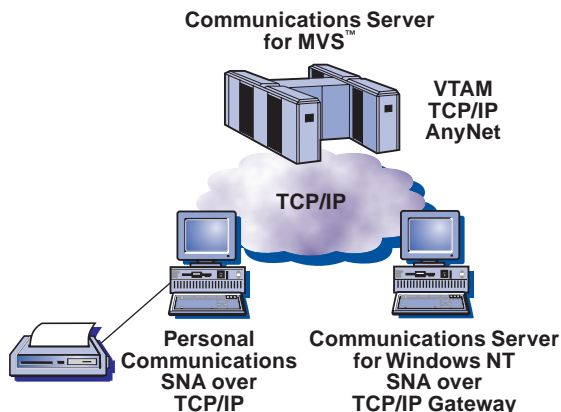
Scenario 2

SNA over TCP/IP
In this scenario, a customer with SNA applications, like APPC, printer, and 3270 emulator programs needs to communicate over a TCP/IP backbone.

The recommended solution for this customer is to install a Communications Server with an SNA gateway. With this function, existing LU6.2 APPC applications, LU2 terminal emulator applications, or LU1 and LU3 printer applications can be used across TCP/IP networks. The dependent LU SNA application support is provided by the VTAM® DLUR and Communications Server DLUR functions. Examples of SNA applications which can now run over TCP/IP networks, include CICS®, DB2®, IMS®, DCAF, and TSO. APPC and SNA applications which were primarily confined to SNA networks are able to communicate with users in a TCP/IP network, and the application does not need to be changed. With this configuration, the customer can now reduce the operational and management costs by enabling network consolidation while leveraging investments in SNA applications.
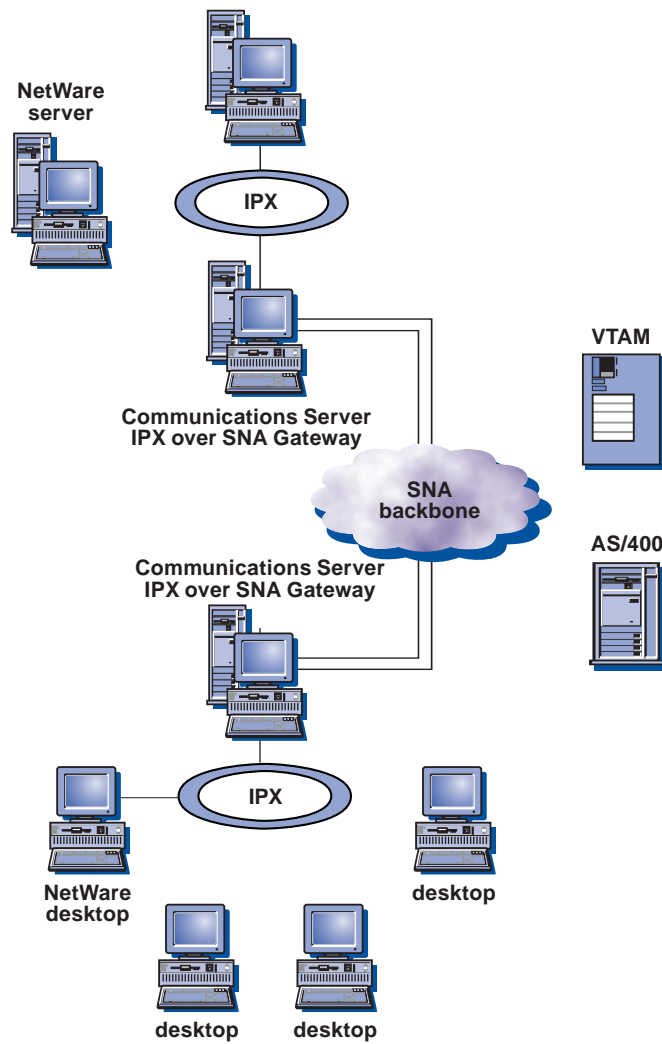
**Communications Server
for MVS™**

**VTAM
TCP/IP
AnyNet**

TCP/IP

**Personal
Communications
SNA over
TCP/IP**

**Communications Server
for Windows NT
SNA over
TCP/IP Gateway**

Scenario 3

IPX over SNA

In this scenario, a desktop on an IPX LAN needs to access a NetWare server on another IPX LAN, connected by an SNA backbone.

Customer can use the Communications Server IPX over SNA gateway capability on each to connect the IPX LANs across the SNA backbone.

NetWare server

IPX

Communications Server IPX over SNA Gateway

VTAM

SNA backbone

AS/400

Communications Server IPX over SNA Gateway

IPX

NetWare desktop

desktop

desktop

desktop

Key

IPX
IPX over SNA

Mobile and wireless host access solutions

Companies today are extending host data access to mobile workers through the use of wireless technology. With wireless technology, you can build a competitive advantage through easy application integration, improved customer service, and reduced communication costs.

The IBM eNetwork Software host access solution

IBM eNetwork Wireless Software is setting the standard in wireless middleware by developing key technologies that allow companies to extend vital applications to their mobile workforces while protecting their existing investments in software and information technology (IT) infrastructure. Mobile workers can now access applications transparently over a variety of wireless or dial-up networks with few software modifications. By leveraging industry standards and offering easy installation and simple operation, eNetwork Wireless Software reduces the expense, complexity, and time required to implement a complete mobile solution. eNetwork Wireless Software consists of products that provide your mobile workers with access to mission-critical enterprise information, whether host- or Web-based. It offers broad network coverage and multiple language support. It provides anytime-anywhere communication facilities through eNetwork Wireless Gateway and Client, eNetwork Web Express Server and Client, and eNetwork Emulator Express Server and Client.

These products incorporate state-of-the-art technology that allow secure access to 3270 and 5250 applications over wireless and/or dial networks from LANs, WANs, intranets, and the Internet. This gives your mobile workers access to the same data and applications as though they were in the office, connected directly to the enterprise network.

An open, industry-standard TCP/IP interface is provided for simple application deployment. eNetwork Wireless solutions support leading client and server platforms so you can leverage existing IT investments. Multiple applications can be supported across a single wireless link, using a patented, cost-effective optimized data transmission capability. To ensure maximum protection for your important data, eNetwork Wireless Software solutions incorporate enterprise-level security, data encryption, and built-in authentication. No other wireless offering delivers the unique combination of features, functions, and characteristics as the eNetwork Wireless Software solution.

eNetwork Software advantages

• Comprehensive, open, complete wireless solution

• Anytime, anywhere access to business information

• Patented optimization techniques for faster access and lower cost

Scenario 1

Mobile desktop with dial 3270 requirements
In this scenario, a mobile desktop needs to attach to a 3270 application, using a switched asynchronous connection.

The recommended solution, in this case, is to use Personal Communications, with its switched asynchronous support, directly to IBM Global Services Network™ Services (IGSNS), Communications Server, or a host controller.
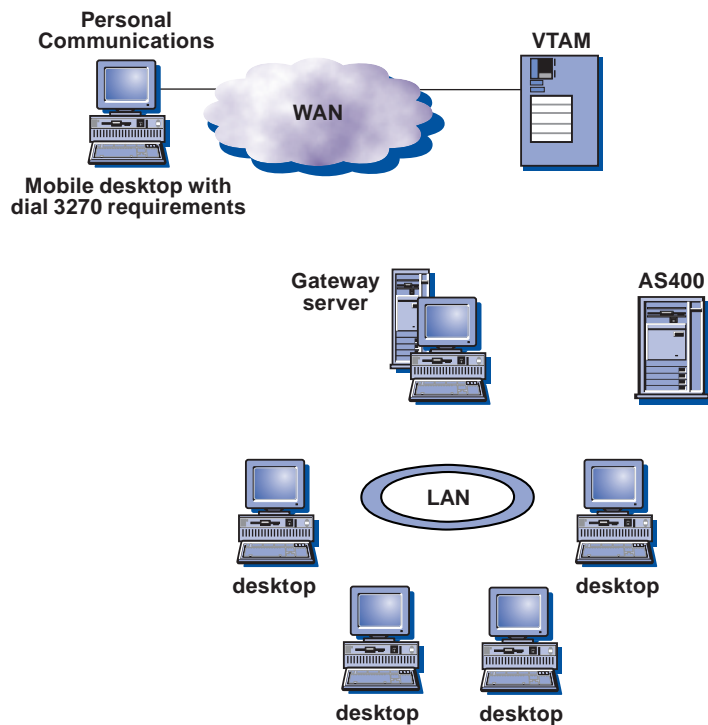
Key

Asynchronous 3270 ———

Scenario 2

Wireless solution using Emulator Express
In today's marketplace, having the competitive edge in your industry is vital. Workers need enterprise connections from a home office, hotel room, or even a car to access critical host data and applications.

Workers are turning to wireless solutions to provide their connectivity, giving them the edge they need to conduct business while on the move.

eNetwork Emulator Express is specifically designed to extend the reach of host-based 3270 applications to your mobile workforce.

The eNetwork Emulator Express Client resides on the mobile device with a Telnet emulator, such as IBM eNetwork Personal Communications. The eNetwork Emulator Express Client communicates with a remote eNetwork Emulator Express Server, using a TCP protocol, which in turn communicates with a Telnet server, such as IBM eNetwork Communications Server.

eNetwork Emulator Express Software is designed to run with IBM eNetwork Wireless Gateway and Client, which supports the leading international data packet radio, analog and digital cellular, and wireline networks under a single interface.

Wireless and wireline networks

Cellular Digital Packet Data
GSM Digital Cellular
PCS 1900
PHS and PDC Digital Cellular
AMPS Cellular
Mobitex (Ericsson)
DataTAC (Motorola)
DataTAC - Private Radio
DataRadio - Private Radio
PSTN

Mainframe applications (3270)

eNetwork Wireless Gateway
eNetwork Emulator Express Server
eNetwork Communications Server

Base Station

Mobile computer
eNetwork Wireless Client
eNetwork Emulator Express Client

Wireline network
LAN or WAN
SNA/APPN