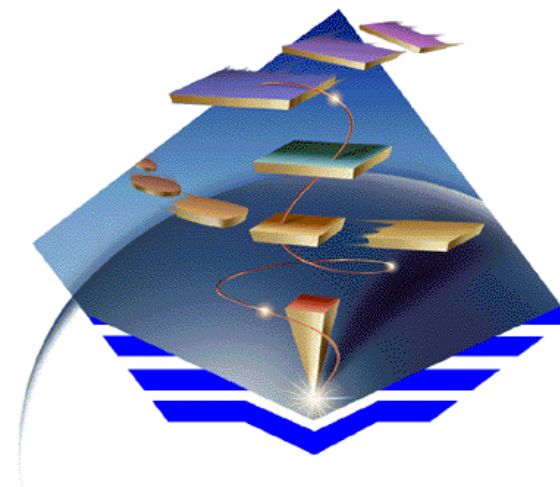




IBM eNetwork™ Communications Server for Windows NT

**The premier multifunction gateway
for the Windows NT environment**



September 1997

IBM Software

Abstract: Communications Server for Windows NT

Communications Server offers unparalleled availability and enterprise class dependability for your mission critical applications. IBM eNetwork Communications Server for Windows NT provides host and Internet access, network integration and end-to-end connectivity solutions to provide the foundation for IBM's network computing framework for e-business. With the integration of Web-to-host connectivity, IBM's Java based Host On-Demand gives you fast and easy access to host 3270 applications and databases using your web browser. Communications Server interconnects people and applications, even over diverse platforms and network configurations, and allows companies to choose applications based on their business needs, not on their network.

This presentation is a product overview of the premier multifunction gateway for the NT environment, with emphasis on intranet and Internet solutions for mixed SNA and TCP/IP environments.

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NetWare for SAA

SAP R/3 SAP AG

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Acronyms

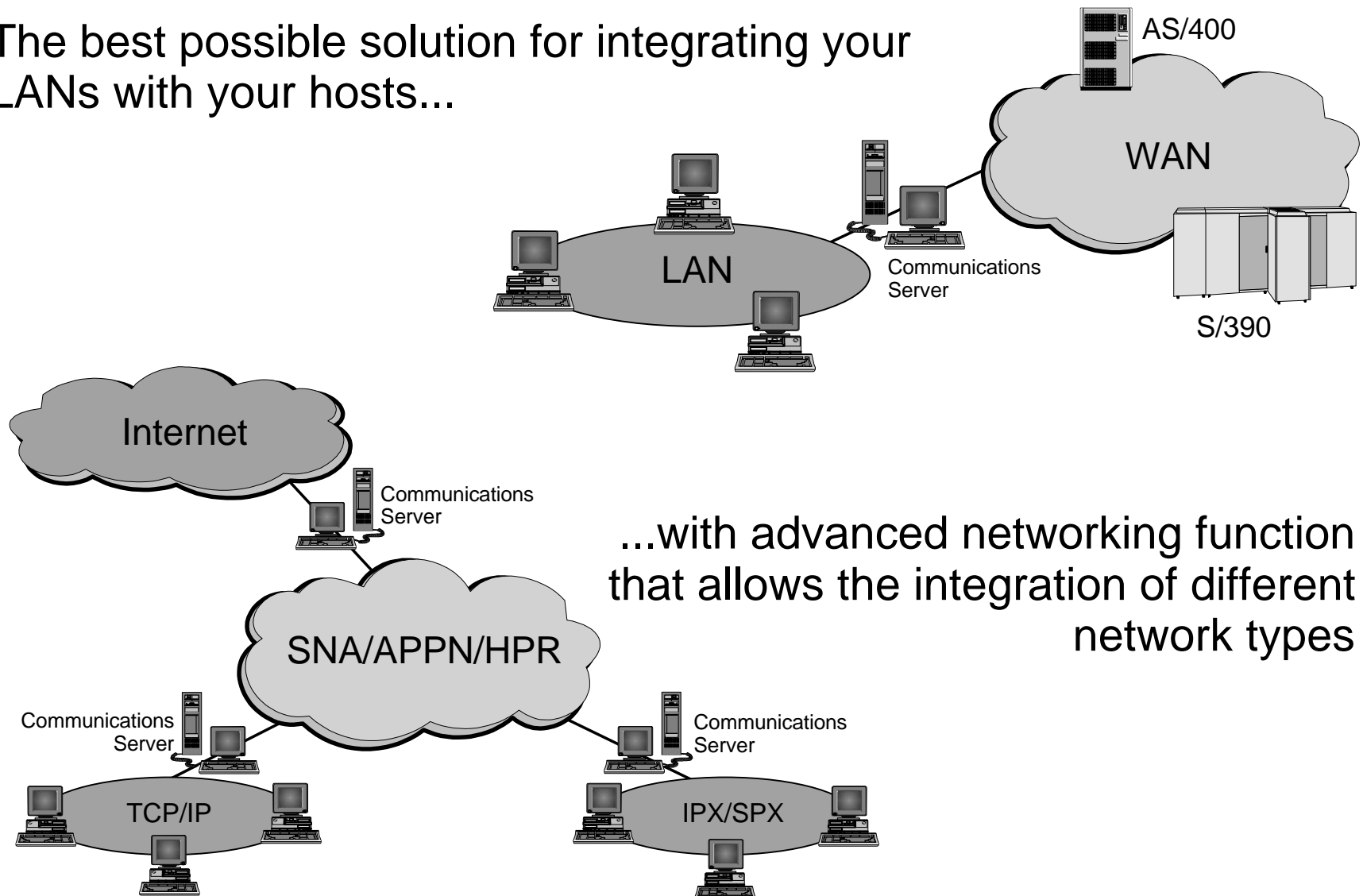
APPC	Advanced Program to Program Communications
APPN	Advanced Peer to Peer Networking
CICS	Customer Information Control System
CM/2	Communications Manager/2
CS/2	Communications Server for OS/2 Warp
CS/AIX	Communications Server for AIX
CS/NT	Communications Server for Windows NT
DB2	DataBase 2
DLU	Dependent LU
DLUR	Dependent LU Requester
DLUS	Dependent LU Server
FTP	File Transfer Protocol
HPR	High Performance Routing
LAN	Local Area Network
OS/2	Operating System 2
PCOMM	Personal Communications
SNA	Systems Network Architecture
SNMP	Simple Network Management Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol

Agenda

- **eNetwork Communications Server Introduction**
- **Industry-Leading SNA Support**
- **Network Integration Solutions**
- **Development and Support Tools**
- **Summary**

What is an IBM Communications Server?

The best possible solution for integrating your LANs with your hosts...



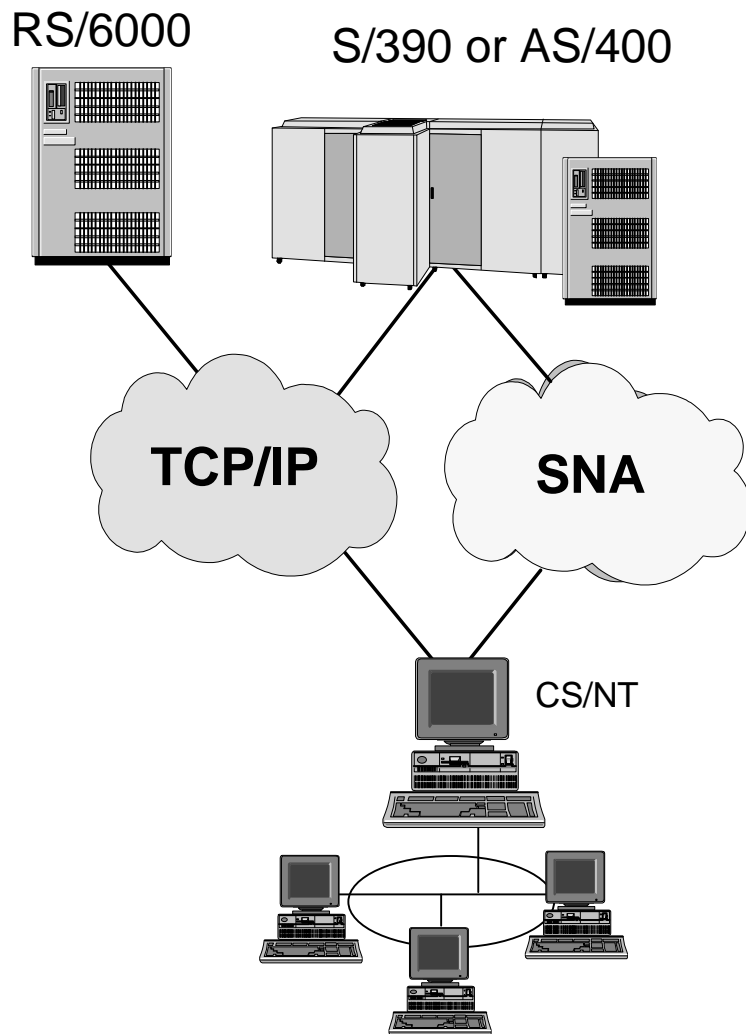
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Communications Server for Windows NT

The solution for companies who want to:

- Have the freedom to make application decisions based on business needs, not network protocols
- Connect users to the Intranet or Internet to exploit network computing advances
- Sharpen their competitive edge by developing best-of-breed applications without updating their network or building parallel networks
- Leverage their current investments and run SNA applications over TCP/IP or IPX/SPX networks and run Socket applications over SNA networks
- Improve their network's availability, efficiency and performance
- Be positioned for the applications and networks of the future
- Buy from the people that introduced networking

IBM eNetwork Communications Server for NT



- **Enterprise-Class - Advanced Networking**
 - Powerful SNA gateway with higher reliability, more current sessions with higher performance than competitive products
- **End to End Universal Access - SNA, TCP/IP, IPX/SPX Integration**
 - Host On-Demand Internet to SNA access for Web users
 - SNA applications over TCP/IP and IPX/SPX networks
 - TCP/IP Sockets applications over SNA for Internet/Intranet access
 - TN3270E Server for TCP/IP client access to 3270 apps and print
 - SNA API client support for OS/2, Win 3.1, 95, NT
 - Broad range of connectivity options: Ethernet, Token Ring, FDDI, ISDN, SDLC, X.25, Frame Relay, Channel Attach
- **Easy to use, Configure - Development and Support Tools**
 - Rich set of APIs
 - Tools and tutorials for simplified configuration and systems management
 - Web-based server administration with easy to use Graphical Interface
- **Effective Utilization of Network**
 - High Performance Routing, (HPR) maximizes throughput and minimizes response times
 - Dependent LU Requester (DLUR) support for APPN
 - Efficient use of network with assigned priorities to differing transmissions
 - SNA data compression to improve utilization of existing lines

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What's New for CS/NT V5.01

■ **End-to-end Access**

- Leveraging current applications investments by improving access to industry applications (banking) with SLI API support
- Additional network protocol support for NetWare clients to access SNA applications

■ **Effective Utilization of Network**

- more effective utilization of available bandwidth in your network with SNA data compression

■ **Enterprise Class Advanced Networking**

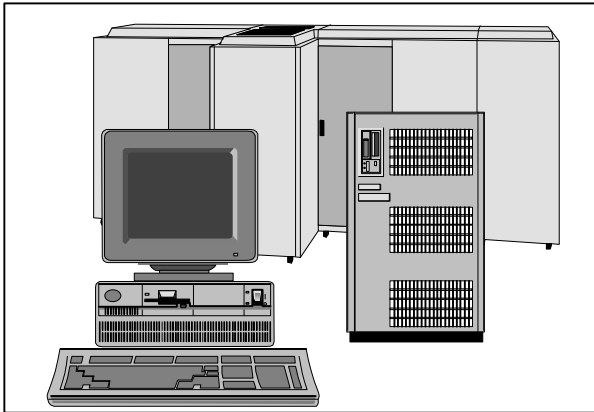
- Improved central administration of TN3270E clients to host resources and to control access to those resources

■ **Designed for Microsoft BackOffice**

Note: Current licensees of CS/NT V5.0 can register on the Web for the V5.01 enhancements at no-charge.

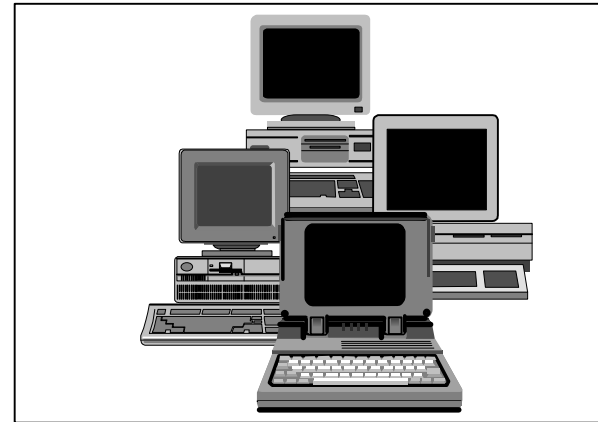
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IBM eNetwork Software



Servers

Communications Server for OS/390
Communications Server for AIX
SNA Client Access for AIX
Communications Server for OS/2 Warp
Communications Server for NT
NetWare for SAA
NetWare for SAA: AS/400 Edition
Artour Gateway (AIX)
Artour Web Express Server (AIX, OS/2)



Clients

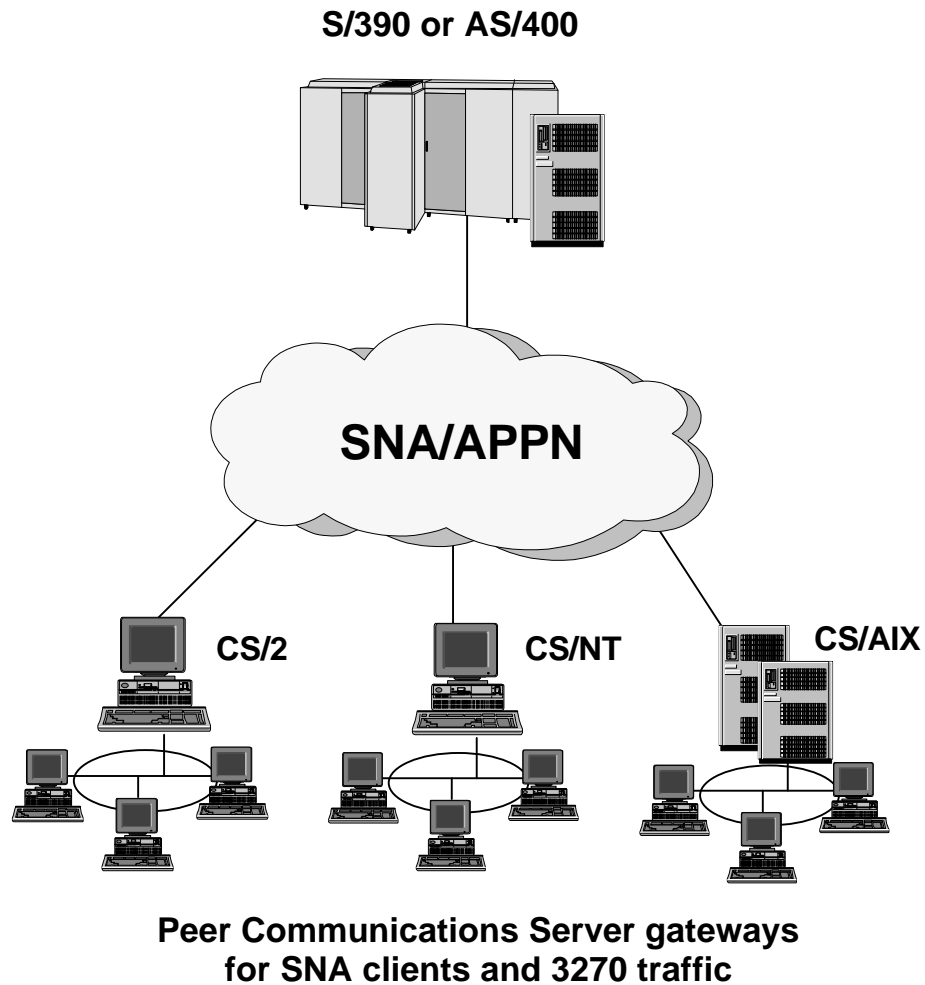
Personal Communications AS/400 and 3270
(for OS/2, Win 3.1, Win 95, Win NT)
Personal Communications AS/400
(for OS/2, Win 3.1, Win 95, Win NT)
CS/2 Access Feature for OS/2, Windows 3.1, Windows 95, Windows NT
Communications Suite
Host On-Demand
Web Express
Emulator Express

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Industry Leading SNA Support

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Communications Server for Windows NT SNA Function

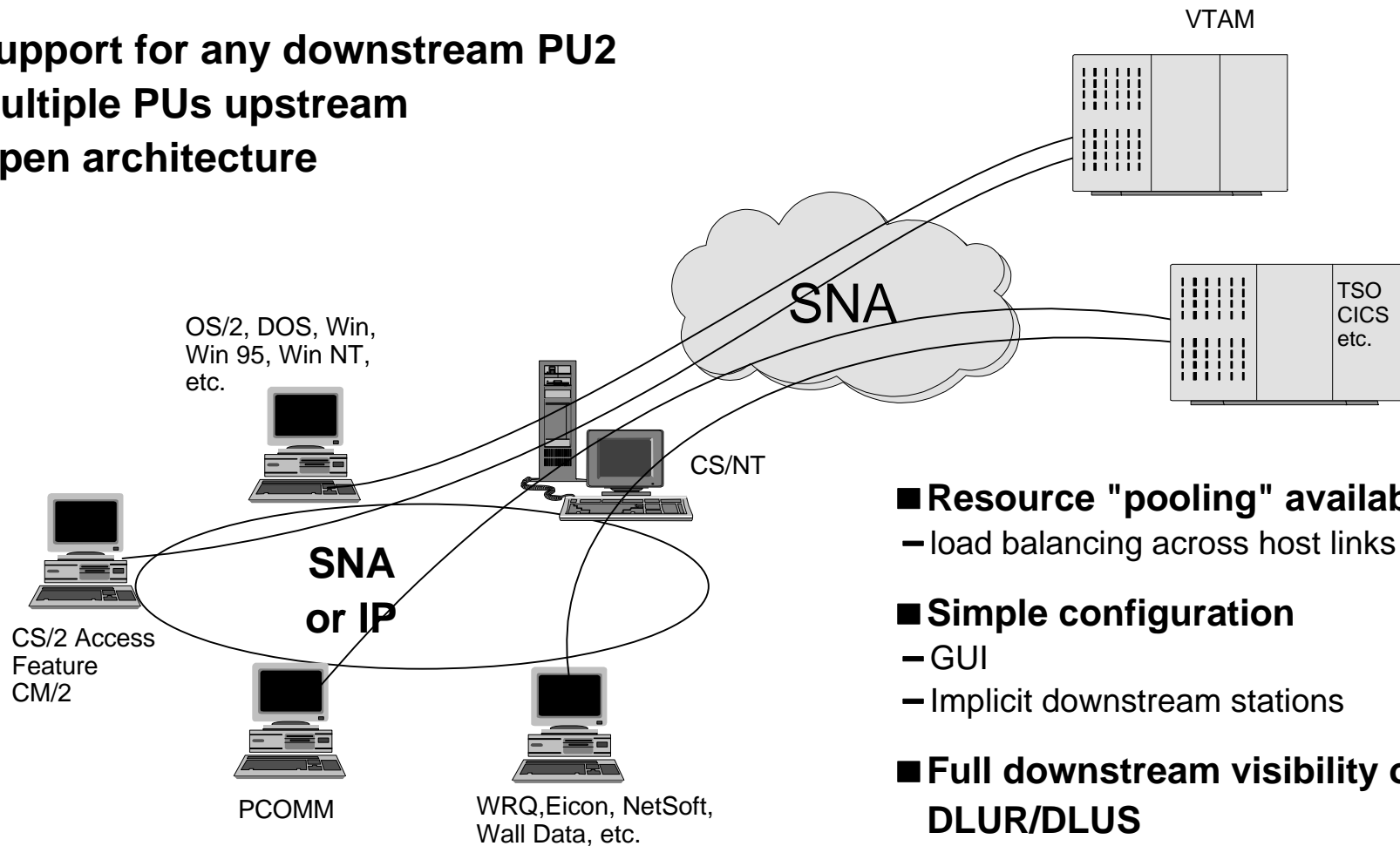


- **Industrial strength server with premier SNA, APPN, HPR functions**
- **SNA Gateway**
 - Full peer to other Communications Servers
 - Discovery server
 - SNA data compression
- **APING, AFTP, APPC3270 support**
- **APIs**
 - LUA RUI and SLI, CPI-C, APPC
- **Load balancing across host links**
- **Wide range of connectivity**
 - 802.2 for LAN (Ethernet, Token Ring, etc.)
 - SDLC - point to point and multidrop
 - X.25 - including X.32
 - Asynchronous - SNA-A and AutoSync
 - Twinaxial
 - Frame Relay
 - ISDN
 - AnyNet SNA/IP or Sockets/SNA
 - Channel attachment
 - Full SNA with APPN and HPR

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SNA Gateway

Support for any downstream PU2
Multiple PUs upstream
Open architecture

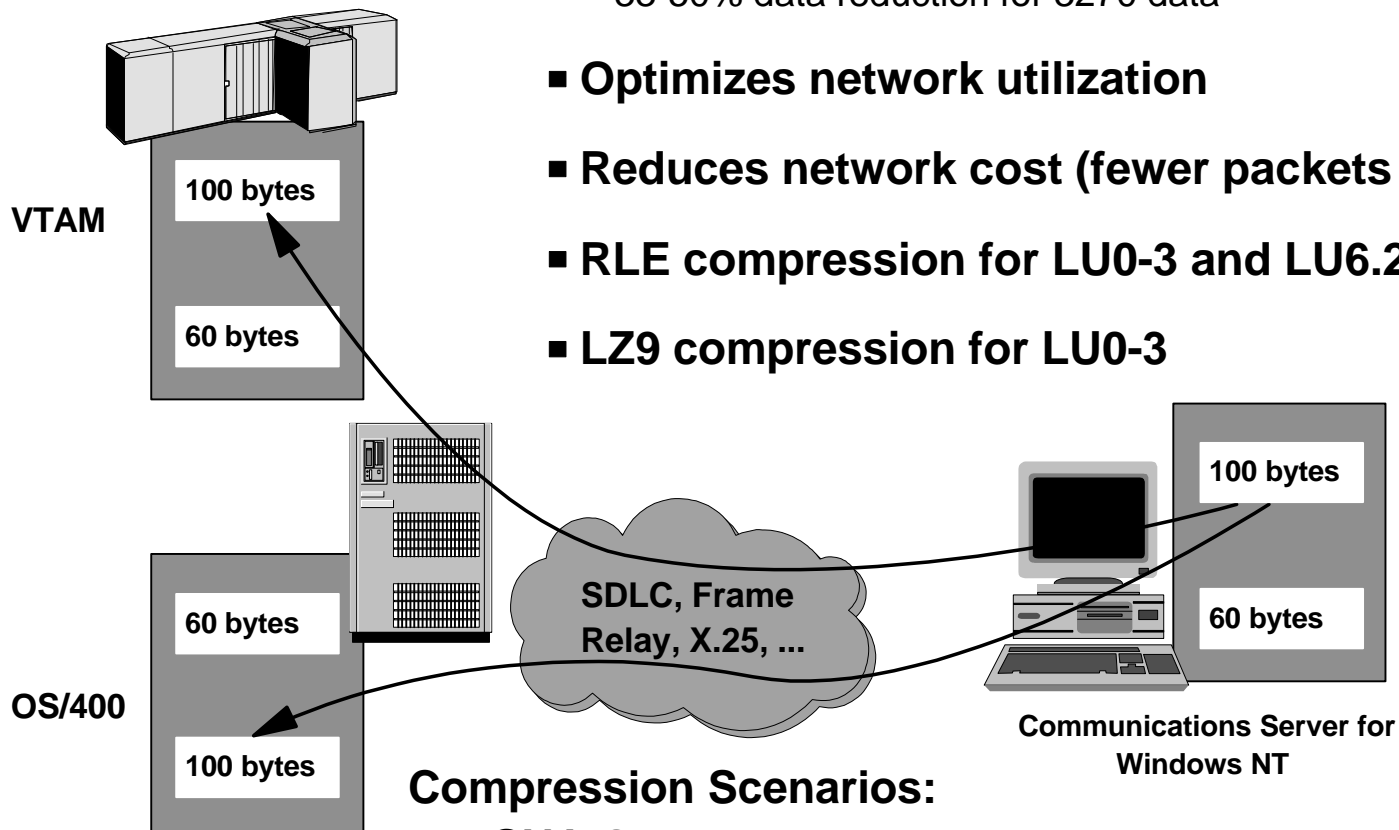


- **Resource "pooling" available**
 - load balancing across host links
- **Simple configuration**
 - GUI
 - Implicit downstream stations
- **Full downstream visibility option via DLUR/DLUS**
- **Dynamic configuration**

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More Effective Utilization of Available Bandwidth - Data Compression

- Increases throughput of data across communications links
 - 33-50% data reduction for 3270 data
- Optimizes network utilization
- Reduces network cost (fewer packets sent)
- RLE compression for LU0-3 and LU6.2
- LZ9 compression for LU0-3



Compression Scenarios:

- SNA Gateway
- LU6.2 appl (DB2, Transaction Server, MQSeries)
- SNA API or TN3270E clients

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Partnerships

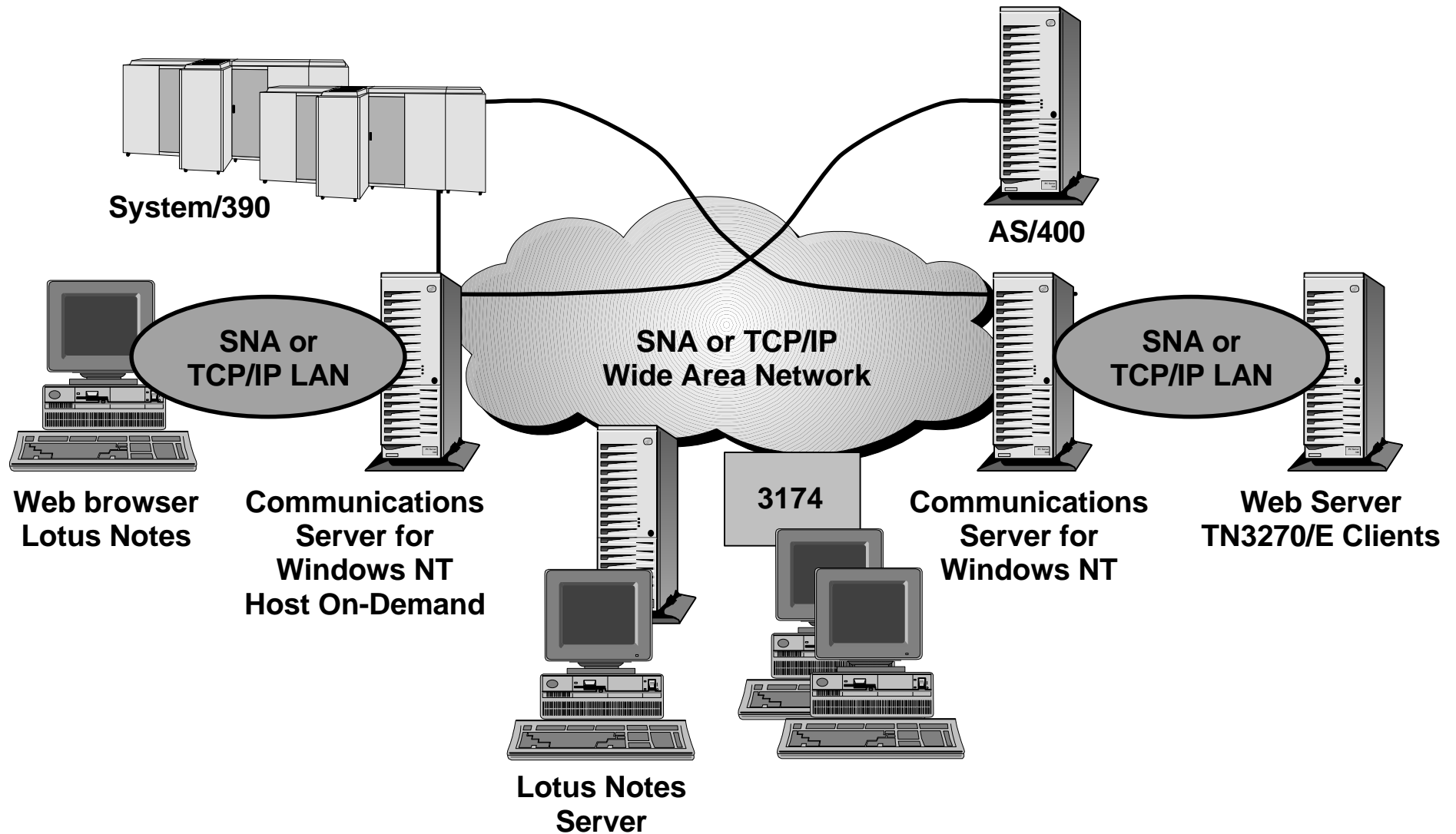
- **Partnerships with leading emulation and connectivity vendors deliver ultimate networking flexibility**
- **Emulation support (in addition to IBM's premier clients!):**
 - Eicon Technology's Aviva Mainframe Edition
 - NetManage's NS/ElitePlus for Mainframe Access and NS/Elite for AS/400
 - WRQ's Reflection for IBM product line
 - Wall Data's RUMBA family of emulators
- **Channel attachment**
 - Bus-Tech Inc.
 - Barr Systems
- **Adapter support**
 - Eicon Technology
 - MicroGate
 - Quadron
 - Interphase (Synaptel)

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IBM NT Solutions - Connecting to Information

- **IBM has a broad set of software products available on NT!**
- **For example, CS/NT interoperates in NT solutions that previously required Microsoft SNA Server:**
 - DB2 Connect Enterprise Edition for Windows NT
 - DDCS Gateway for Windows NT Version 2.3.2
 - CICS Client for NT Version 2.0.1 supports APPC communications
 - MQSeries for NT V2.0

CS/NT Network Integration Solutions



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What kind of customer problems are solved with network integration solutions?

My company has merged with another company. We both use different protocols.

How can we streamline communications?

Our SNA clients want to build an intranet and also access the Internet

Can we do this?

Users in our branches want to use Lotus Notes to communicate with each other.

Can we do this with an SNA/APPN central site?

We'd like to consolidate to TCP/IP to simplify management, but we have a huge investment in our host SNA database applications.

Can we consolidate but still access our databases?

All our retail stores need to access our central site financial systems. We'd like to use SAP R/3 but

Can it be deployed in our SNA backbone environment?

SNA and TCP/IP Network Integration Overview

- **TN3270E Server**

- TCP/IP client access to 3270 applications and print services

- **Web-to-Host gateways**

- Internet-to-SNA connectivity for Web users needing access to 3270 applications and databases

- **Sockets over SNA**

- Run TCP/IP sockets applications over SNA networks
- Intranet and Internet access from SNA or TCP/IP

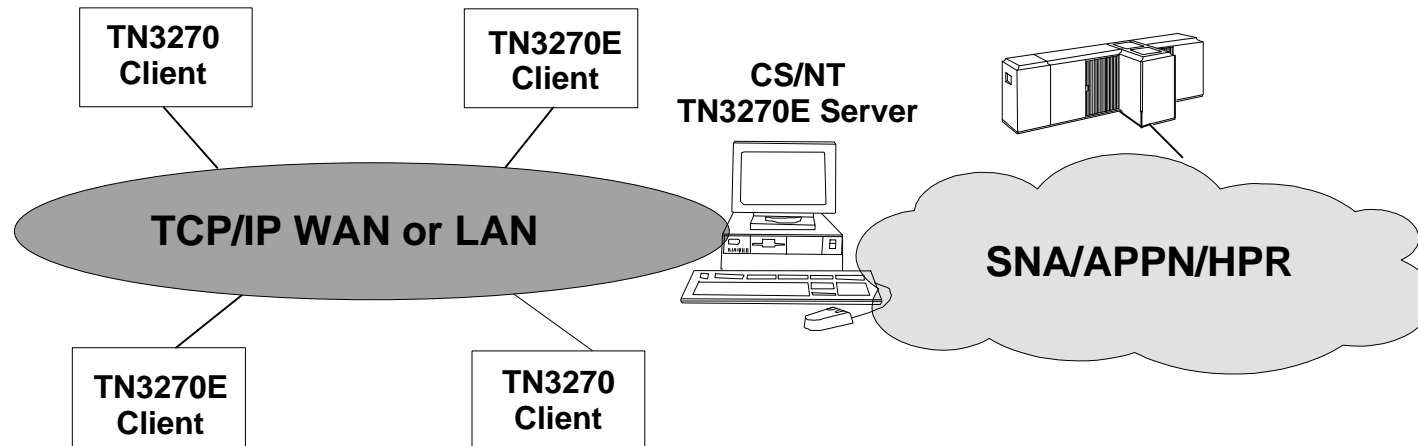
- **SNA over TCP/IP**

- Extend SNA applications over TCP/IP networks

- **SNA API Client Support**

- TCP/IP and IPX/SPX client access to SNA APIs without SNA protocol flows

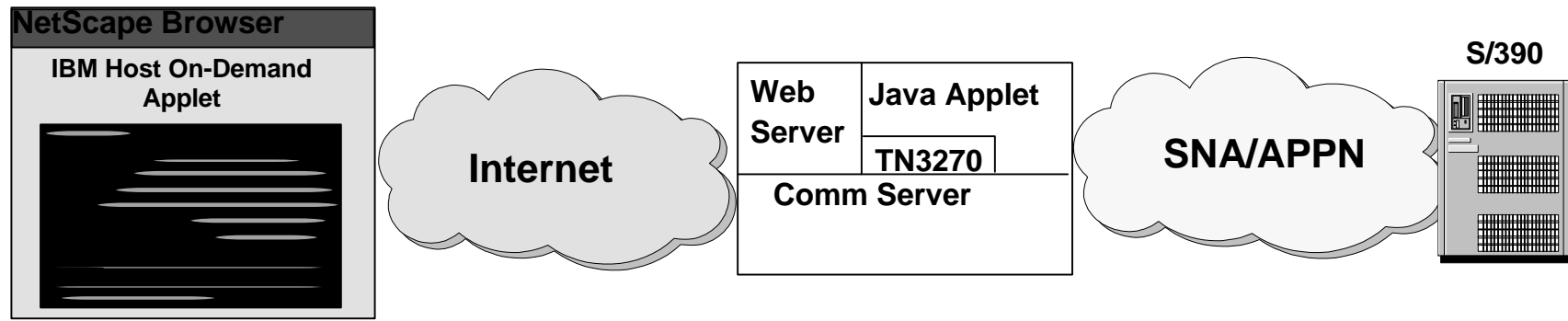
TN3270E Server



- **Easy access from IP clients to 3270 applications and print services**
 - No IP on host
 - No SNA on workstations
 - HPR-capable from gateway to host with non-disruptive sessions
- **Can be placed in remote branches or channel attached to host**
- **Supports traditional TN3270, RFC1646, RFC1647**
 - LU1, LU2, and LU3 devices
 - Print services
 - ATTN, SYSREQ keys
 - SNA response handling
- **Designed for 10,000 connections, tested up to 4000**

IBM Software

Host On-Demand - Internet to SNA Solution

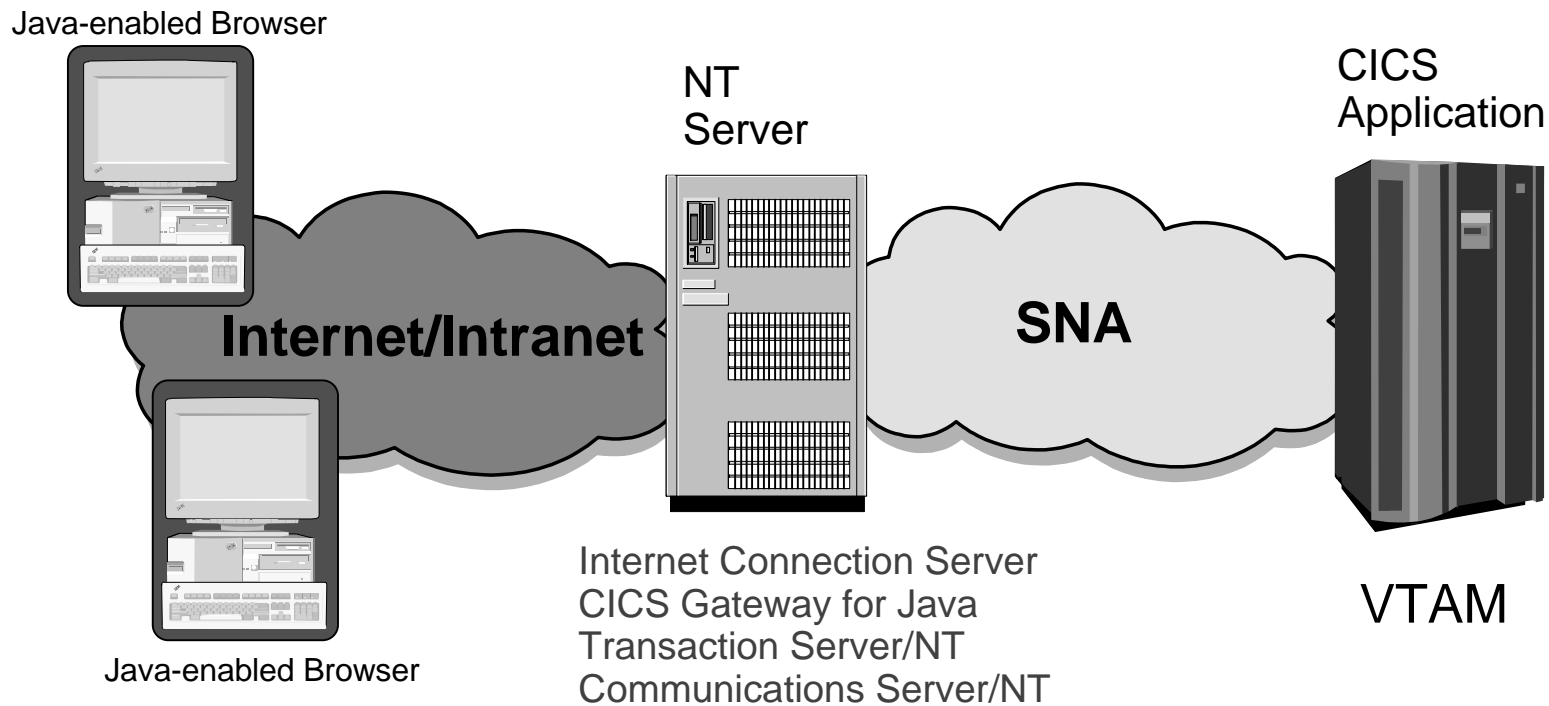


Java Browser

- Provides fast and easy access to host 3270 SNA applications from intranets and Internet
- Java-based solution that uses TN3270 protocols
- Provides high-performance, low-cost solution for intranet and Web users who need occasional access to central site applications or databases
- Available to Communications Servers:
 - CS/2, CS/AIX 4.2, NetWare for SAA V2.2, CS/NT
- http://www.networking.ibm.com/hex/hexprod_en.html
- Host On-Demand client software in Netscape Communicator Professional Edition

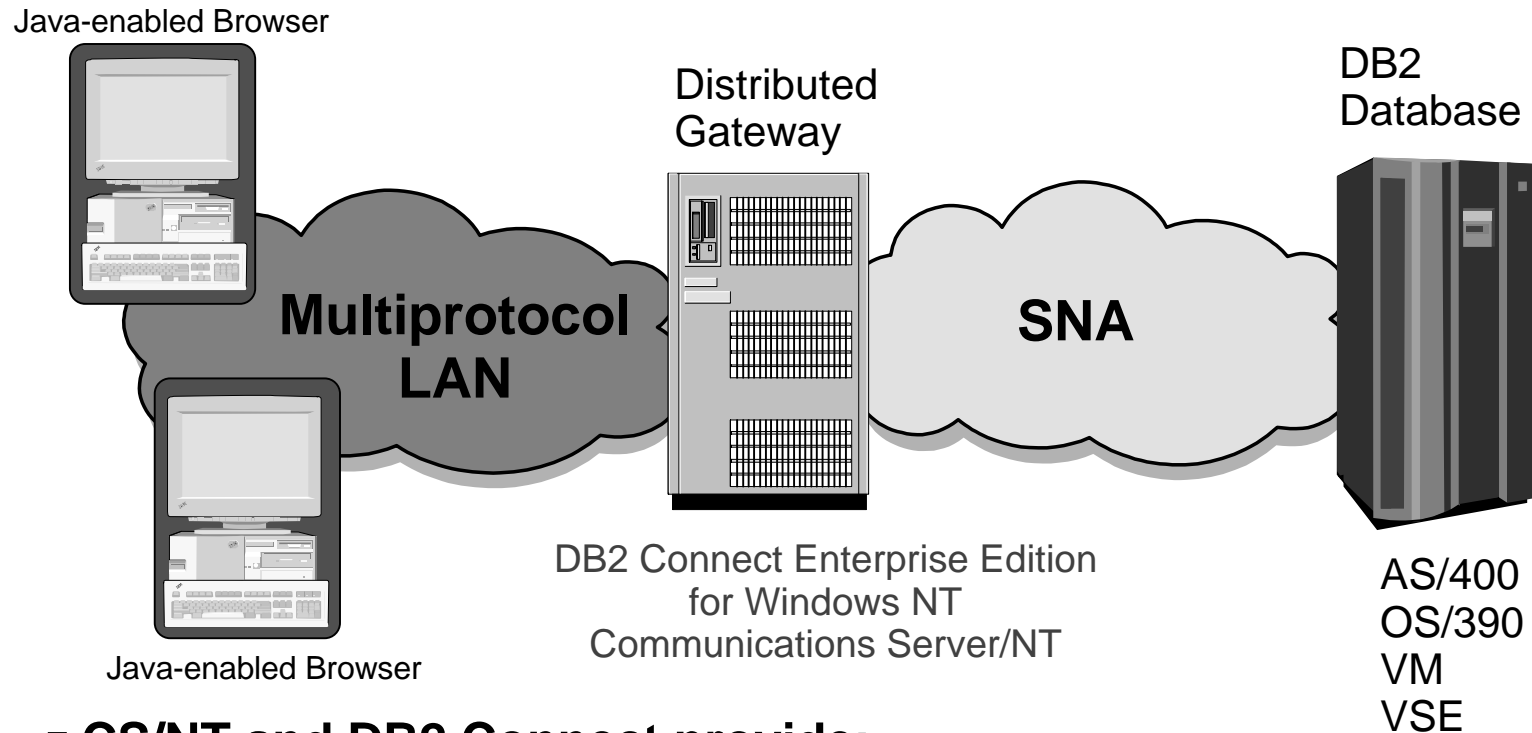
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Web Access to Legacy CICS Data



- Existing CICS applications on mainframes or other servers can be accessed from web browser with no change to CICS 3270 applications
- Internet becomes extension of your enterprise

Client Access to host DB2 Databases

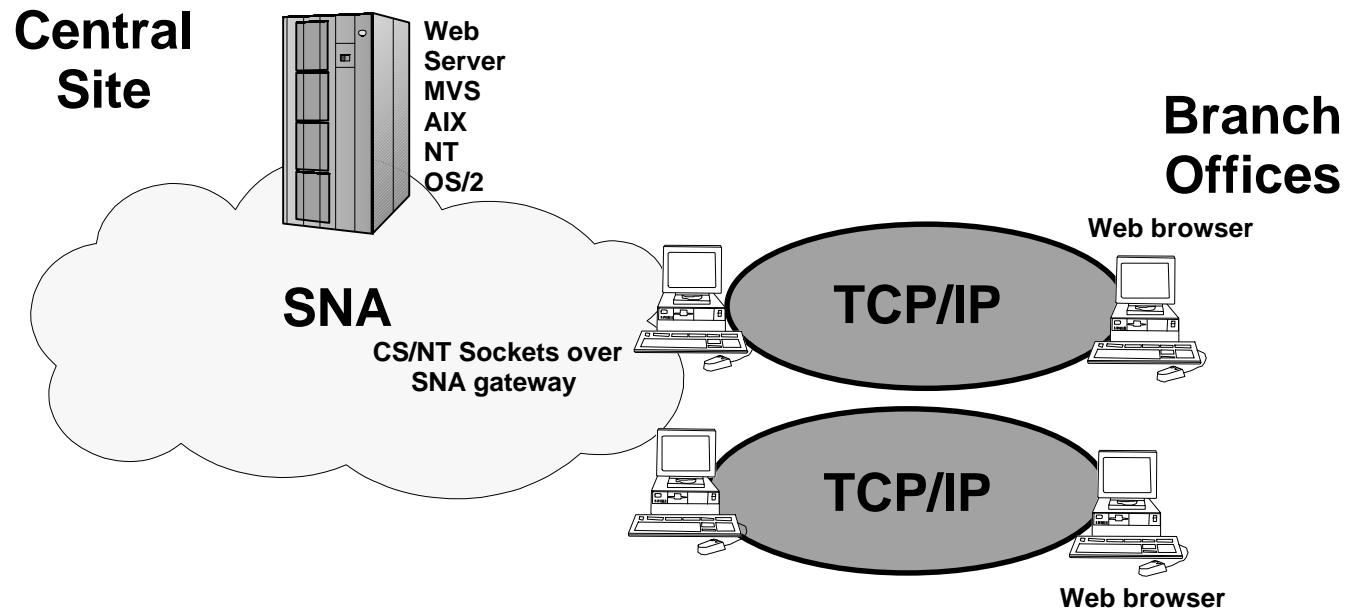


■ CS/NT and DB2 Connect provide:

- Best combination of services for PC and UNIX client connections to DB2
- Best offering for customers implementing a replicated branch office, departmental data mart, or a Web application delivering both host data and multimedia content
- Indispensable foundation to insurance, retail, banking and health care industry solutions with data distributed across a mixture of hardware platforms queried from distributed sites

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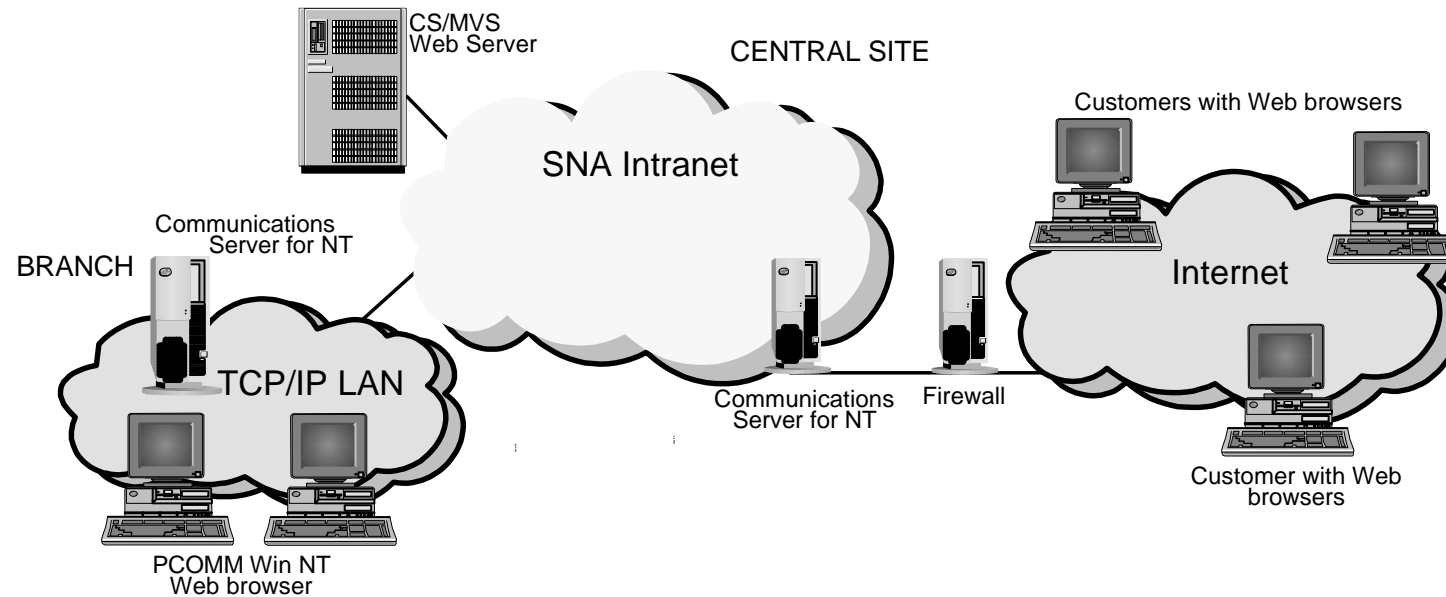
Enterprise Intranet - Sockets over SNA Gateway



- Intranet improves and streamlines communications within corporations
- Branch users can access Web server in SNA network
- Other sockets apps can be used in same configuration: eg. FTP, Telnet, SAP R/3, SNMP, Lotus Notes
- Capacity: 2048 connections

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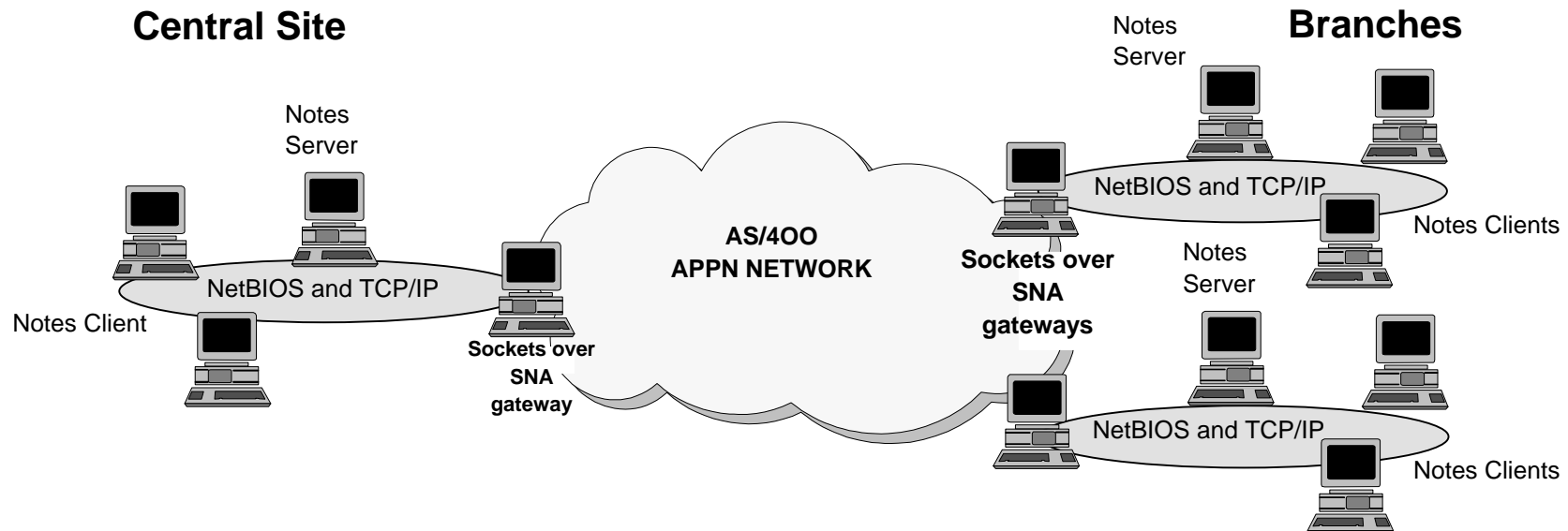
Transportation Industry - Internet/intranet access using SNA



- **Environment:** Documentation distributed on paper, Customers call service reps to make reservations, Reps at branches use PCOMM and CS/NT to access central site S/390 reservations systems
- **Requirement:** Efficiently distribute documentation to reps
Reduce transaction time
Non-disruptive solution
- **Solution:** Use CS/MVS as Web server. Branch CS/NTs enable intranet access. New central site Comm Server allows customers to access pricing information
- **Benefits:** No major networking changes, productivity savings from intranet document distribution
- **Brochure:** G325-5102-01: Use your SNA or APPN network for Internet or intranet access
- **URL:** <http://www.raleigh.ibm.com/any/anynew.html>

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Lotus Notes over APPN: Traffic Prioritization



- Company:** Zahid Tractors and Heavy Machinery Company, Ltd. in Saudi Arabia
- Environment:** Enterprise wide AS/400 APPN network
- Requirement:** Replication between Lotus Notes servers between branches using existing leased line SNA network with no impact to existing 5250 traffic
- Solution:** Branch LAN interconnection using Sockets over SNA gateways in Communications Server #BATCH class of service used for Notes traffic so 5250 traffic is not impacted
- Benefits:** Freedom to use TCP/IP-based Internet applications while benefitting from SNA/APPN bandwidth utilization, traffic prioritization, etc. No need to upgrade or disrupt existing network
- Application brief:** G325-3648
- URL:** <http://www.networking.ibm.com/cms/cms3648.html>

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Customer Quotes

"By simply deploying a few gateways with Sockets over SNA multiprotocol function, we Internet enabled our whole SNA community."

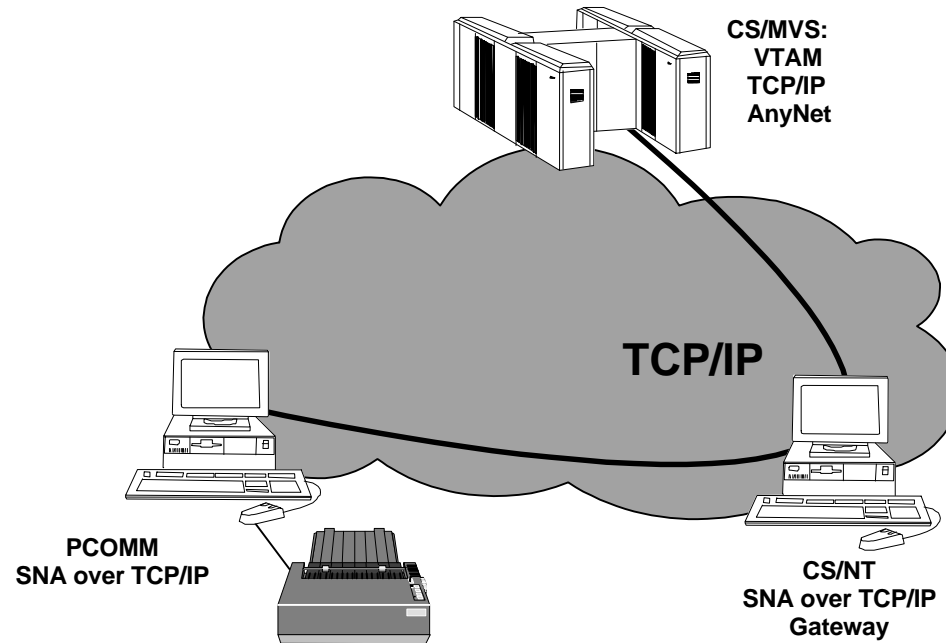
*Hussein Tarhini, Technical Support Manager
Zahid Tractors*

"I am particularly pleased that IBM can add multiprotocol function to our SNA network in such a non-disruptive manner. We were able to implement the Sockets over SNA gateway software solution within normal business hours without any interruptions to our user community."

*Graham Ferguson, Technology Manager
Zahid Tractors and Heavy Machinery*

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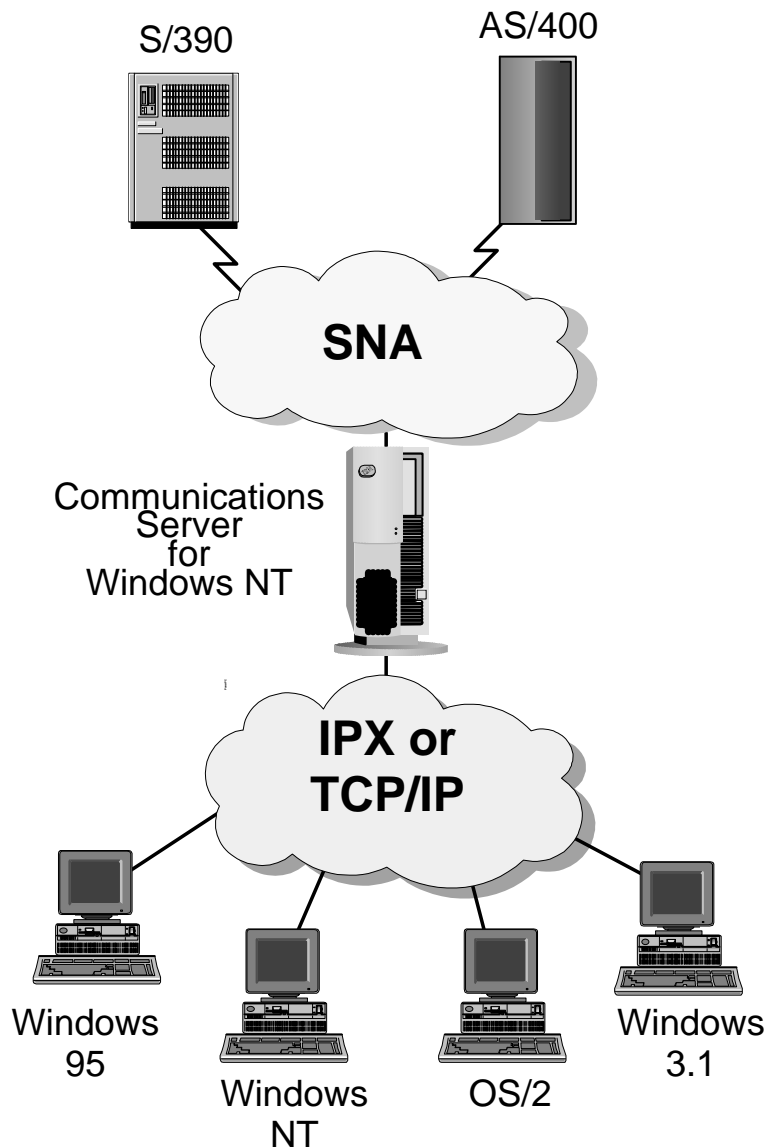
SNA over TCP/IP



- **Broad SNA support over TCP/IP for APPC, printer, and 3270 emulator programs (LU0, 1, 2, 3, 6.2)**
 - DLUS in VTAM SNA/IP access node
 - DLUR in CS/NT
- **Clients can access SNA and TCP/IP applications**
- **Reduces operational and management costs by enabling network consolidation while leveraging investment in SNA applications**
- **Capacity: 2048 Connections**

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Remote API Client Support (Split Stack)



- **Allows IPX/SPX and TCP/IP attached clients to access SNA APIs without SNA protocol**
- **Supports the following clients**
 - Windows NT
 - Windows 95
 - Windows 3.1 (TCP/IP only)
 - OS/2 (TCP/IP only)
- **Clients provide API support for**
 - CPI-C APPC
 - EHNAPPC
 - LUA RUI
 - Common Services
 - Management Services
- **Clients shipped with server**
- **Client requires less storage and processing capability**

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Advanced Technologies

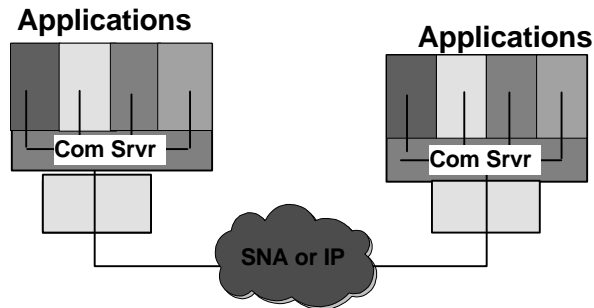
Built on Advanced Technologies



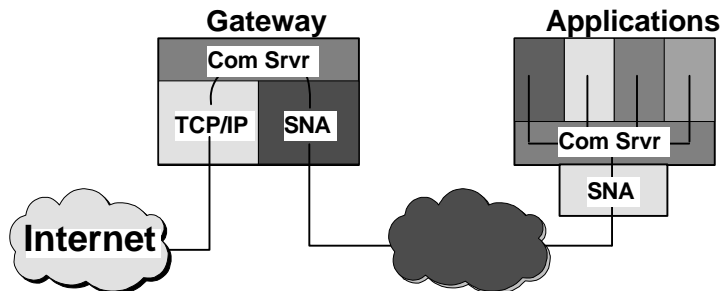
- Allows rapid deployment of advanced business and consumer applications without disrupting existing applications
- Supports new users, applications, and mix of TCP/IP and SNA communications without disruptive network upgrades
- Provides higher reliability and availability
- Simplifies design, installation, and operations

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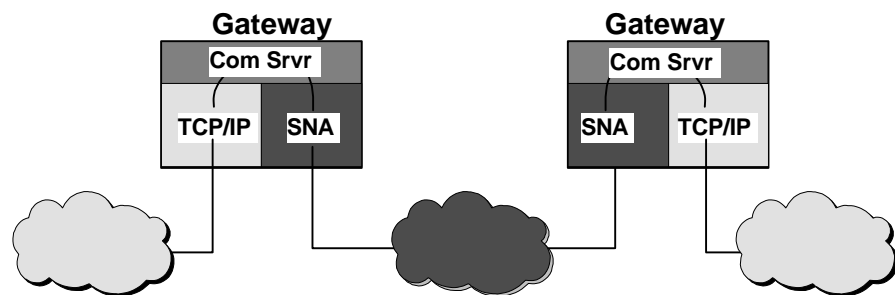
Advanced Multiprotocol Support



Supports nonnative application

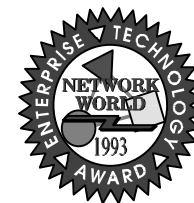


Joins 2 unlike networks



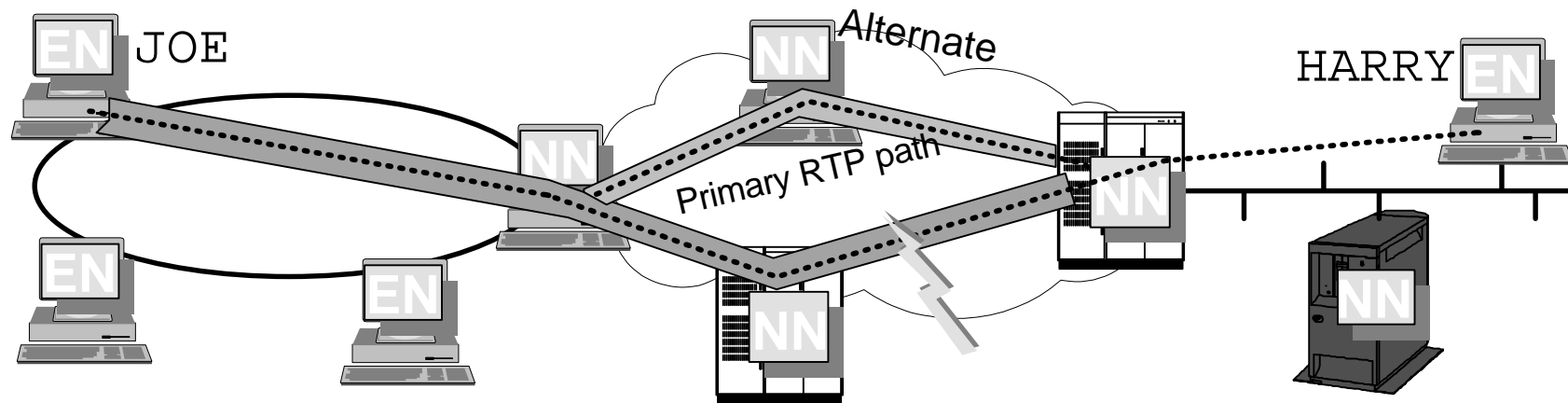
Joins two like networks with unlike backbone

- Simplifies application selection, network design, and operation
 - e.g. Internet access from SNA and IP
- Expands application scope and gives end users broader choice of applications
- Enhances existing router and controller networks
- Award-winning, standards-based, software solution
 - Compensates for differences in protocols
 - Solutions for SNA, TCP/IP (sockets), NetBIOS, and IPX



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High-Performance Routing



HPR Advantages

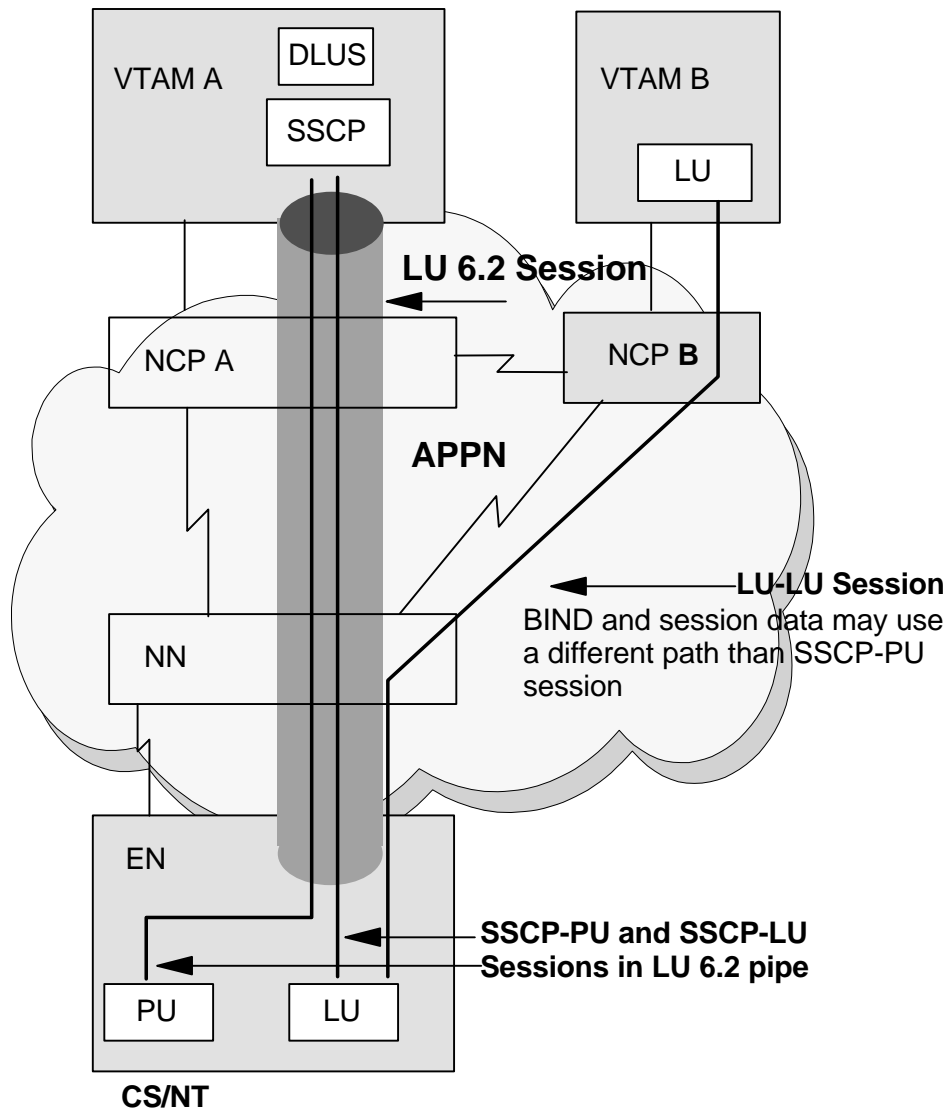
- ★ Better performance with Rapid Transport Protocol (RTP)
End-to-end error checking only
- ★ Lower overhead with Automatic Network Routing (ANR)
Source routing reduces storage and increases speed
- ★ Non-disruptive session rerouting around failures
New RTP path recalculated in case of interruption
- ★ Full APPN (pre-HPR) compatibility

"HPR is the most efficient and highest level of the protocol stacks..."

Frank Dzubeck, LAN Times, March 1996

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Dependent LU Requester



- Provides migration strategy for DLU from subarea to APPN
- DLUs can reside on nodes that are non-adjacent to the host
- APPN search logic used to provide the best path for LU-LU sessions
- Network management provided by DLUS and PUs that are not adjacent to SSCP can still be visible to host
- With AnyNet, DLU sessions can be established over TCP/IP
- Backup DLUS support if connection to primary DLUS fails
- Multi-subnet support allows DLUR, DLUS, and application all to be in different subnetworks

Communications Server Family Technology Highlights

Industry-leading SNA support:	CS/2	CS/NT	CS/AIX	OS/400	NetWare	CS/MVS
3270 SNA gateway	X	X	X	X	X	
APPN EN and NN function	X	X	X	X		X
High Performance routing intermediate routing	X	X	X	X		X
HPR connection endpoint	X	X				X
3270 support over APPN (DLUS/R)	X	X	X			X
Multiprotocol support:						
TN3270E server	X	X	X		X	
TN5250 server			X			
Sockets over SNA access node	X	X	X	X		X
APPC over TCP/IP access node	X	X	X	X		X
SNA over TCP/IP access node	X	X				X
Sockets over SNA gateway	X	X	X		X	
APPC over TCP/IP gateway	X	X	X			X
SNA over TCP/IP gateway	X	X				X
IPX over SNA gateway	X				X	
IPX over TCP/IP gateway	X					
NetBIOS over SNA gateway	X					
NetBIOS over TCP/IP gateway	X					
NetWare Directory Services integration					X	

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Development and Support Tools

- **Sophisticated programming interface supporting a rich set of 32-bit APIs including:**
 - CPI-C
 - APPC
 - Conventional LU Application Interface (LUA) RUI and SLI
 - EHNAPPC
- **Tools and advanced tutorials to simplify configuration and systems management**
- **Web-based server administration through an easy-to-use graphical interface**

Middleware

Construct your applications on a solid base

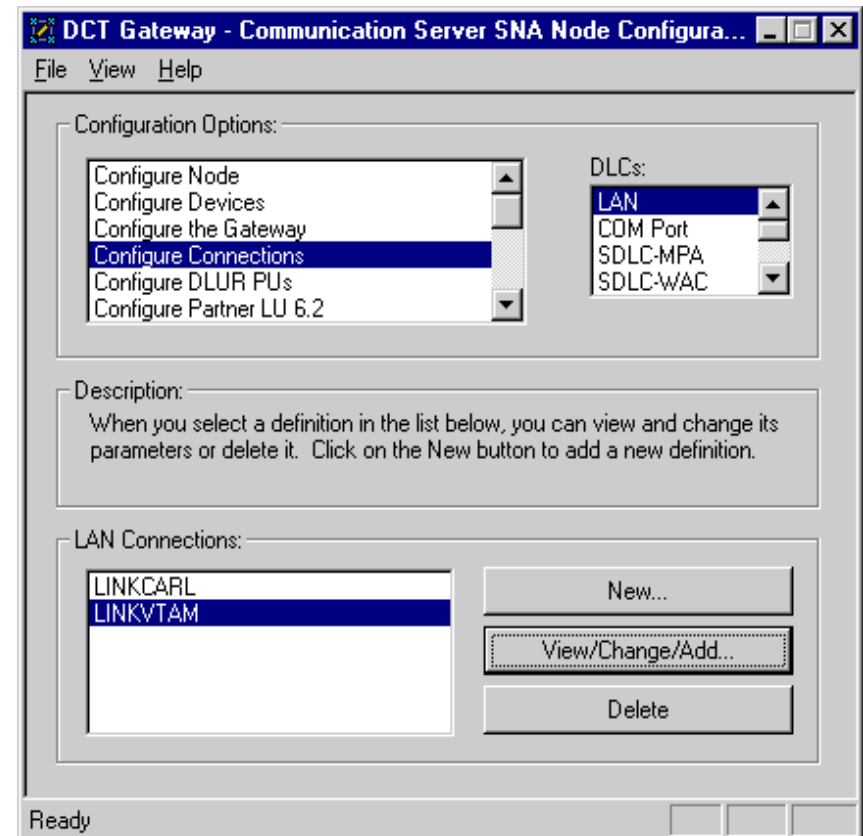
- **APPC and CPI-C**
 - Industrial strength client-server LU6.2 applications between all platforms
- **LUA**
 - Low level programming for LU 0, 1, 2, 3
- **System Management (NOF)**
 - SNA system resource administration
- **Common Services**
 - Common functions such as translation, traces, message logging, etc.

* APIs are free

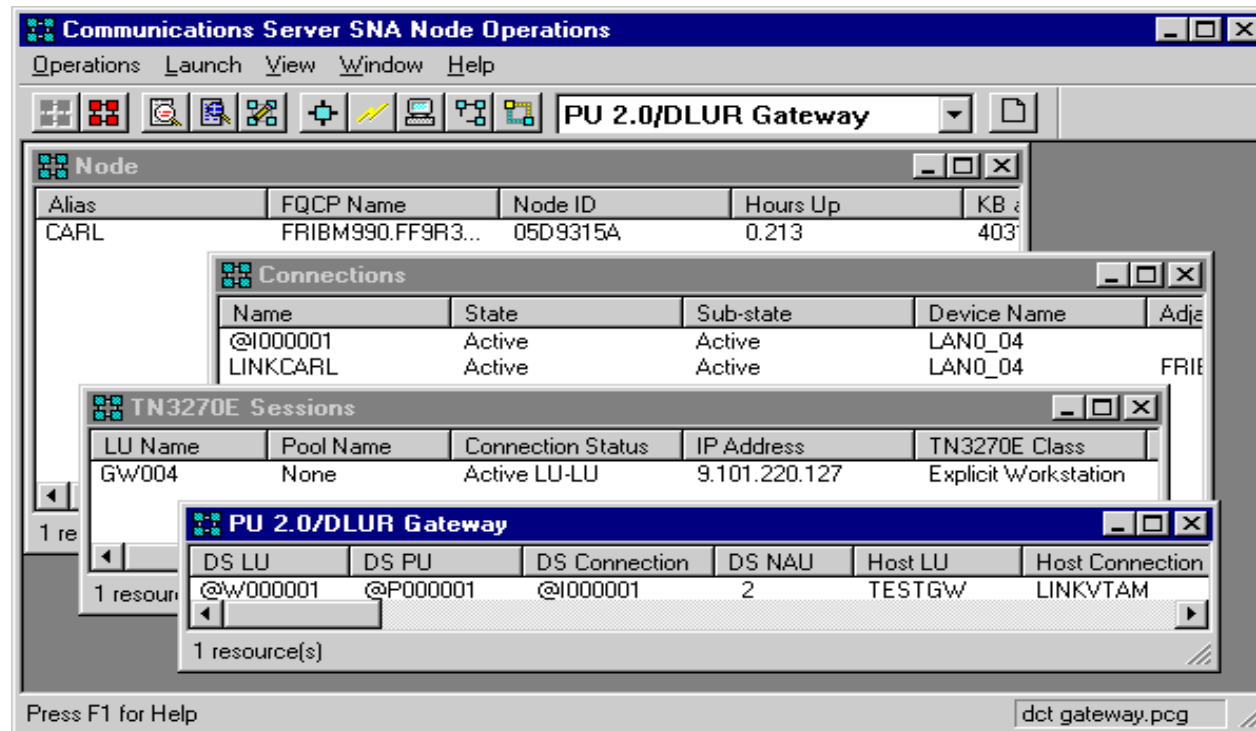
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Installation and Configuration

- **InstallShield standard**
 - InstallShield silent support for automatic installation
- **Configuration with SmartGuides**
 - Task oriented
- **Complete customization**
 - ASCII configuration file
- **SNA Discovery protocol for easy client configuration**
- **Full online Tutorial**



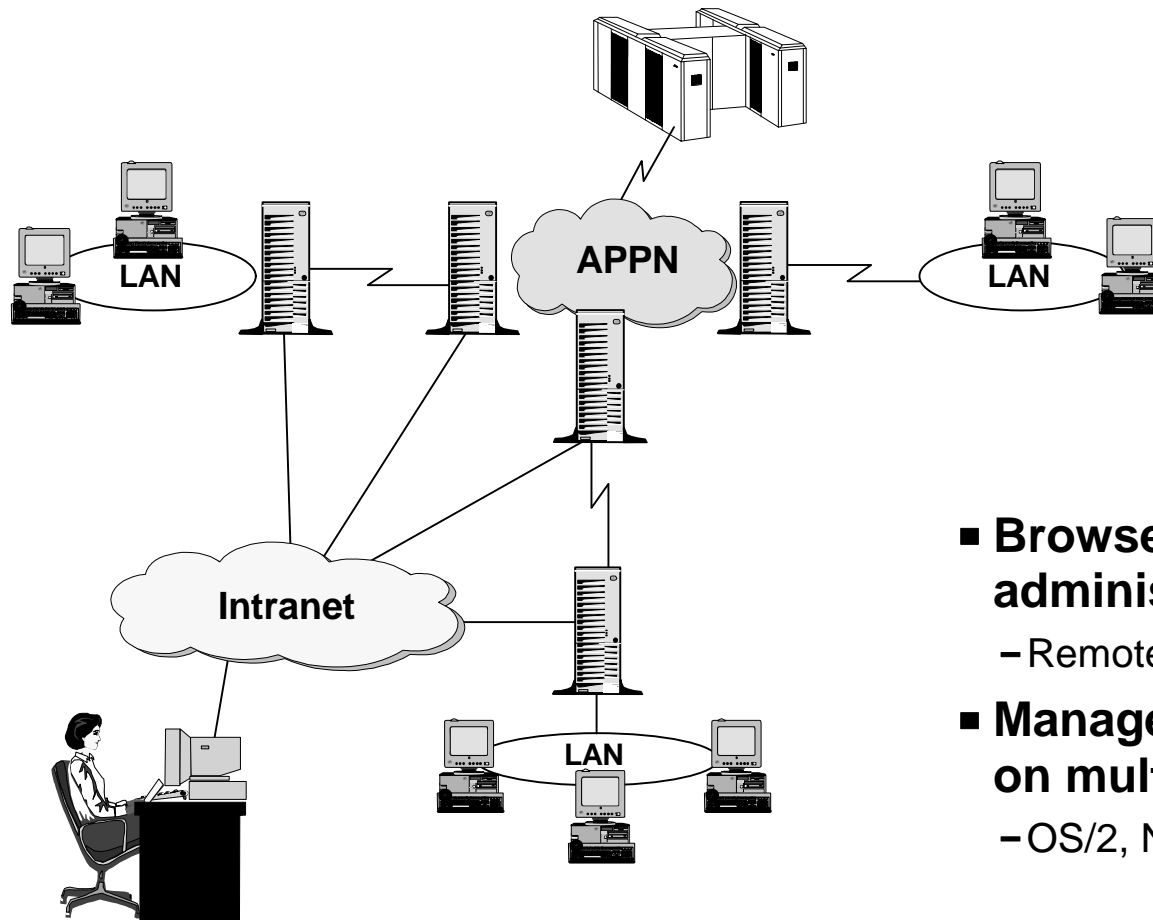
Administration



- ★ Simple multiple document management interface
- ★ NetView alert support
- ★ Remote administration client facility
- ★ Complete online documentation
- ★ Multiple Server administration from one point

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Web Based Administration



- **Browser based administration**
 - Remote from any workstation
- **Management of Servers on multiple platforms**
 - OS/2, NT, NetWare

New, All-in-one Packaging



- All product files
- Clients for remote SNA API support
- Entry PCOMM emulator for server administration
 - 3270 and 5250 Entry Level Emulation
- Development tools, APIs, and samples
- Complete online documentation
- Host On-Demand
- Web Administration
- Remote server administration client
- Hot buttons for CS/NT Web pages

*Single CD-ROM for server and client installation
All from one integrated graphic interface*

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Pre-requisite Hardware and Software

Communications Server for Windows NT

- Hardware
 - Will run on hardware required by MS Windows NT Server
 - Recommendation: Intel Pentium, 100 MHz CPU, 32 MB of RAM, 75 MB of hard disk
 - Ultimately, hardware required will depend on network environment and may be greater than recommendation
- Software
 - MS Windows NT Server, either
 - MS Windows NT Server 3.5.1 (Service Pack 4 or above is required for split stack operation)
 - MS Windows NT Server 4.0 (Service Pack 3 recommended)
 - MS TCP/IP and/or IPX/SPX (SNA API clients)

Remote Admin Client Pre-Reqs

- Hardware
 - Will run on hardware required by MS Windows NT
- Software
 - MS Windows NT Workstation or Server
 - MS Windows NT Server 3.5.1
 - MS Windows NT Server 4.0

SNA API Clients Pre-Reqs

- Hardware
 - Will run on hardware required by base operating system
- Software
 - OS/2 3.0 (Warp) or above
 - MS Windows 3.1.1 or above and TCP/IP
 - MS Windows 95 with service packs 1 & FIX Q128336
 - MS Windows NT Workstation or server
 - MS Windows NT Server 3.5.1 with Service Pack 4 or above
 - MS Windows NT Server 4.0 (Service Pack 3 recommended)
 - TCP/IP and/or IPX/SPX to communicate with CS/NT Server

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Capacity Planning

Description	Design
SNA Gateway	254 Per PU PUs - No limit
TN3270E Server	10,000
APPN Network Node	No limit
SNA/IP Gateway	2,048
Sockets/SNA Gateway	2,048

Summary

Communications Server for Windows NT:

- The premier multifunction gateway for the NT environment

Key product advantages:

- Reduces costs by enabling network consolidation
- Mission critical provider of end-to-end solutions
- Better ease of use and any-to-any network integration
- IBM's excellence in service and support

NT Future Directions

Enhancements for:

- Better ease of use
- End-to-end universal access
- Advanced networking
- Effective utilization of network

Includes additional:

- S/390 and AS/400 host integration capabilities
- Availability
- Security
- DLC support
- Manageability
- SNA Enhancements

For more info...

Cross Platform

- Communications Server Family Brochure
- Communications Server Spec Sheet
- Use your SNA network for Internet access
- Integrate SAP R/3 into your SNA or APPN network
- Solutions for Internet and Intranet Infrastructures
- Solutions for Network Integration
- Solutions for Any-to Any Information Access
- <http://www.networking.ibm.com/cms/commserv.html>

IBM Pub Number

G325-5207
G325-3565
G325-5102
G325-3650
G325-3675
G325-3676
G325-3677

Windows NT

- Communications Server for Windows NT
- 10 Reasons to Buy Communications Server for Windows NT

G325-3684
G325-3683

eNetwork Software

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

CM/2 and CS/2 to CS/NT migration utility download

- <http://www.networking.ibm.com/cms/cs2dwn01.html>

CS/NT evaluation kit registration

- <http://service.software.ibm.com/reg/sws/csnkit-r>

MKTOOLS package: CSNTMKT

IBM Communications Server for Windows NT V5.0 and Microsoft SNA Server V3.0 Comparison

- <http://www.networking.ibm.com/ene/cs-ms.html>

Frequently Asked Questions, Tips and Techniques

- <http://networking.ibm.com/cms/cmssup.html>

Current licensees of CS/NT V5.0 Registration for V5.01

- <http://www.networking.ibm.com/cms/csneh.html>

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