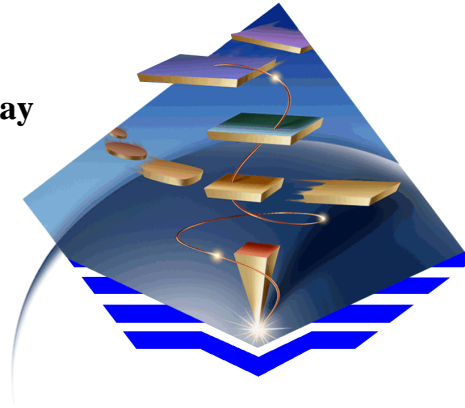




*IBM eNetwork™  
Communications Server  
for AIX, Version 5*

**The premier multifunction gateway  
for the AIX environment**



**February 1998**

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***Abstract: Communications Server for AIX***

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**Communications Server offers unparalleled availability and enterprise class dependability for your mission critical applications. IBM eNetwork Communications Server for AIX 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 AIX environment, with emphasis on intranet and Internet solutions for mixed SNA and TCP/IP environments.**

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## ***Those wonderful acronyms ...***

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API	Application Programming Interface
APPC	Advanced Program to Program Communication
APPN	Advanced Peer to Peer Networking
BOS	Base Operating System
CDLC	Channel Data Link Control
DDDLU	Dynamic Definition of Dependent LU
DOS	Disk Operating System
ESCON	Enterprise Systems Connection
FDDI	Fiber Distributed Data Interface
FTP	File Transfer Program
ISC	Interprocess System Communication
LAN	Local Area Network
LU	Logical Unit
MPC	Multiple Path Channel
PC	Personal Computer
PU	Physical Unit
SDLC	Synchronous Data Link Control
SNA	Systems Network Architecture
SNMP	Simple Network Management Protocol
TN3270	Telnet 3270
VTAM	Virtual Telecommunications Access Method
WAN	Wide Area Network

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## Agenda

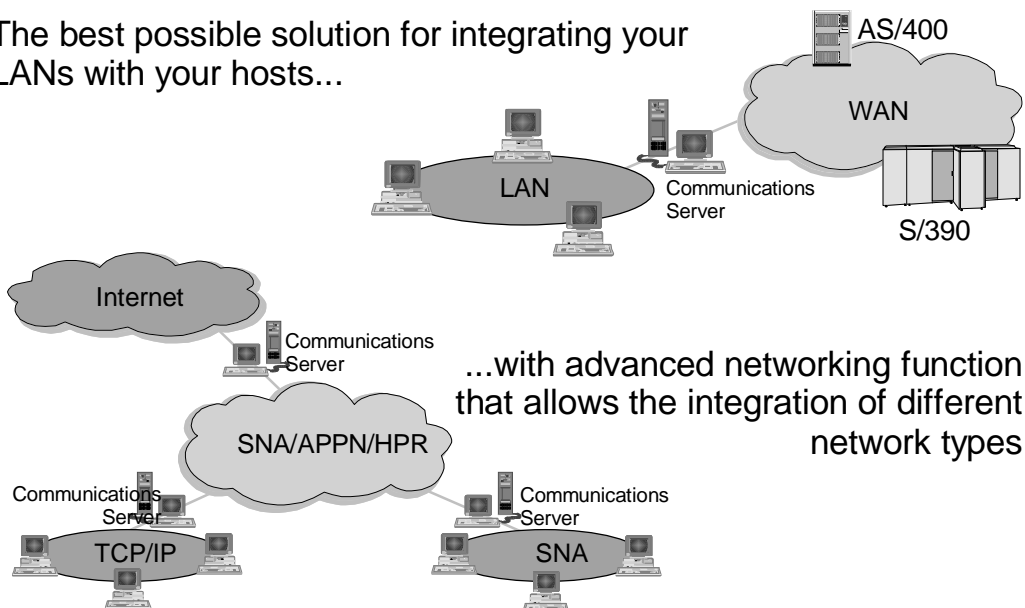
- ▶ **What's New with Version 5.0**
- ▶ **Communications Server for AIX Functional Overview**
- ▶ **Sample Scenarios**
- ▶ **Summary**

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## What is an IBM Communications Server?

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



...with advanced networking function that allows the integration of different network types

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## *Communications Server for AIX*

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► **The solution for companies who want to:**

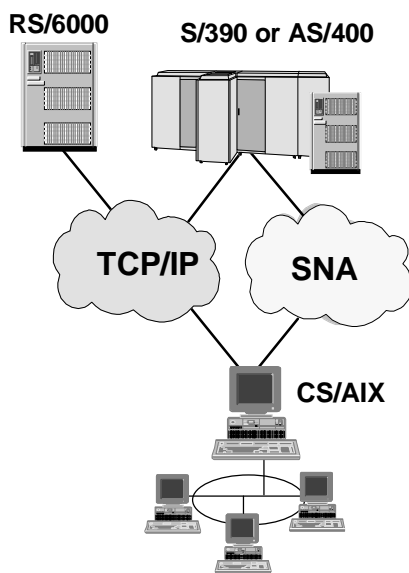
- Have the freedom to make application decisions based on business needs, not network protocols
- Connect users to the Intranet or Internet to exploit network computing advances
- Sharpen their competitive edge by developing best-of-breed applications without updating their network or building parallel networks
- Leverage their current investments and run SNA applications over TCP/IP 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

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## *IBM eNetwork Communications Server for AIX*

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■ **Enterprise-Class - Advanced Networking**

- Powerful SNA gateway with higher reliability, more concurrent sessions with higher performance than competitive products

■ **End to End Universal Access - SNA and TCP/IP Integration**

- Host On-Demand V1: Internet to SNA access for Web users
- SNA applications over TCP/IP
- Sockets applications over SNA for Internet/Intranet access
- TN3270E Server for TCP/IP client access to 3270 apps and print
- Broad range of connectivity options: Ethernet, Token Ring, FDDI, SDLC, X.25, Frame Relay, Channel Attach

■ **Easy to use, Configure - Development and Support Tools**

- Rich set of APIs
- Easy-to-use graphical user interface simplifies configuration and systems management

■ **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

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## ***What's New with Communications Server for AIX V5***

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▶ **Integrated TN3270E Server**

▶ **SNA/APPN enhancements**

- High Performance Routing (HPR) rapid transport protocol (RTP) support, now provides non-disruptive rerouting of sessions and is supported across all link types
- Dynamic Definition of Dependent LUs (DDDLU)
- DLUR has been extended to sessions that use generic SNA, secondary LU0, and the new LUA API

▶ **Enhanced Application Programming Interfaces (API's)**

- Upward compatibility for applications written for previous versions of IBM AIX SNA products
- Conventional LU Application Interface (LUA) RUI
- Node Operator Facility (NOF)
- Common Programming Interface for Communications (CPI-C) provides CPI-C 2.0+ support
- New Common Service Verb, and Management Services APIs
- eNetwork Host Access Class Library (Host Access API)

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## ***What's New with Communications Server for AIX V5 (contd.)***

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▶ **Additional connectivity options**

- Multiple-path Channel (MPC) support
- ATM LAN Emulation
- Frame Relay (requires TPS\*\*/SoftFRAD product)

▶ **Improved Configuration and Administration through new Motif Administration Tool**

▶ **Migration tool provided for migrating from previous versions**

▶ **Host On-Demand V1.1 included with the product**

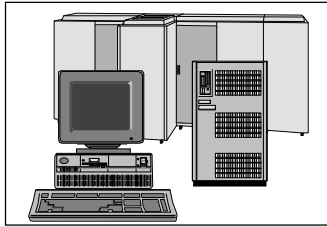
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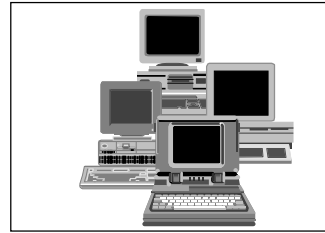
## *IBM eNetwork Software*

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### **Servers**

Communications Server for OS/390  
Communications Server for AIX  
Communications Server for OS/2 Warp  
Communications Server for NT  
NetWare for SAA  
NetWare for SAA: AS/400 Edition  
Wireless Gateway  
Web Express Server  
Emulator Express Server



### **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  
Wireless Client  
Web Express Client  
Emulator Express Client

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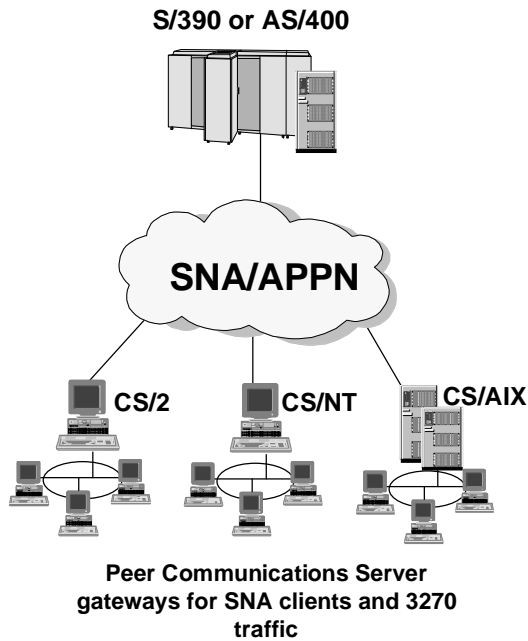
## **Industry Leading SNA Support**

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## Communications Server for AIX SNA Function



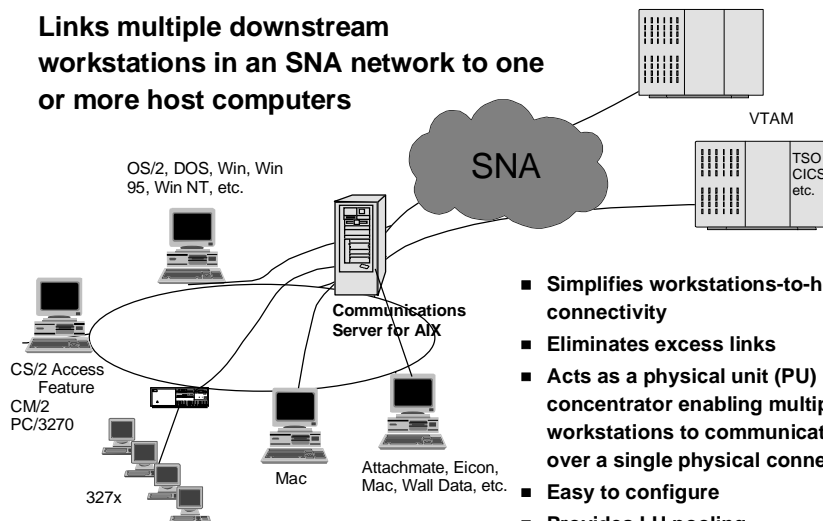
- **Industrial strength server with premier SNA, APPN, HPR functions**
- **SNA Gateway**
  - Full peer to other Communications Servers
  - Discovery server
  - PU Concentrator for downstream SNA devices
- **APPC Application Suite**
  - APING, AFTP, ATELL, ACOPI, ANAME, XA3270, and SNAP1 interactive application development tool
- **APIs**
  - LUA RUI, 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
  - Frame Relay
  - AnyNet APPC/IP or Sockets/SNA
  - Channel attachment - including MPC support

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## SNA Gateway

**Links multiple downstream workstations in an SNA network to one or more host computers**

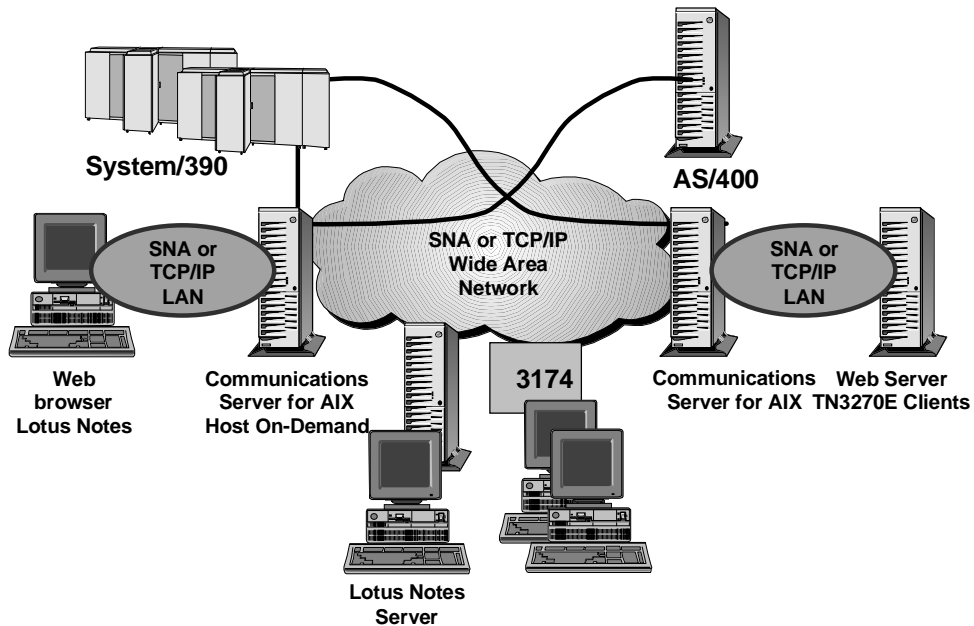


- **Simplifies workstations-to-host connectivity**
- **Eliminates excess links**
- **Acts as a physical unit (PU) concentrator enabling multiple workstations to communicate over a single physical connection**
- **Easy to configure**
- **Provides LU pooling**

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## CS/AIX 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?

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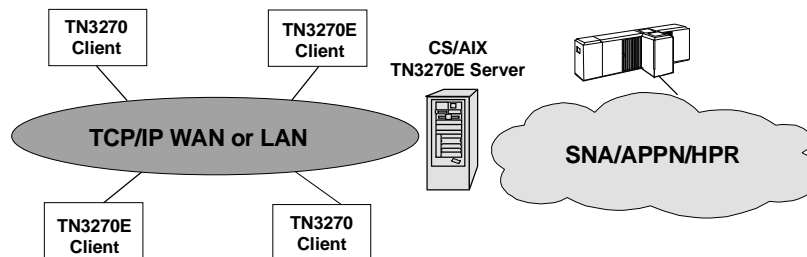
## *SNA and TCP/IP Network Integration Overview*

- **TN3270E Server**
  - TCP/IP client access to 3270 applications and print services
- **Web-to-Host gateway**
  - 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
- **APPC over TCP/IP**
  - Extend APPC applications over TCP/IP networks

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## *TN3270E Server*

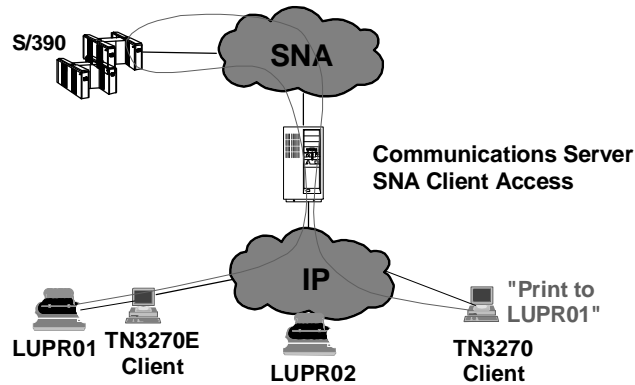


- **Easy access from IP clients to 3270 applications and print services**
  - No IP on host
  - No SNA on workstations
  - HPR-capable from gateway to host with non-disruptive sessions, when using DLUR
- **Can be placed in remote branches or channel attached to host**
- **Supports traditional TN3270, RFC1646, RFC1647**
  - LU1, LU2, and LU3 devices
  - Print services
  - ATTN, SYSREQ keys
  - SNA response handling
- **Load balancing support using IBM LoadLeveler or Network Dispatcher for AIX**

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## TN3270E Printer Support

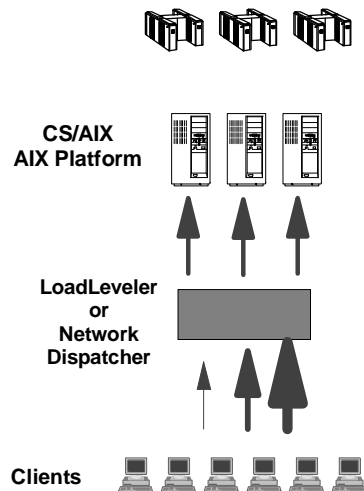


- ▶ Host print support on locally attached or network addressable printers (LU1/LU3 device emulation)
  - TN3270E client required, serves as print queue
- ▶ Specific LU request support
- ▶ Definite response

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## TN3270E Load Balancing

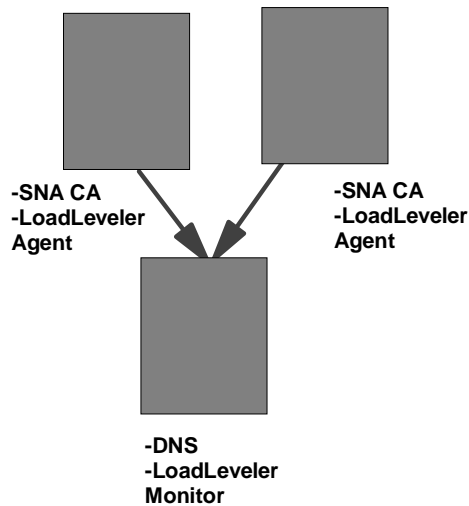


- ▶ Control and balance workload across multiple servers
  - capacity to handle thousands of TN3270 sessions
- ▶ Optimum response time, reliability and availability
- ▶ Clients routed to machine based on:
  - Host LU availability
  - Link speed
  - Client/Host connection load
  - Overall system load
  - Machine processor speed
- ▶ IBM LoadLeveler or Network Dispatcher resides on one AIX machine
  - Utilizes the DNS to resolve TCP/IP address of optimum TN3270 Server

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## Load Balancing - Details

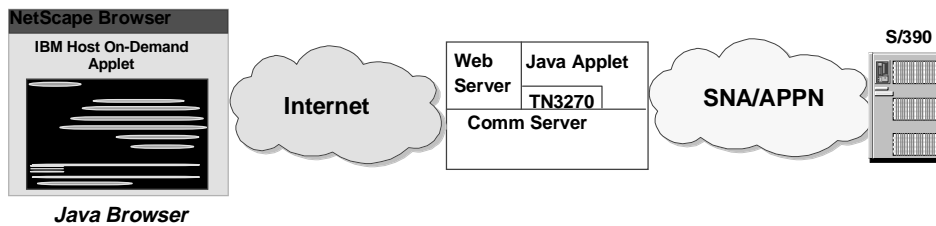


- ▶ LoadLeveler agents reside on same machine as CS/AIX and SNA CA
- ▶ LoadLeveler monitor resides on same machine as network DNS
- ▶ Agents utilize 'sysload' program to report status of each machine to the LoadLeveler monitor.
- ▶ Sysload reporting criteria:
  - Host LU availability
  - Link speed
  - Client/Host connection load
  - Overall system load
  - Machine processor speed
- ▶ LoadLeveler monitor and DNS used to resolve TCP/IP address of optimal TN3270 Server

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## Host On-Demand - Internet to SNA Solution

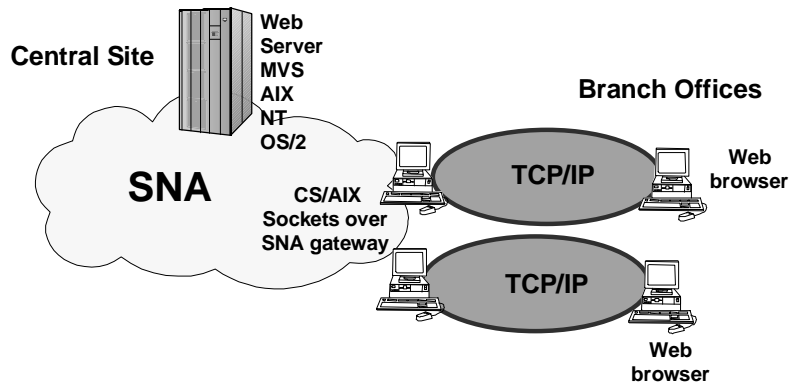


- Provides fast and easy access to host 3270 SNA applications from intranets and Internet
- Java-based solution that uses TN3270 protocols
- Provides high-performance, low-cost solution for intranet and Web users who need occasional access to central site applications or databases
- Available to Communications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

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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

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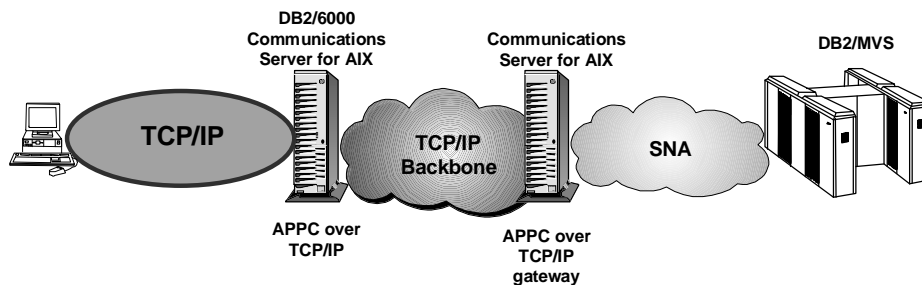
## Accessing APPC/APPN applications over TCP/IP backbone network

### Environment:

- TCP/IP backbone network
- Distributed DB2/6000 environment

### Requirement:

- Remote TCP/IP LANs running DB2/6000 need APPC access to host DB2 data



### Solution:

- Communications Server for AIX installed on each remote LAN providing APPC over TCP/IP
- Communications Server for AIX installed at central site providing APPC over TCP/IP gateway to host

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## Advanced Technologies

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### *Built on Advanced Technologies*

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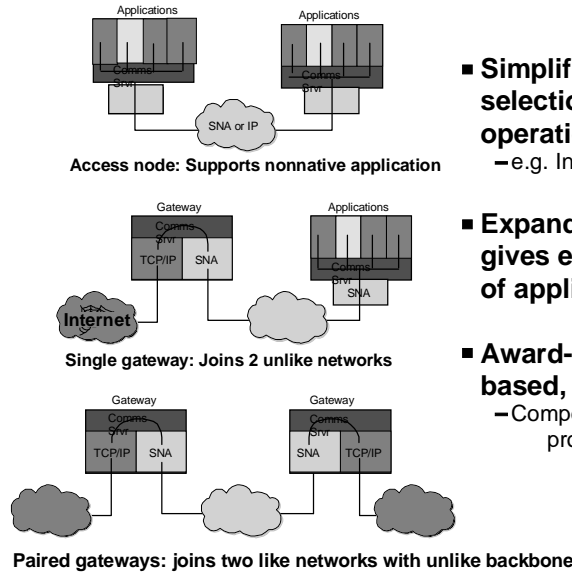


- Allows rapid deployment of advanced business and consumer applications without disrupting existing applications
- Supports new users, applications, and mix of TCP/IP and SNA communications without disruptive network upgrades
- Provides higher reliability and availability
- Simplifies design, installation,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

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## Advanced Multiprotocol Support



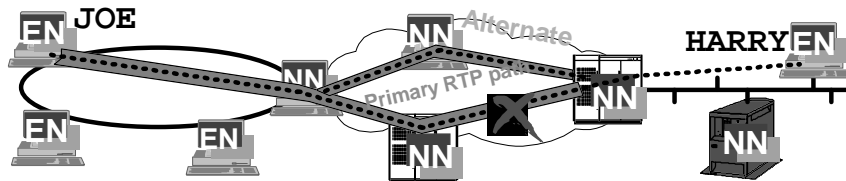
- Simplifies application selection, network design, and operation
  - e.g. Internet access from SNA and IP
- Expands application scope and gives end users broader choice of applications
- Award-winning, standards-based, software solution
  - Compensates for differences in protocols



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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
- ★ Supported over ESCON connection

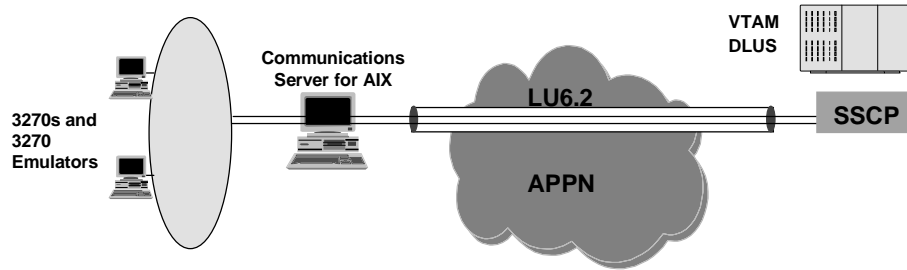
"HPR is the most efficient and highest level of the protocol stacks..."

Frank Dzubeck, LAN Times, March 1996

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## Dependent LU Requester (DLUR) in SNA Gateway



- DLUR, in conjunction with VTAM's dependent LU server (DLUS) function, enables dependent LU applications (LU0-3, and dependent LU6.2) to operate unchanged in an APPN network
- DLUR establishes an LU6.2 session with, and receives SSCP services from, the DLUS node.
- SNA Gateway provides services to the downstream dependent LUs.
- Protects investment in 3270s (real and emulators) and other dependent LU applications while migrating new applications to LU6.2 and APPN

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## Communications Server 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			X
3270 support over APPN (DLUS/R)	X	X	X			X
<b>Multiprotocol support:</b>						
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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## Application Programming Interfaces (APIs)

CS/AIX now includes the following new or changed application programming interfaces (APIs):

- ▶ Conventional LU Application Interface (LUA) Request Unit Interface (RUI) API
- ▶ The Node Operator Facility (NOF) API can be used to write applications that administer CS/AIX configuration and management resources.
- ▶ The new CPI-C API has been enhanced to the 2.0+ level
- ▶ The new Common Service Verb API provides utility verbs that enable you to perform functions such as character set conversion and trace file control.
- ▶ The new Management Services API supports network messaging functions.
- ▶ The eNetwork Host Access Class Library (Host Access API)

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## New Easy to Use Administration Tool

The screenshot displays the CS/AIX Administration Tool interface for node 'sna80'. The main window shows a tree view of 'Connectivity and dependent LUs' with nodes like CHNLPO, ETSAP0, tok0, tohost, DLUR, and SE9203. A 'Status of link station tohost' window is open, showing details for the Remote System (MERLIN\_V29CDRM) and Statistics. A callout box lists features of the Motif graphical user interface.

Remote System	
Node name	MERLIN_V29CDRM
Node type	Network Node
Node ID	FFF.FFFFC
TG number	21

Statistics	
Active ICB Session Count	0

- ▶ Motif graphical user interface
- ▶ Easily and quickly configure, view, and manage SNA resources
- ▶ Extensive Help screens provide guidance to perform specific tasks and also include overview and reference information
- ▶ Updates to configuration can be made while node is active
- ▶ Current status is displayed
- ▶ Resources can be activated and deactivated

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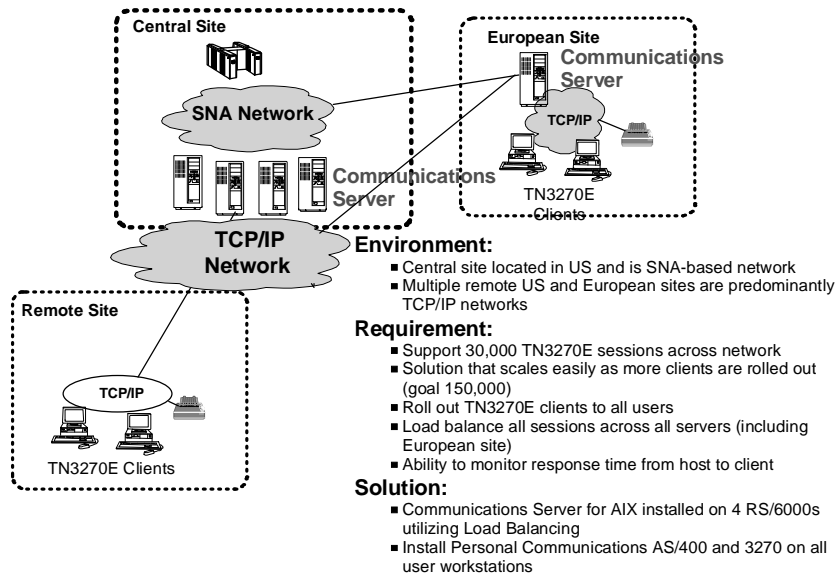
## Sample Scenarios

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### *TN3270 Server Solution*



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## Using your SNA or APPN network for intranet and Internet access

### Environment:

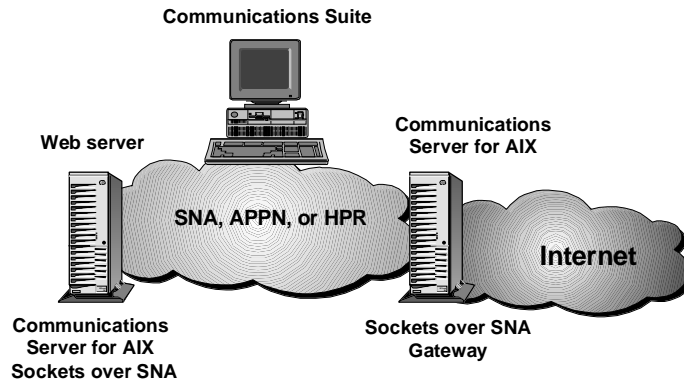
- Customer with large, established SNA network
- Intelligent workstations accessing SNA 3270 applications

### Requirement:

- Provide access to corporate intranet
- Provide access to Internet
- Protect investment in SNA network

### Solution:

- Communications Server for AIX installed on system with Web Server to provide Sockets over SNA
- Comm Suite installed on workstations to provide 3270 emulation, Web Browser, and Sockets over SNA
- Communications Server for AIX installed, providing Sockets over SNA Gateway for access to Internet



### Internet Access

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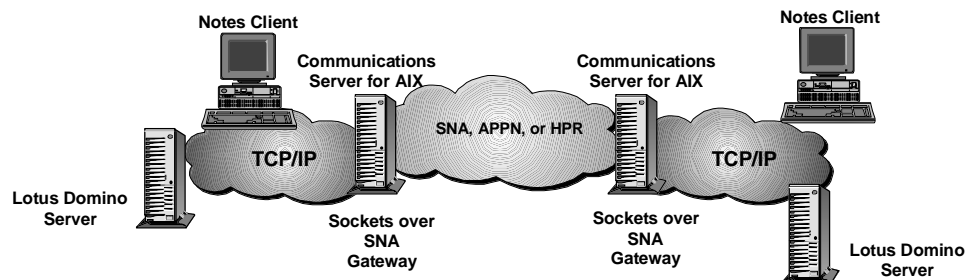
## Using your SNA or APPN network for connecting remote TCP/IP LANs

### Environment:

- Large, established SNA backbone network
- Departments use remote TCP/IP LANs for Lotus Notes

### Requirement:

- Notes clients need access to Notes databases on remote TCP/IP LANs



### Solution:

- Communications Server for AIX installed on each remote LAN providing paired Sockets over SNA Gateways, interconnecting the remote LANs using the SNA backbone

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## *Accessing SNA/APPN applications over TCP/IP backbone network*

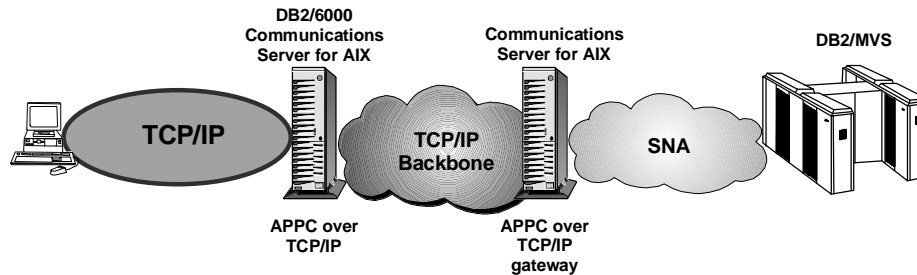
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### **Environment:**

- TCP/IP backbone network
- Distributed DB2/6000 environment

### **Requirement:**

- Remote TCP/IP LANs running DB2/6000 need APPC access to host DB2 data



### **Solution:**

- Communications Server for AIX installed on each remote LAN providing APPC over TCP/IP
- Communications Server for AIX installed at central site providing APPC over TCP/IP gateway to host

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## *Summary*

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### **Communications Server is 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 networks and vice versa
- 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

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## *Where to go for Additional Information*

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### ■ Collaterals

- G325-3572 Communications Server for AIX
- G325-3749 Ten Reasons to Buy CS/AIX

### ■ Application briefs

- G325-3655 Royal Bank of Trinidad and Tobago Branches Out
- G325-5102 Use your SNA or APPN network for intranet and Internet access
- G325-3650 Integrate SAP R/3 and your SNA or APPN network

### ■ Marketing CD-ROMS

- eNetwork On-Demand Education CD-ROM
  - Computer-based training
  - Not for Resale code
  - Comprehensive marketing resource

### ■ eNetwork Software Sales and Assessment Guides

- G325-3674 Solutions Guide
- G325-3675 / 3679 Solutions for Internet and Intranet Infrastructures
- G325-3676 / 3680 Solutions for Network Integration
- G325-3677 / 3681 Solutions for Any-to-Any Information Access

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## *Where to go for Additional Information (contd.)*

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### ■ Networking Software Opportunity Center (NSOC)

- eNetwork Software pre-sales support and assistance for IBM sales specialists
- Send requests to NSOC at IBMUS

### ■ World-Wide Web Home Pages

- <http://www.ibm.com> IBM Home Page
- <http://www.software.ibm.com/enetwork/> eNetwork Software Home Page
- <http://www.software.ibm.com/enetwork/commserver/> Comm Server Home Page

### ■ Redbooks

- SG24-2136 - *IBM eNetwork Communications Server for AIX: Understanding and Migrating to Version 5 Release 1*. Provides orientation for the new release, including performance and tuning information.

### ■ Forums

- URL: <http://www.ics.raleigh.ibm.com/csxtalk>

### ■ MKTTOOLS

- CSAIXMKT PACKAGE - marketing materials for CS/AIX

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