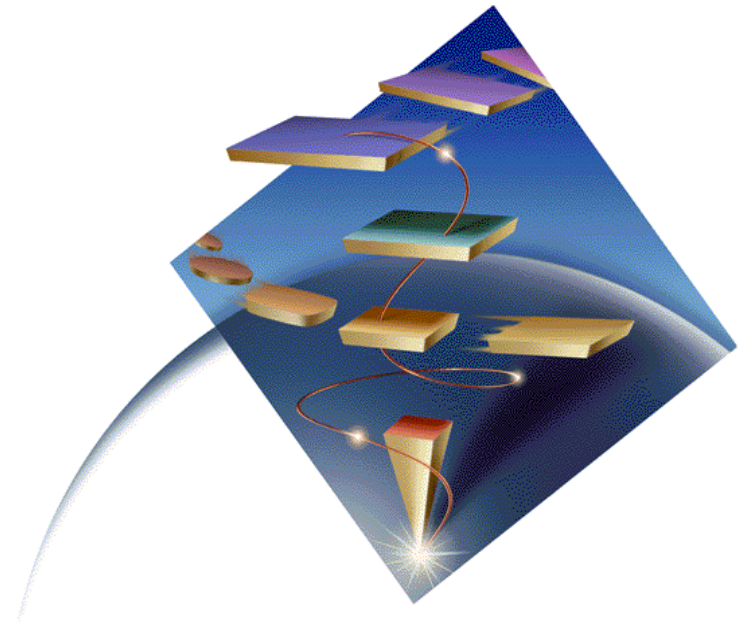


IBM eNetwork Communications Server for OS/2 WARP

Energize your business network



IBM Software

Abstract: Communications Server for OS/2 Warp

With the introduction of Communications Server for OS/2 Warp (CS/2), the next phase of IBM communications support is here! CS/2 is a high performance multiprotocol gateway, incorporating the comprehensive SNA support provided on Communications Manager/2 as well as several open advanced technologies:

- Dependent LU Requester (DLUR) allows your 3270 emulators and printers to take advantage of APPN networks**
- AnyNet supports diverse application and network environments, enabling cost-effective deployment of applications such as web browsers, Lotus Notes, and SAP R/3 over SNA, and database applications such as CICS and DB2 over TCP/IP**
- High performance routing (HPR) optimizes network availability and response time as well as supports network intensive applications**

CS/2 offers enterprises greater opportunities than ever to exploit the power of their networks and to increase significantly the efficiency and productivity of every desktop user. This session overviews CS/2 functions and configuration options, including customer solutions.

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The following are trademarks or registered trademarks of their respective companies:

Windows, Windows 95,
Windows NT

Microsoft Corporation

IPX, NetWare

Novell

Lotus Notes

Lotus Development Corporation

SAP R/3

SAP AG

Other products mentioned herein might also be trademarked by their respective companies.

The announcement and availability of referenced functions is within IBM's business and technical judgment.

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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 |
| DB2 | DataBase 2 |
| DCE | Distributed Computing Environment |
| DDCS | Distributed Database Connection Services |
| DLU | Dependent LU |
| DLUR | Dependent LU Requester |
| DLUS | Dependent LU Server |
| FTP | File Transfer Protocol |
| HPR | High Performance Routing |
| IMS | Information Management System |
| IPX | Internet Package Exchange |
| LAN | Local Area Network |
| LTLW | LAN to LAN over WAN |
| NetBIOS | Network Basic Input Output System |
| OS/2 | Operating System 2 |
| PCOMM | Personal Communications |
| SNA | Systems Network Architecture |
| SNMP | Simple Network Management Protocol |
| TCP/IP | Transmission Control Protocol/Internet Protocol |

IBM Software

Agenda

- **Introduction**

- Communications Server
- eNetwork Software
- Product Evolution
- Packaging

- **Key Functions**

- Connectivity
- SNA Gateway
- Integrated Multiprotocol Support
- Performance
- APIs
- Ease of Use
- Wide Area Support
- Other Enhancements

- **Prices**

- **Technical Assistance**

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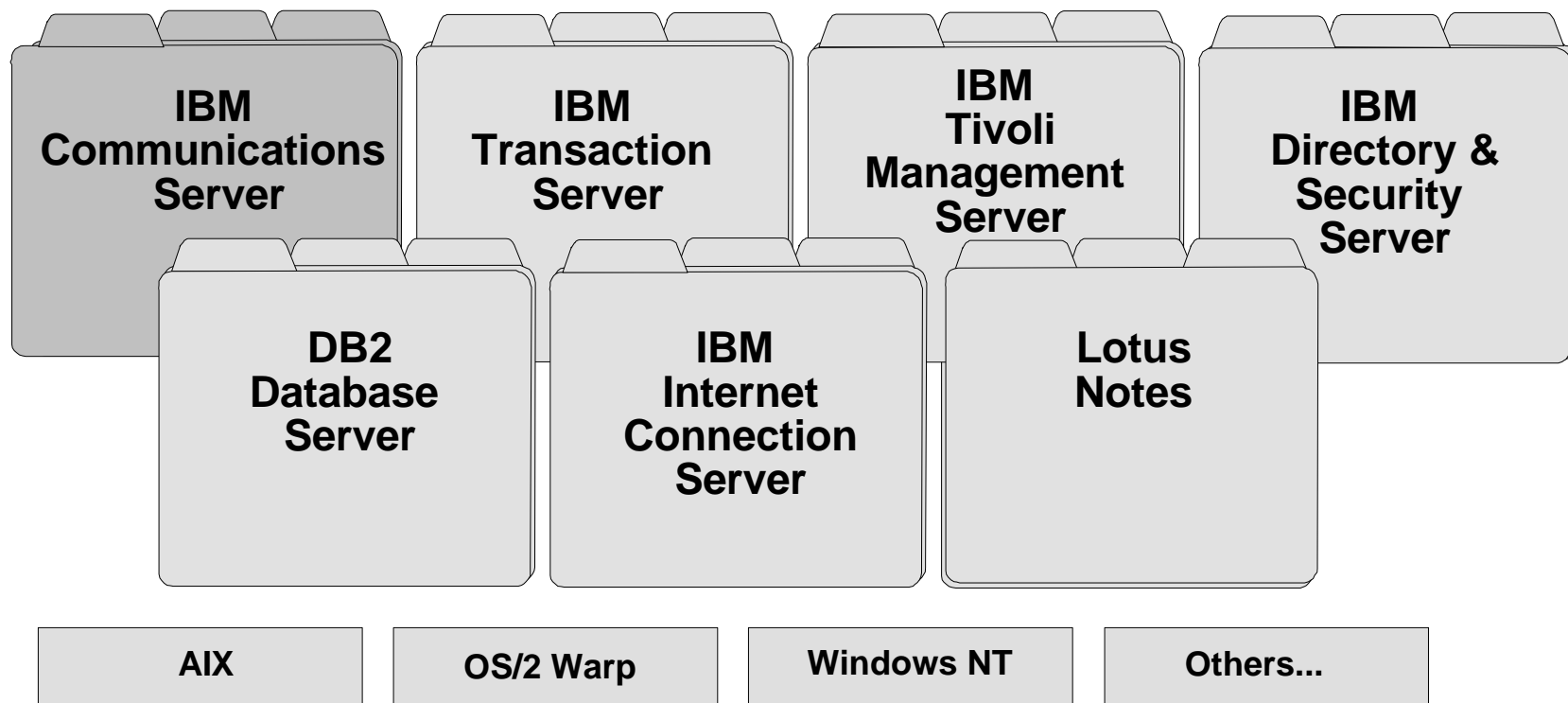
Today's networking challenges

- **The Internet, corporate intranets, network computing and eBusiness are completely reshaping business**
- ***Real Value* comes when these new concepts and technologies are combined with your traditional systems and applications**
 - Applications, data and resources can now be extended to reach employees, customers and partners virtually anywhere
- **Integrating new technologies and applications with existing infrastructure presents challenges:**
 - Access to host applications
 - Network integration
 - Interconnecting LANs
 - Mobile computing
 - Delivery of network computing applications

IBM Software

IBM Software Servers

- **The industry's most comprehensive software server family**
 - Seven modular application servers
 - Multiple platforms...the widest choice of operating systems & clients
 - Integration Tested



IBM Software

IBM eNetwork Communications Server

- **Enables workstations to communicate with other workstations as well as S/390 and AS/400 hosts**
- **Provides a powerful multiprotocol gateway, allowing SNA and Sockets applications to run unchanged over both SNA and TCP/IP networks**
- **Supports client server and distributed applications with Advanced Peer-to-Peer Networking (APPN) and a rich set of application programming interfaces**
- **Supports a broad range of wide area and local area network connections**
- **Protects investments in current applications and networks, while allowing for growth and change**

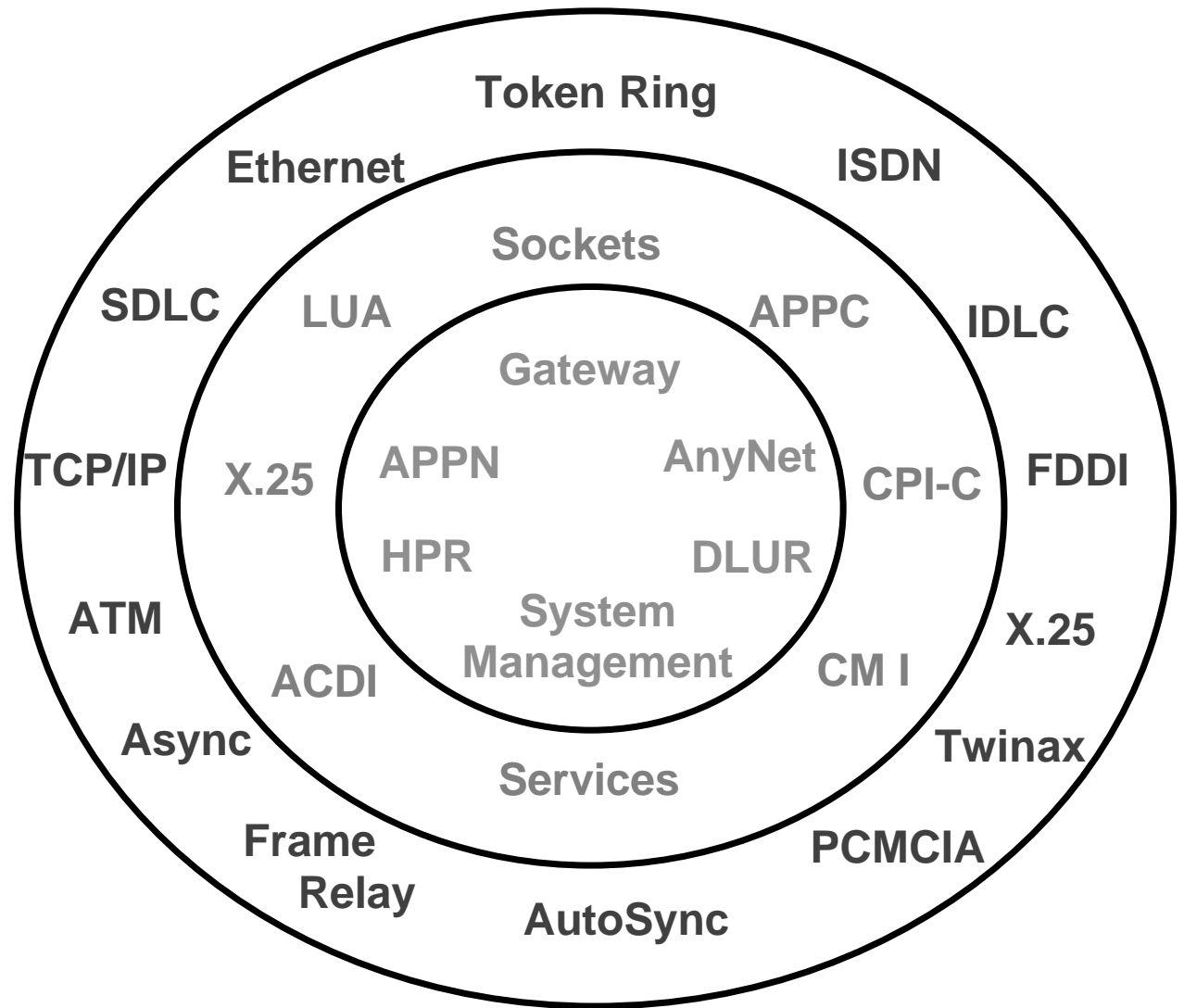
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Communications Server, a Complete Multiprotocol Engine!

✓ *Functions*

✓ *APIs*

✓ *Connectivity*



IBM Software

Communications Server: A Member of the eNetwork Software Family

- **The eNetwork Software Family is designed and built on the essential elements required to address enterprise networking needs**
 - Enterprise-class dependability
 - End-to-End universal access
 - Easy implementation and use
 - Effective network utilization

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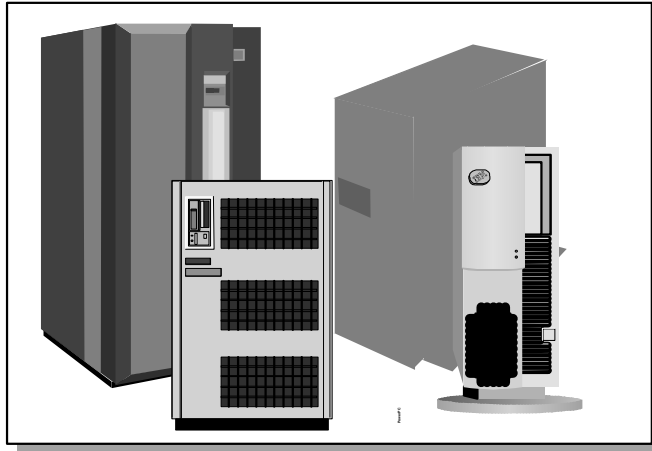
IBM eNetwork Software

- **A full range of industry-leading client and server networking software products:**
 - Communications Servers
 - Communications Clients
 - Wireless communication
 - And soon... the next generation of products providing Java application services and mobile computing support

- **Combines IBMs' expertise in delivering industrial-strength solutions with the latest technologies to provide open solutions**

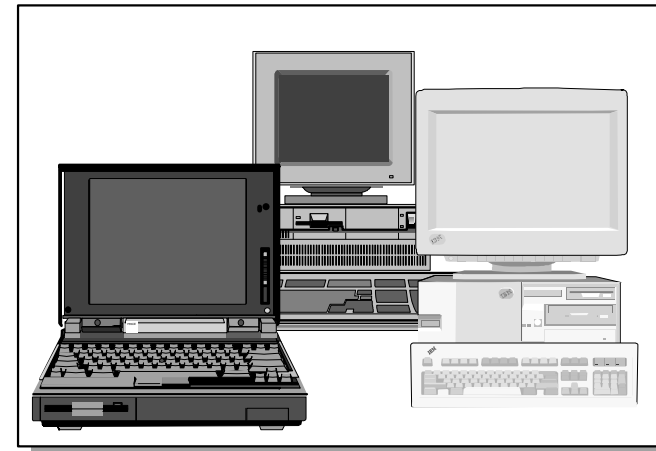
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The IBM eNetwork Software



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 (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
CS/2 Access Feature for Windows
Internet Connection for Windows
Communications Suite
Host On-Demand
ARTour Emulator Express

IBM Software

. . . 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 deploying 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**

Product Evolution: Existing Desktop Communications Products

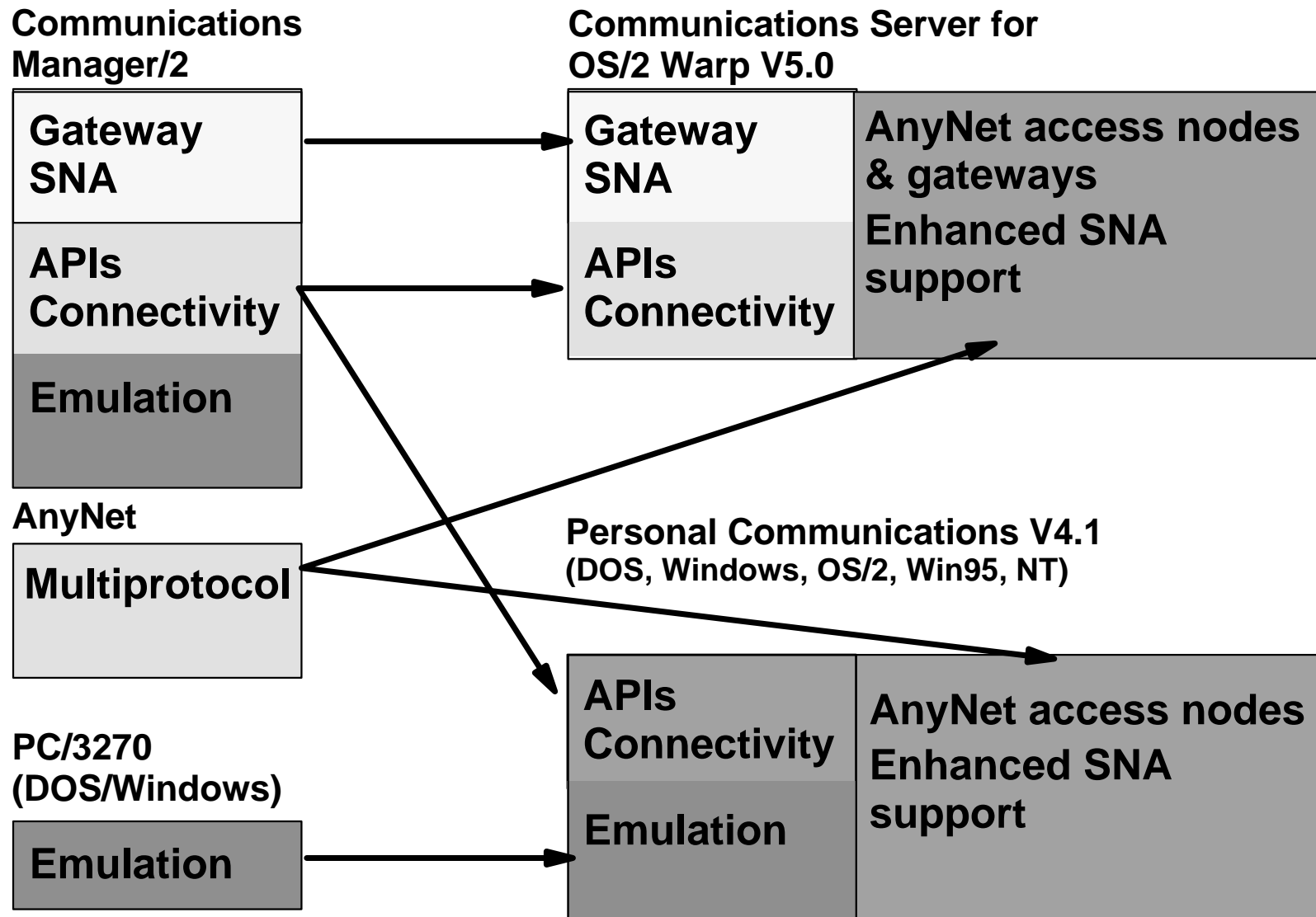
- **Communications Manager/2 V1.11**

- **Personal Communications Offerings**
 - DOS/Windows
 - PCOMM/3270 V4.1
 - PCOMM AS/400 V4.1
 - PCOMM Toolkit for Visual Basic OS/2
 - PCOMM/3270 V4.1
 - PCOMM AS/400 V4.1

- **AnyNet**
 - AnyNet/2 V2.0.2
 - AnyNet SNA over TCP/IP Gateway for OS/2 V1.0
 - AnyNet/2 Sockets over SNA Gateway V1.1.6
 - AnyNet APPC over TCP/IP for Windows

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Product Evolution: *Simpler and More Flexible*



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Consultant Quotes

"What IBM is offering is more robust and tailorable to specific solutions than Microsoft's products are."

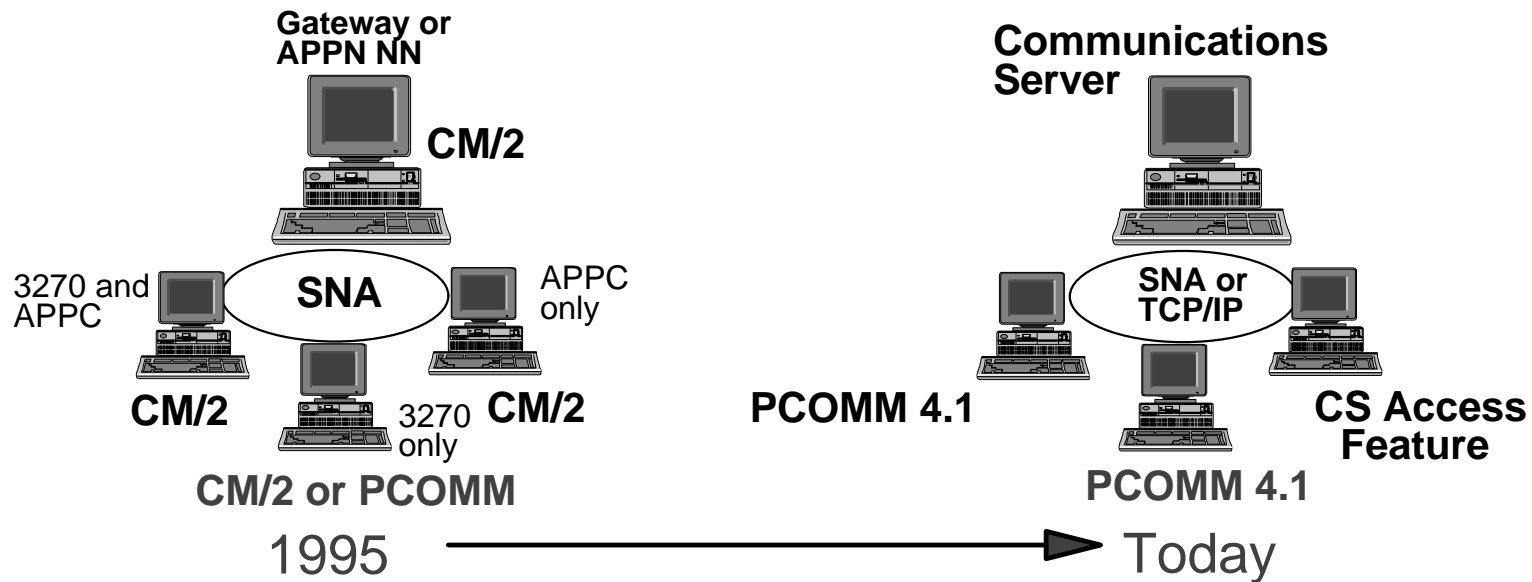
***Frank Dzubeck, President
Communications Network Architects, Inc.
Network World, March 25, 1996***

"Basically (the integration) is a good thing because Communications Manager is something that sells well into the mainframe enterprise and AnyNet is an enabler that will enrich the product."

***Elisabeth Rainge, Analyst
International Data Corporation
Infoworld, February 19, 1996***

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Communications Server for OS/2 Warp V5



- **Server is multifunction gateway**
 - Much more than simple CM/2 repackage
 - One time charge; no per-seat or per-session charges
 - Continued gateway support for DOS, Windows, Windows 95, Windows NT, Apple SNA, NW for SAA, etc.
- **OS/2 and Windows 3.1, NT, 95 Access Features included**
 - Optionally installable; separately priced
 - OS/2: APIs, LAN and WAN connectivity, multiprotocol support
 - Windows: APPC APIs and APPC multiprotocol support
- **PCOMM clients available separately**

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New, All-in-one Packaging

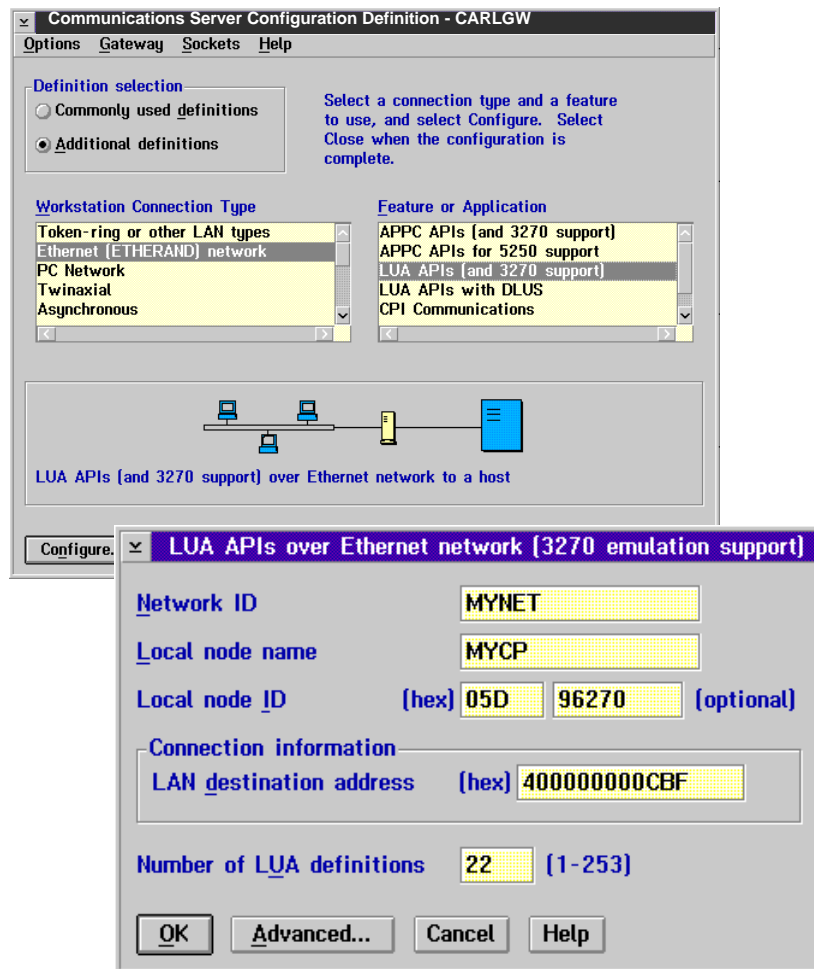


- **Host On-Demand for browser-based access to enterprise data and applications**
- **All server installation files**
- **All adapter and protocol configuration (LAPS) files**
- **All client Access Features**
- **Entry PCOMM for server administration**
 - AS/400 and 3270 Entry Level
- **Development tools, APIs, and samples**
- **Complete online documentation in .INF, Book and LIST3820**
- **Web Administration Console**

Single CD-ROM for server and client installation

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Simplified, Graphical Configuration



- Graphical interface with configuration examples to reduce training
- Multiple modes accommodate beginner to expert
- Integrated help
- Hardware provides self-discovery

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Key Functions

■ **Connectivity**

- SNA access from Java-enabled browsers (New)
- Frame Relay support integrated

■ **SNA Gateway**

- Branch Extender increases reach of APPN networks (New)
- Dependent LU Requester (DLUR)
- Self-defining Dependent LUs (SDDL U)
- Backup Link

■ **Integrated Multiprotocol Support**

- Sockets over SNA
- SNA over TCP/IP
- LAN Gateway (IPX & NetBIOS)
- TN3270E Server

■ **Performance and Reliability**

- Data Compression
- SNA Transmission Priority
- High Performance Routing

■ **Ease of Use**

- Web-based server administration (New)
- Support for Windows 95 and Windows NT access feature (New)

■ **Wide Area Support**

- MultiLink Transmission Group feature allows more cost effective use of network resources (New)
- HPR over wide area (New)

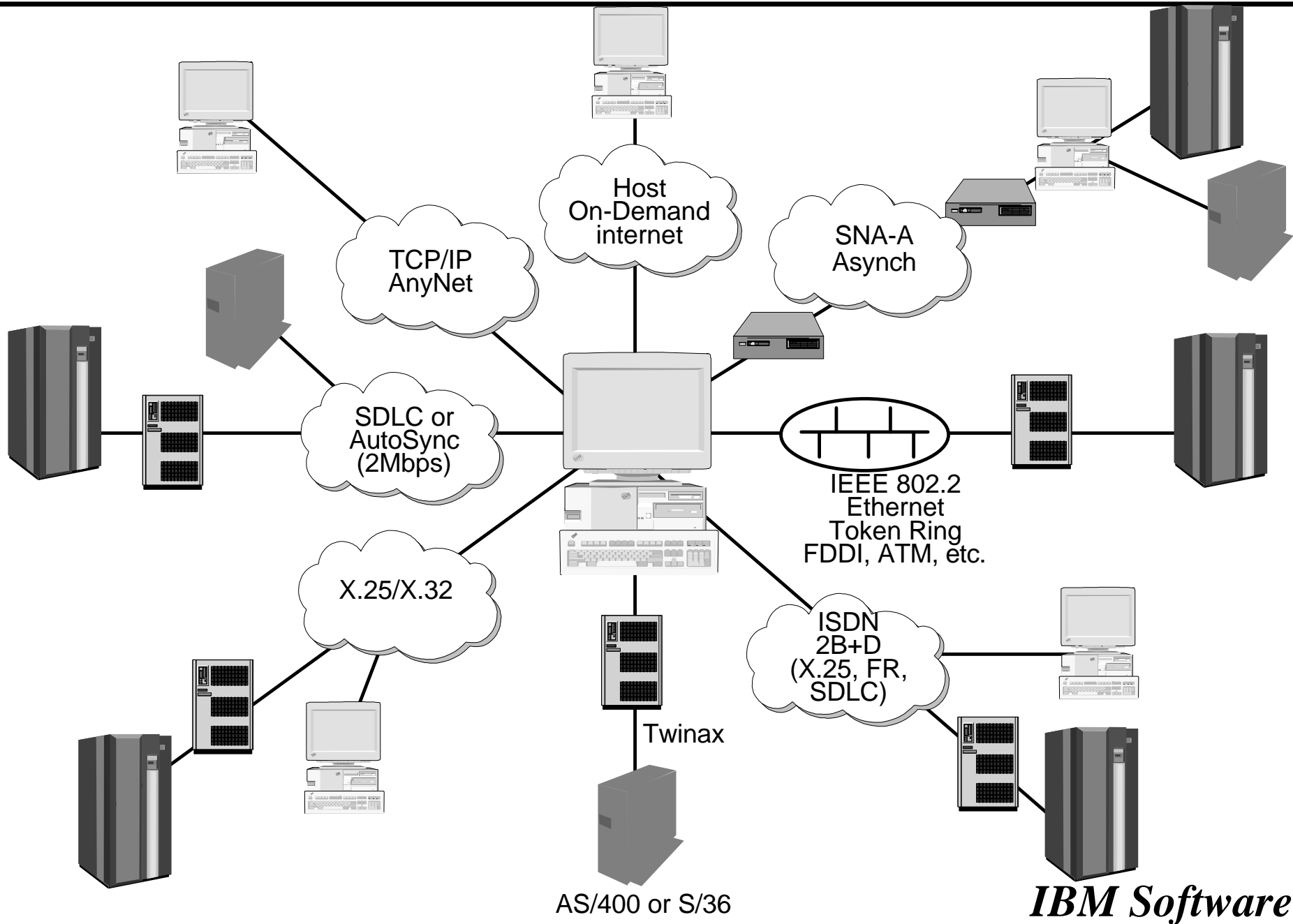
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Connectivity Support

- **OEM WAN card support (e.g. Eicon, MicroGate, Synaptel, ARN Informatique)**
- **Frame Relay Support**
 - Integrated part of RouteXpander/2
- **High Speed SDLC**
 - At least 1 SDLC line at T1/E1 speed (2Mbps) supported over WAC adapter
 - Remote servers can be accessed with nearly same throughput as local servers
- **Full-duplex data transmission mode**
 - 2-way simultaneous transmission supported on all SDLC connections provides improved performance and better line utilization
- **Additional SDLC lines**
 - Number of SDLC lines supported increased from 2 to 16, in any mix of upstream and downstream lines
- **Multipoint primary support**
 - Support for up to 16 downstream multipoint SDLC lines
- **ARTIC as multiple port adapter**
 - ARTIC NDIS MAC provided to allow CS/2 to support ARTIC Portmaster type adapters

IBM Software

Connectivity Anywhere

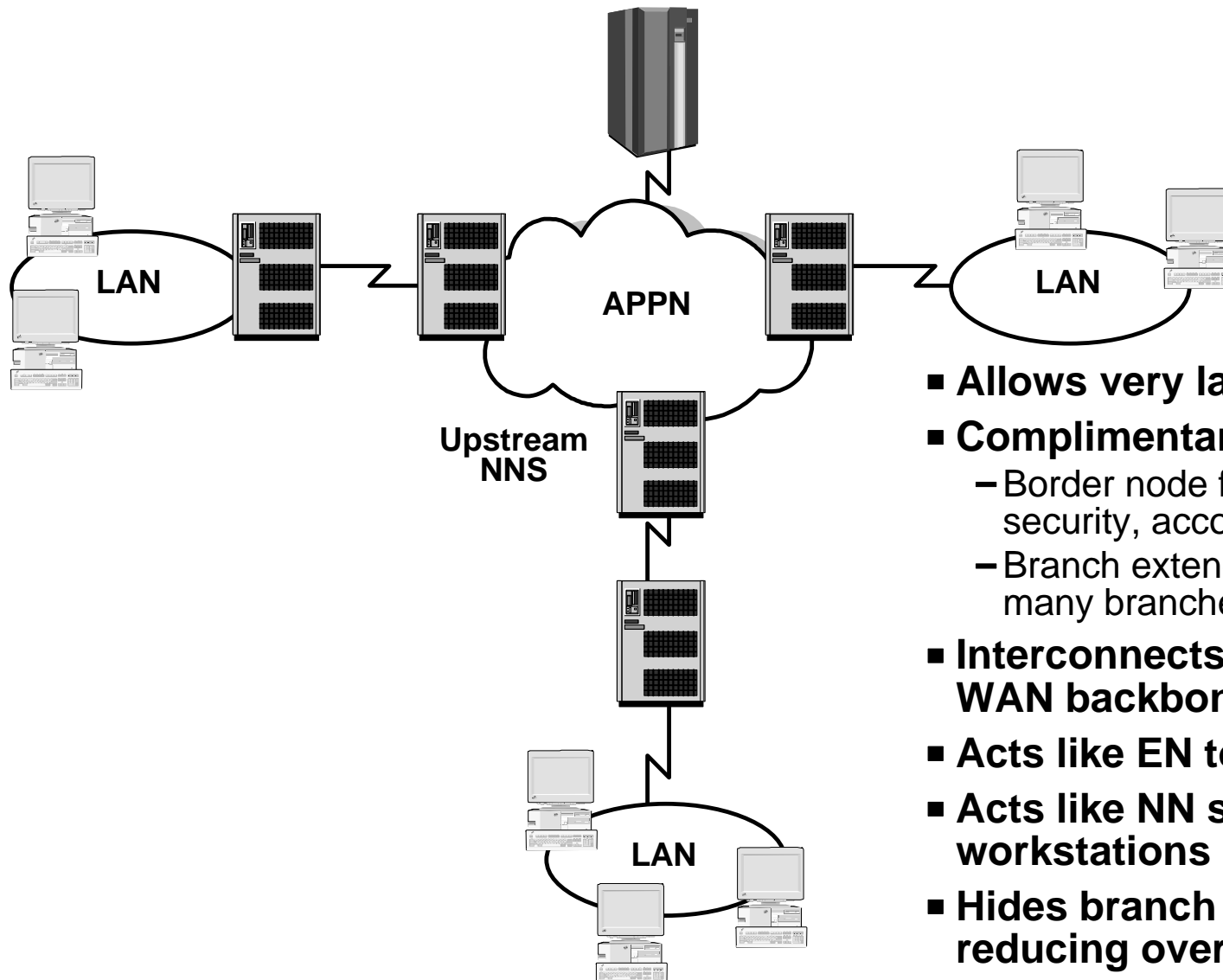


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SNA Gateway

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Branch Extender

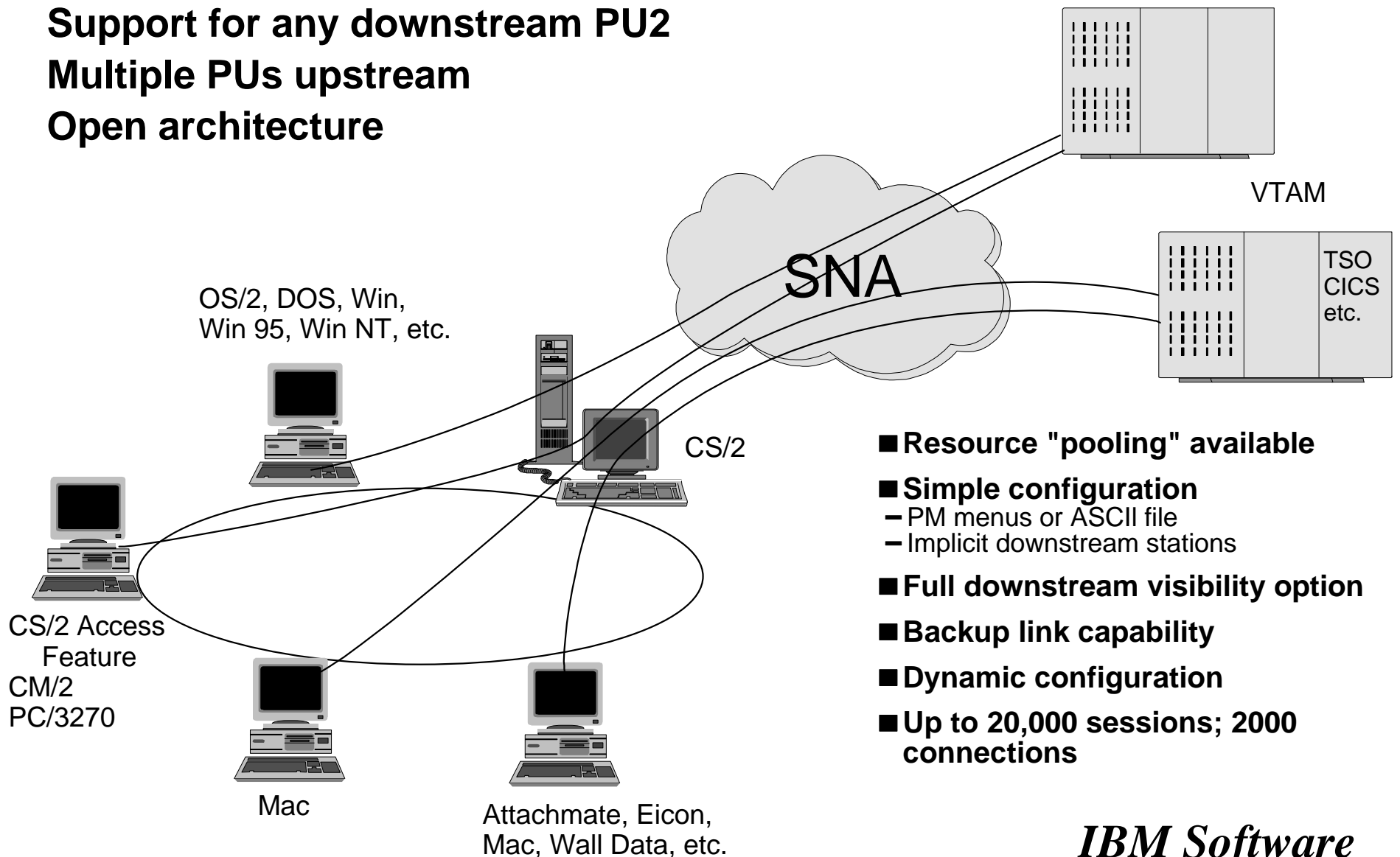


- **Allows very large APPN networks**
- **Complimentary to border node:**
 - Border node for large intranets requiring security, accounting
 - Branch extender for large intranets with many branches
- **Interconnects branch sites to APPN WAN backbone**
- **Acts like EN to APPN backbone**
- **Acts like NN server to branch workstations**
- **Hides branch topology from Wan, reducing overhead on WAN traffic**

IBM Software

SNA Gateway

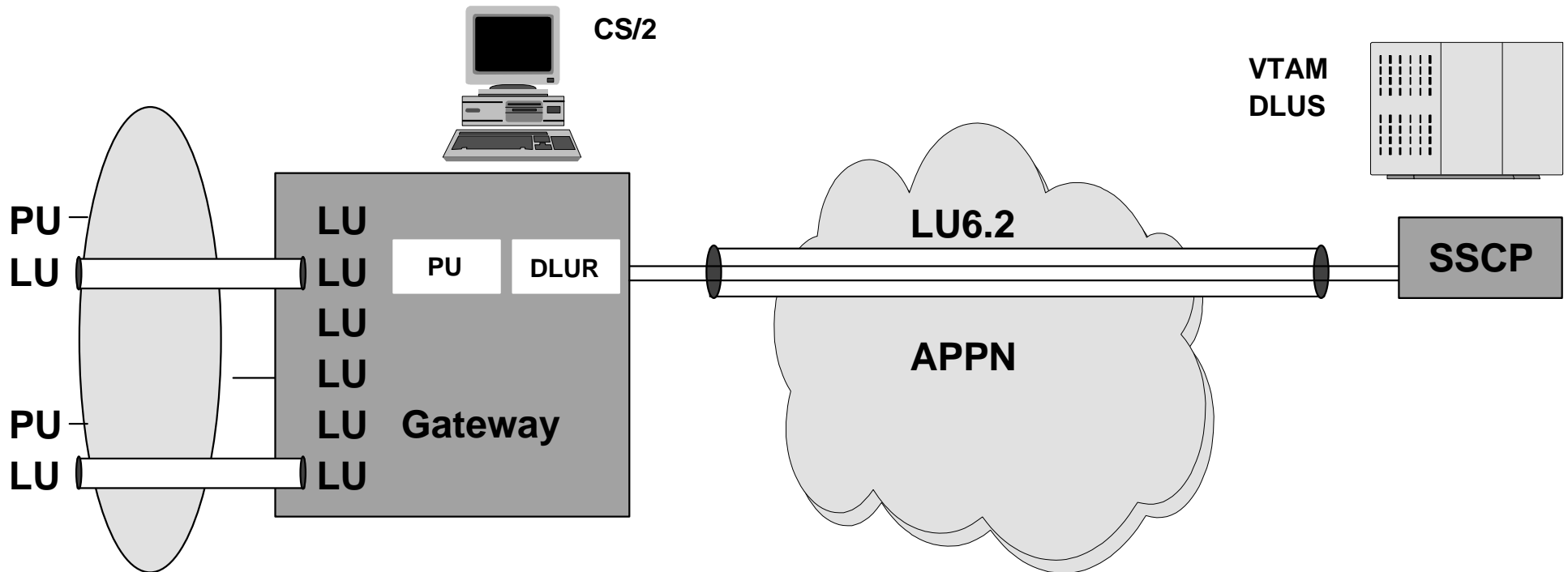
Support for any downstream PU2
Multiple PUs upstream
Open architecture



- **Resource "pooling" available**
- **Simple configuration**
 - PM menus or ASCII file
 - Implicit downstream stations
- **Full downstream visibility option**
- **Backup link capability**
- **Dynamic configuration**
- **Up to 20,000 sessions; 2000 connections**

IBM Software

Dependent LU Requester in SNA Gateway



■ Before DLUS/R:

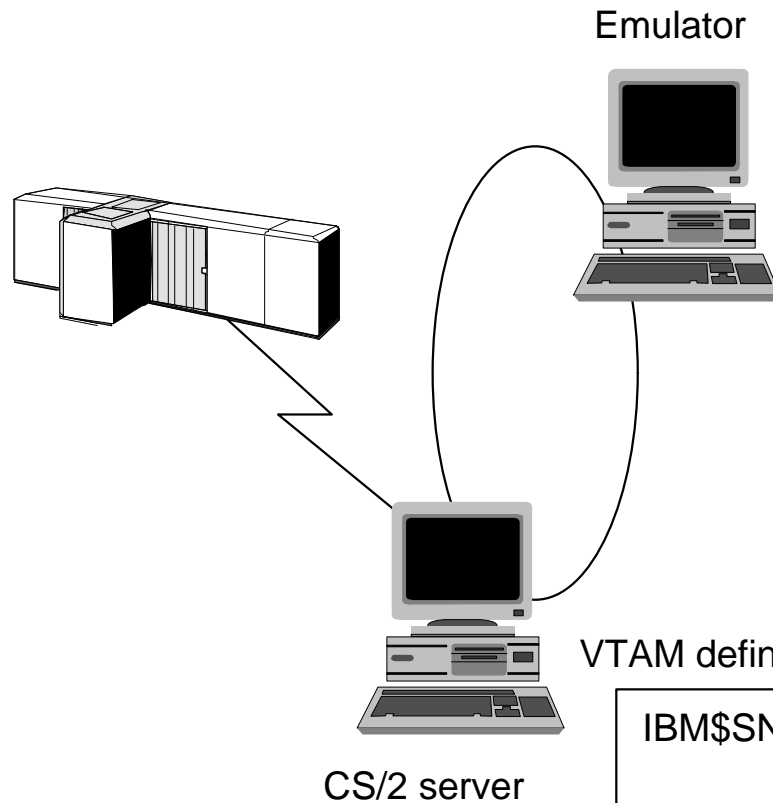
- Node with dependent LU had to be adjacent to subarea boundary node, and needed subarea connectivity to owning SSCP

■ With DLUS/R:

- Full 3270 support over APPN
- SSCP-PU and SSCP-LU sessions encapsulated in LU6.2 session
- LU-LU sessions benefit from dynamic routes with APPN optimization
- Link sharing for multiple PUs lifts 254 LU limit
- Downstream PU visibility

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Greatly Simplified Administration With Self-defining LUs



VTAM definitions using SDDL

```
IBM$SNA PU ADDR=C1
                LUSEED=LUX
3278@  LU
```

VTAM definitions before SDDL

```
IBM$SNA  PU  ADDR=C1
LU1      LU  LOCADDR=02
LU2      LU  LOCADDR=03
LU3      LU  LOCADDR=04
LU4      LU  LOCADDR=05
          :
          :
          :
```

■ **Dynamic Definition of Dependent LUs (DDDLU) is a VTAM exit**

■ **CS/2 supports Self-Defining DLU**

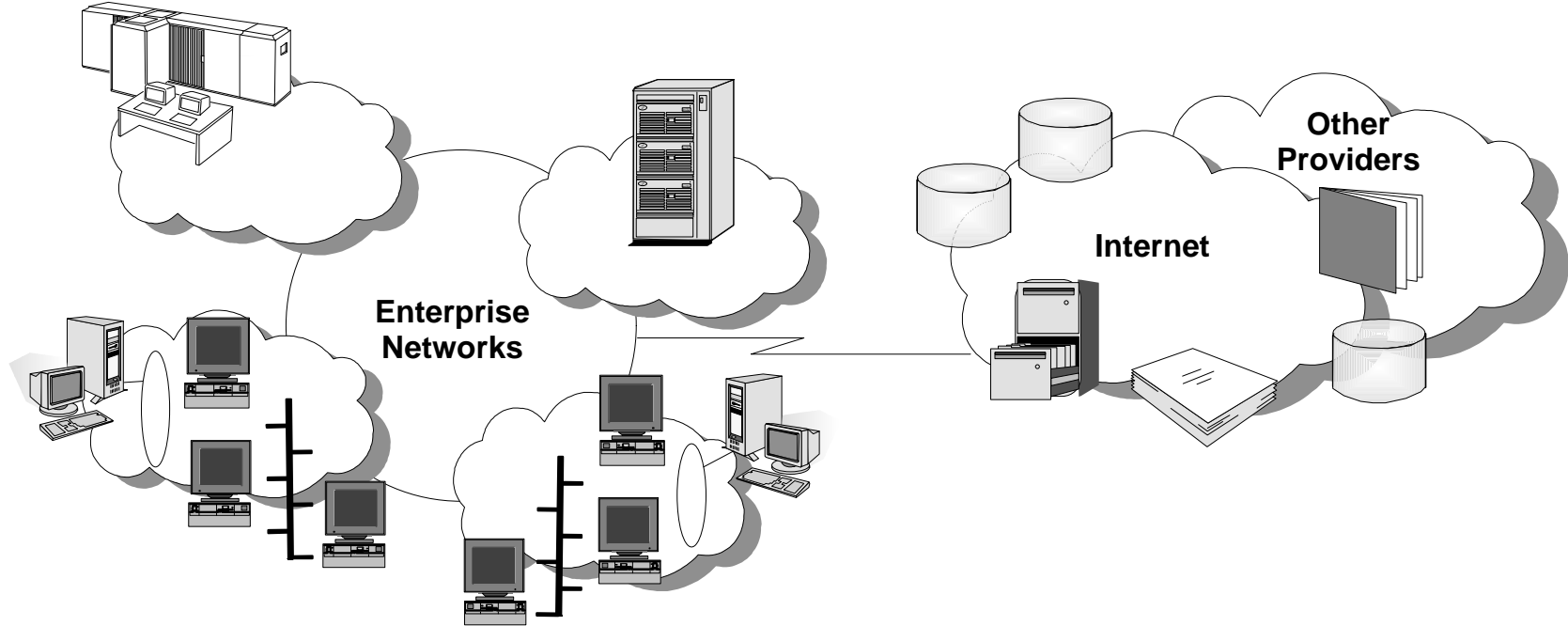
- Fewer VTAM definitions
- CS/2 tells VTAM the number/type of LUs needed when the line is started
- Minimizes resources allocated; all changes dynamic

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Integrated Multiprotocol Support

IBM Software

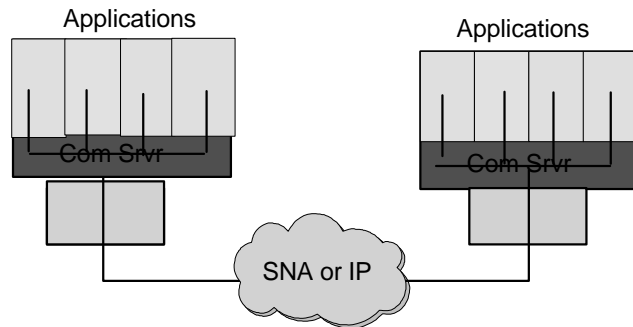
AnyNet: Application Choice, Network Independence



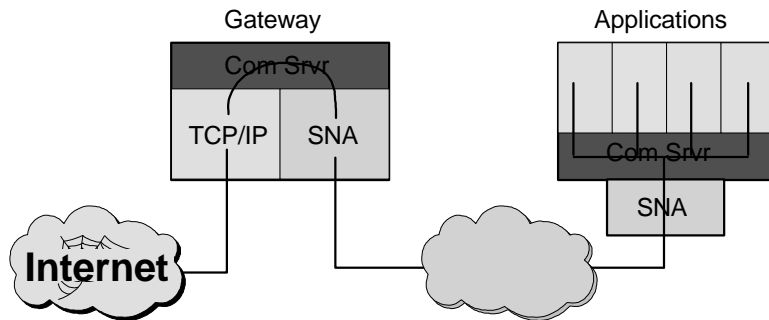
- Sockets over SNA and SNA over TCP/IP access nodes and gateways
- Lan Gateway (IPX and NetBios) running over SNA or TCP/IP WANs
- Add new applications without network constraint
- Extend reach of applications across connected networks
- Reduce costs by consolidating and simplifying multiprotocol networks
- Manage single backbone protocol
- Leverage existing applications

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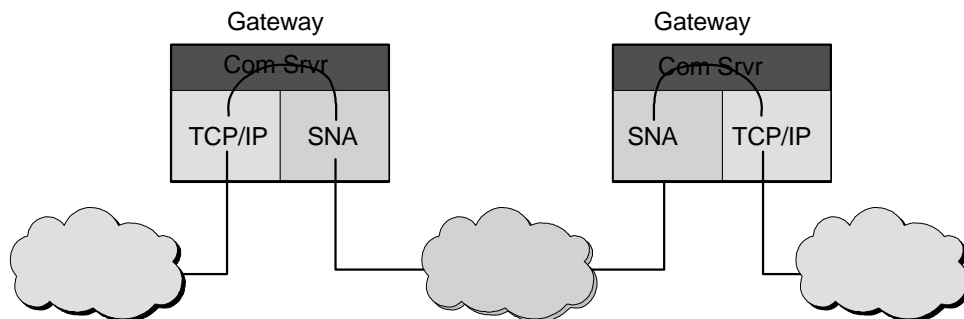
Advanced Multiprotocol Support



Access node: Supports nonnative application



Single gateway: Joins 2 unlike networks

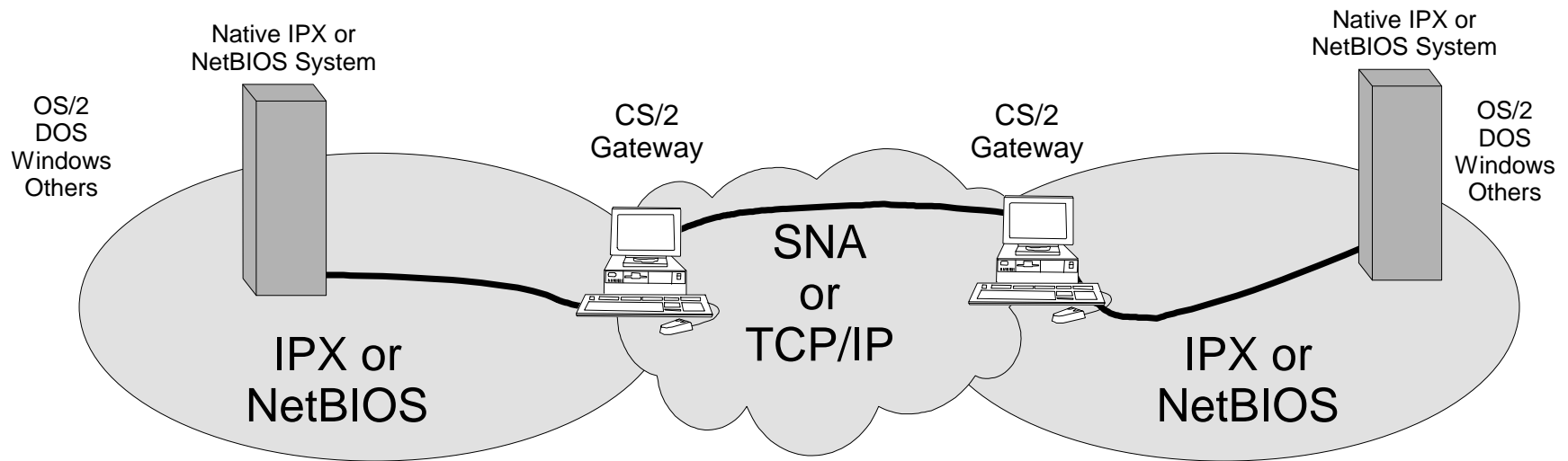


Paired gateways: joins two like networks with unlike backbone

- **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**
- **Award-winning, standards-based, software solution**
 - Compensates for differences in protocols
 - Solutions for SNA, TCP/IP NetBIOS, and IPX

Data Comm
MAGAZINE
*Hot
Products*
IBM Software

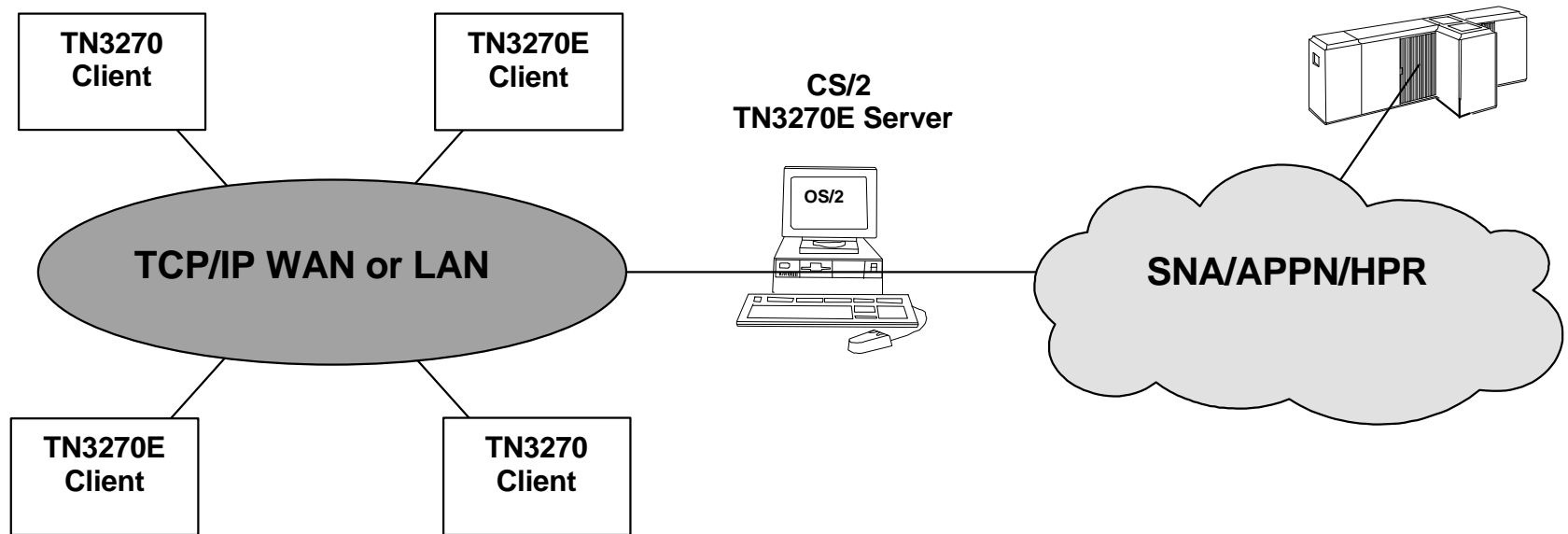
IPX/SNA, NB/SNA, IPX/IP, NB/IP Gateways



- **IPX over SNA Gateway and NetBIOS over SNA Gateway**
 - Compatible with LAN to LAN over WAN (LTLW) and 2217 Multiprotocol Concentrator
- **IPX over IP Gateway and NetBIOS over IP Gateway**
- **Protects SNA and IP backbones by filtering IPX and NetBIOS broadcasts and caching names**

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TN3270E Server

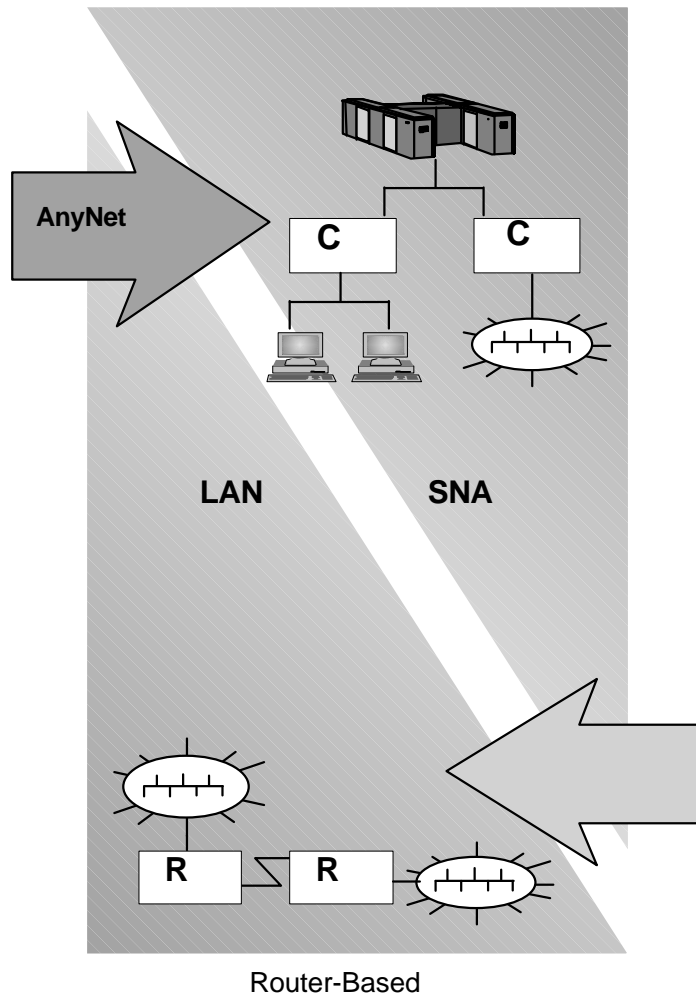


- **Supports traditional TN3270, RFC1646, RFC1647**

- No IP on host
- No SNA on workstations
-
- LU1, LU2, and LU3 devices
- LU name assignment
-
- SNA response handling

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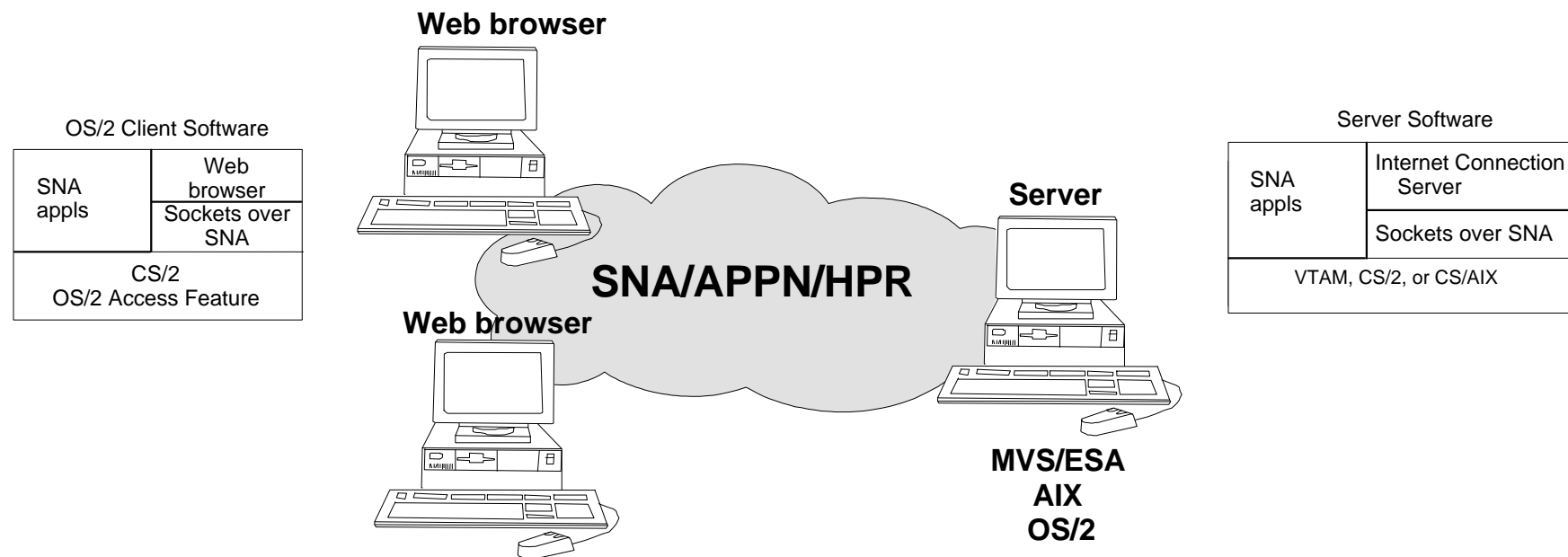
Multiprotocol Concentration Advantages



- **Single backbone protocol concentration eliminates complexity of multiple protocol stacks**
- **No modifications to applications**
- **Non-SNA applications running over SNA benefit from SNA networking features:**
 - cost-effective bandwidth utilization
 - predictable response times
 - traffic prioritization
 - data compression
 - high performance routing
- **Non-TCP/IP applications running over TCP/IP benefit from TCP/IP networking features:**
 - router-based networks
 - access to worldwide Internet

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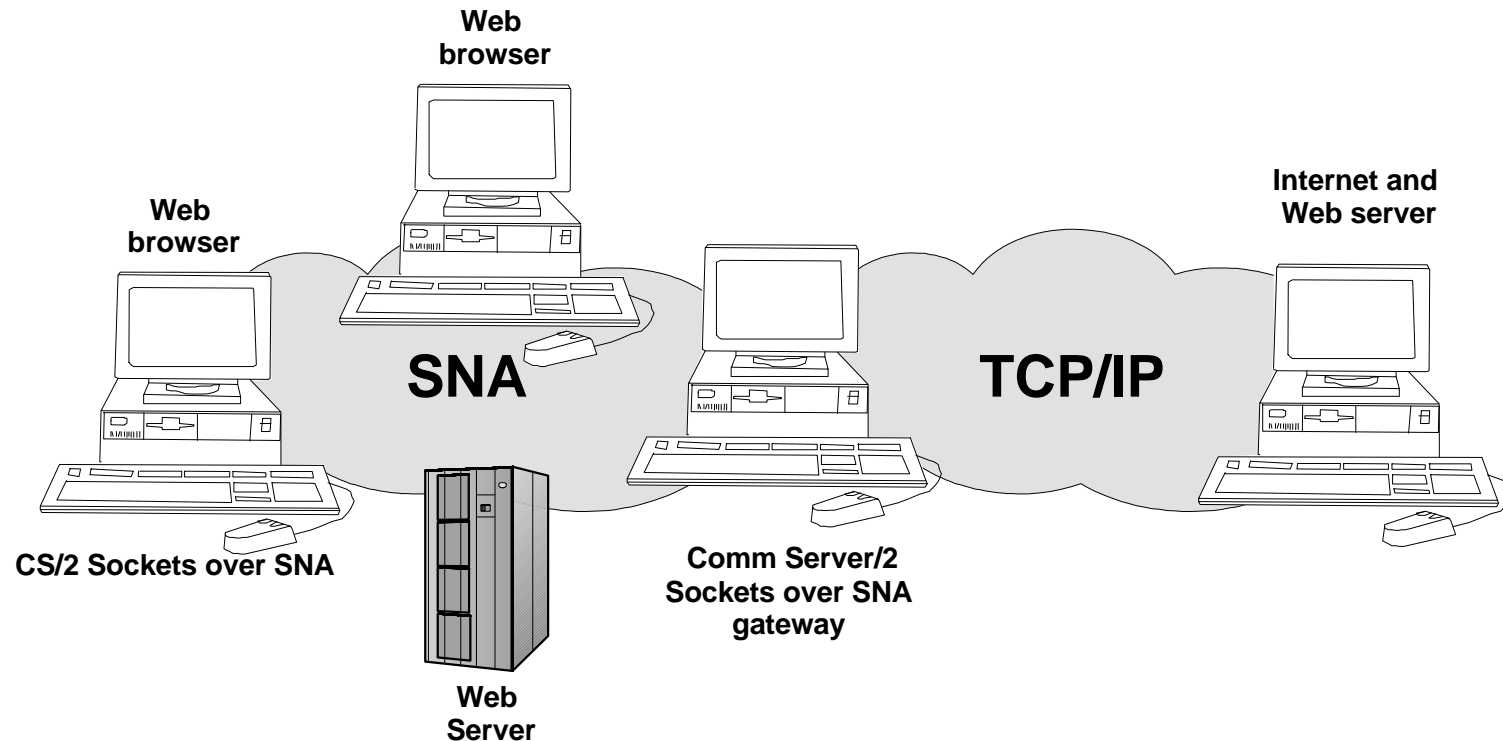
Sockets over SNA - Intranet



- Web browser and server applications run on SNA/APPN network
- No separate TCP/IP communications stack on workstations or server
- Collaborative development of hypermedia for internal web site
- Access Internet applications from existing network without expanding network support

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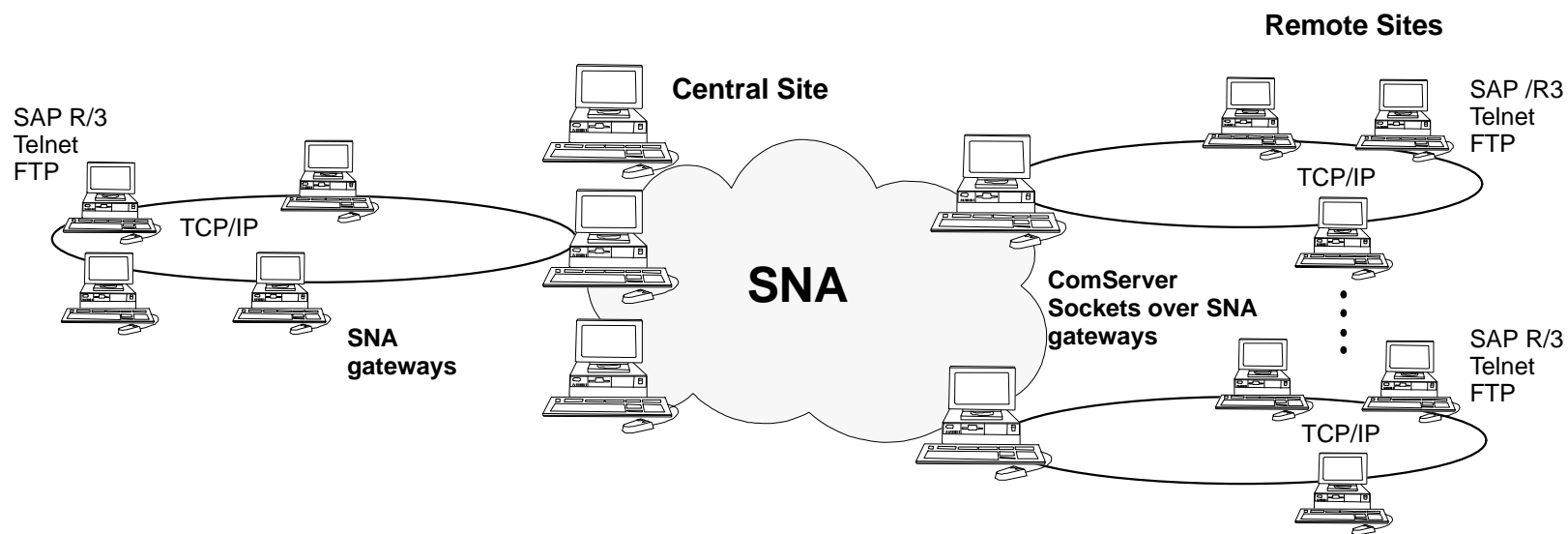
Browse WWW from Your SNA Workstation!



- **SNA end-users access Internet via web browsers while staying connected to SNA network**
- **Internet users can access Web server in SNA network**
- **Other sockets apps can be used in same configuration: eg. FTP, Telnet, SAP R/3, DCE, SNMP, Lotus Notes**

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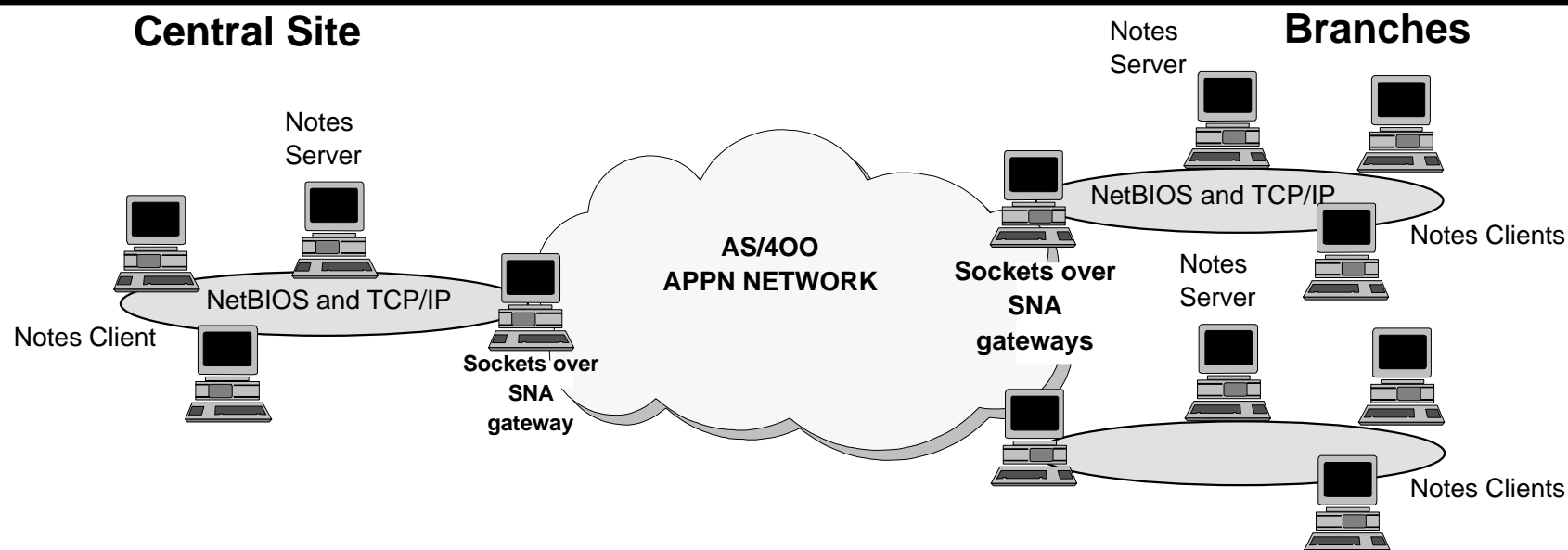
Sockets over SNA Gateway



- Multiple gateways at central site
- Load balancing and backup among gateways
- Remote locations can use SNA backbone to access Sockets applications
- Sockets over SNA Gateway can use existing SNA links and take advantage of SNA COS and data compression
- No new hardware and no application modifications
- Up to 2,000 connections per gateway

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Zahid Tractor Implements Lotus Notes over APPN



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 for OS/2 Warp #BATCH class of service used for Notes traffic so 5250 traffic is not impacted

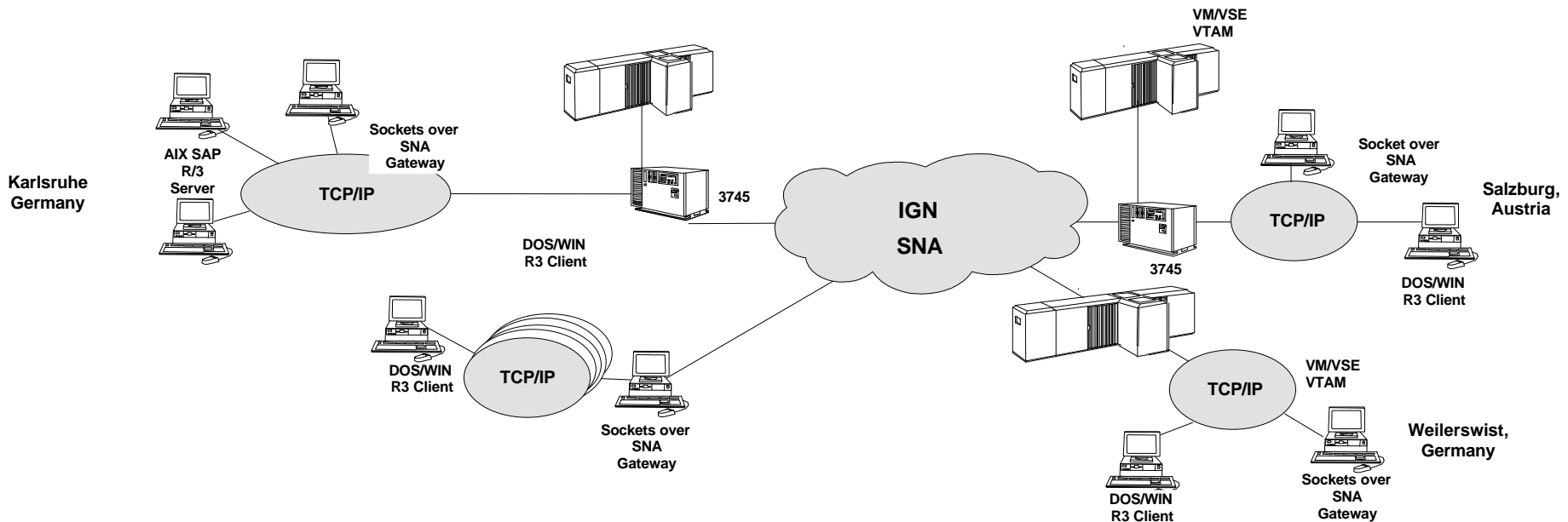
Benefits: Freedom to use TCP/IP-based Internet applications while benefitting from SNA/APPN bandwidth utilization, traffic prioritization, etc.
No need to upgrade or disrupt existing network

Application brief: G325-3648

URL: <http://www.networking.ibm.com/eNetwork/sszahid.html>
<http://www.software.ibm.com/is/sw-servers/communications/cmssuc03.html>

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Customer Scenario - Filiadata: SAP R/3 over SNA



Application brief: G325-3624

Company: Filiadata, computer service center of Drogeriemarket in Germany

Environment: IP-based operations in various locations in Austria, Germany, and Hungary

Requirement: Enable access to SAP R/3 server in Karlsruhe from SAP R/3 clients in numerous remote IP offices

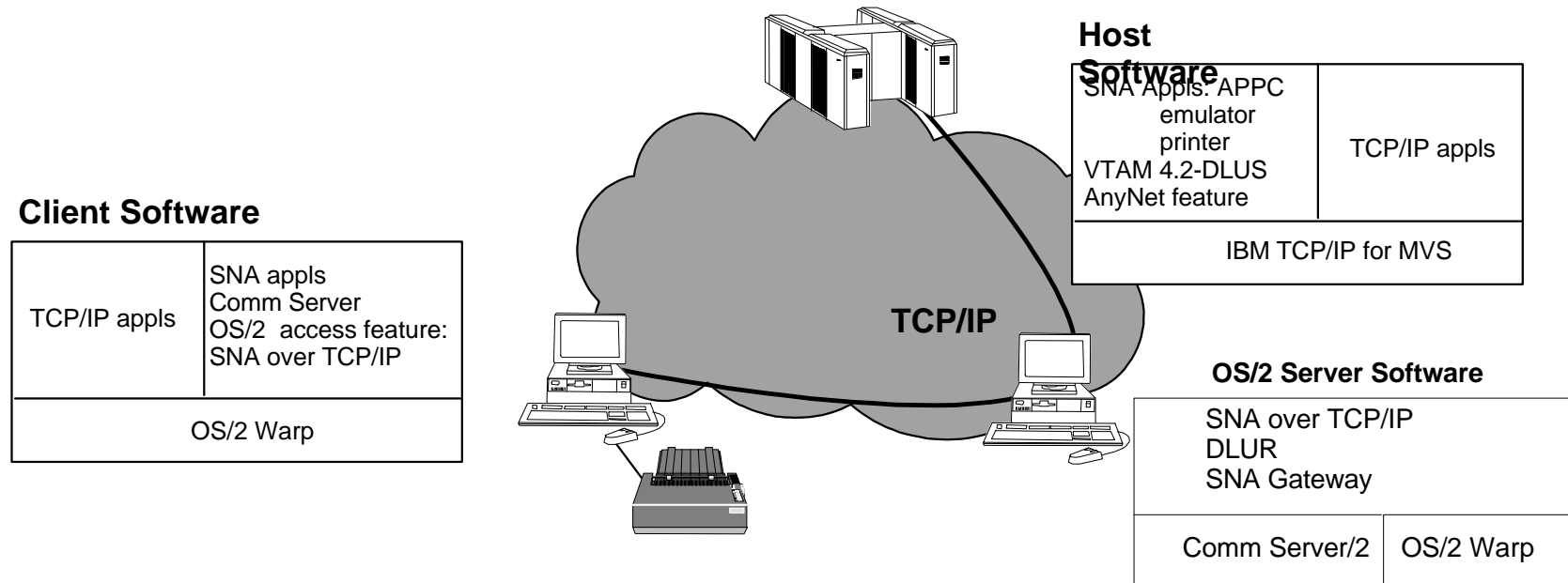
Solution: Paired Sockets over SNA Gateways (available in Communications Server for OS/2 Warp) to connect remote store over IBM Global Network to SAP R/3 server site

Clients on IP LANs can access SAP R/3 server over IGN

Benefits: Traffic prioritization for SAP R/3

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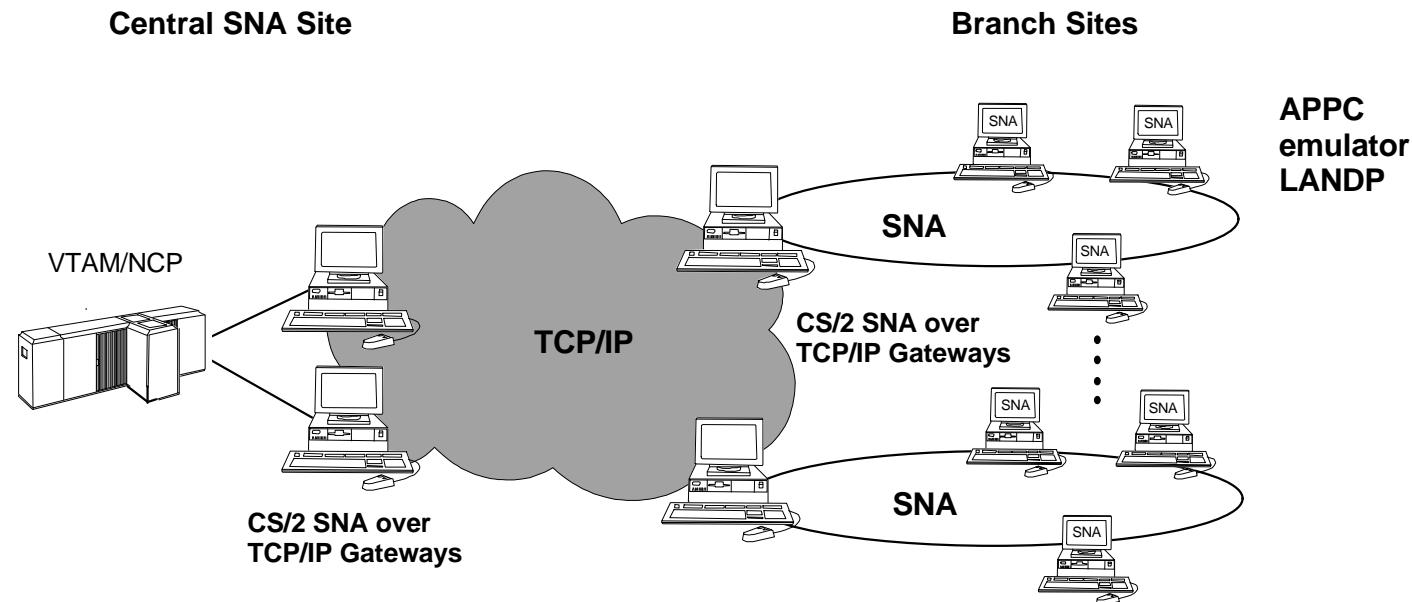
SNA over TCP/IP



- **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 Comm Server/2
- **Clients can access SNA and TCP/IP applications**

IBM Software

SNA over TCP/IP Paired Gateways



- **Gateway supports 1500 connections**
- **Parallel gateways at central site support large number of connections**
- **SNA traffic carried over IP using standards based protocol conversion, not DLSW or encapsulation**
- **All SNA applications supported with no change: APPC, printers, emulators**

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Customer Quotes

"By simply deploying a few OS/2 gateways with Sockets over SNA multiprotocol function, we Internet enabled our whole SNA community."

*Hussein Tarhini, Technical Support Manager
Zahid Tractors and Heavy Machinery*

"With Communications Server, our existing SNA application remained accessible to end users over our IP router network, with no modification to the application. Routing traffic, rather than bridging it, resulted in easier management and more control. And our line costs are significantly reduced as the result of our network consolidation."

*Juan Miqueli, Technical Specialist
Turner Broadcasting System*

"We can enjoy all the benefits of a single SNA APPN backbone and feel that we can accommodate major protocols, such as TCP/IP, NetBIOS, and IPX, if we need them."

*George Sarkis, Data and Communications Manager
Bank al Jazira*

" I am particularly pleased that IBM can multiprotocol our SNA network in such a non-disruptive manner. We were able to implement the Sockets over SNA gateway 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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Customer Quotes

"The performance was more than acceptable. We couldn't detect any difference between the standalone network that they were using and AnyNet in the middle sending APPC data across TCP/IP. Our users didn't even know that AnyNet was running. So, the transparency was more important than anything. They didn't want to have to go through a lot of changes to make their applications work. Since they didn't have to, they were very happy."

*Charles Hights, Senior Systems Analyst
Pacific Bell
Software Quarterly, Volume 3 - Number 1*

"We see HPR and AnyNet as a way to easily converge multiprotocol traffic onto the APPN backbone we are currently building."

*David Mayhew
Royal Bank of Canada*

"IBM's solution gave us the ability we needed to make the application decisions independently from existing network protocols so we could install SAP R/3."

*Mr. Mueller, Network Administrator
Filiadata*

"We are very satisfied with the response time and throughput of running SAP R/3 over SNA. Users at our store locations are taking advantage of the ability to use SNA's class of service (COS) for TCP/IP traffic prioritization."

*Mr. Roman Melcher, Department Manager, Production Systems
Filiadata*

IBM Software

Multiprotocol Customer References

APPC over TCP/IP

Caisse Nationale de Credit Agricole, France

- Industry
- Products
- Key applications:

banking
AnyNet/MVS and AnyNet/6000
DB2 on MVS and DDCS/6000

Chevron

- Industry:
- Products:
- Key applications:

petroleum
AnyNet/2
DB2/2

Pacific Bell

- Industry:
- Products:
- Key Applications

telecommunications
AnyNet/MVS, AnyNet/2, AnyNet/6000
DB2, DB2/6000, X: Change

Tennessee Valley Authority

- Industry
- Products:
- Key applications:

utilities
AnyNet/MVS and AnyNet/2
DB2, CICS

Turner Broadcasting System

- Industry:
- Products:
- Key application:

communications
Communications Server for OS/2 Warp, OS/2 Access Feature
International Shipping and Inventory System (DB2/2 - based)

US Postal Service

- Industry:
- Products:
- Key applications:

communications
AnyNet/2
XCOM from Legent, DCAF

Sockets over SNA

Bank al Jazira, Saudi Arabia

- Industry:
- Products:
- Key applications:

banking
AnyNet/2 Sockets over SNA Gateway
SNMP, Telnet, FTP

Filiadata, Germany

- Industry:
- Products:
- Key application:

communications
AnyNet/2 Sockets over SNA Gateway
SAP R/3

Zahid Tractors and Heavy Machinery Co. Ltd, Saudi Arabia

- Industry:
- Products:
- Key Applications

distribution
AnyNet/2 Sockets over SNA Gateway
Lotus Notes

NetBIOS over SNA

Nykredit Mortgage Bank, Denmark

- Industry:
- Products:
- Key applications

banking
AnyNet/2
LAN Server

IBM Software

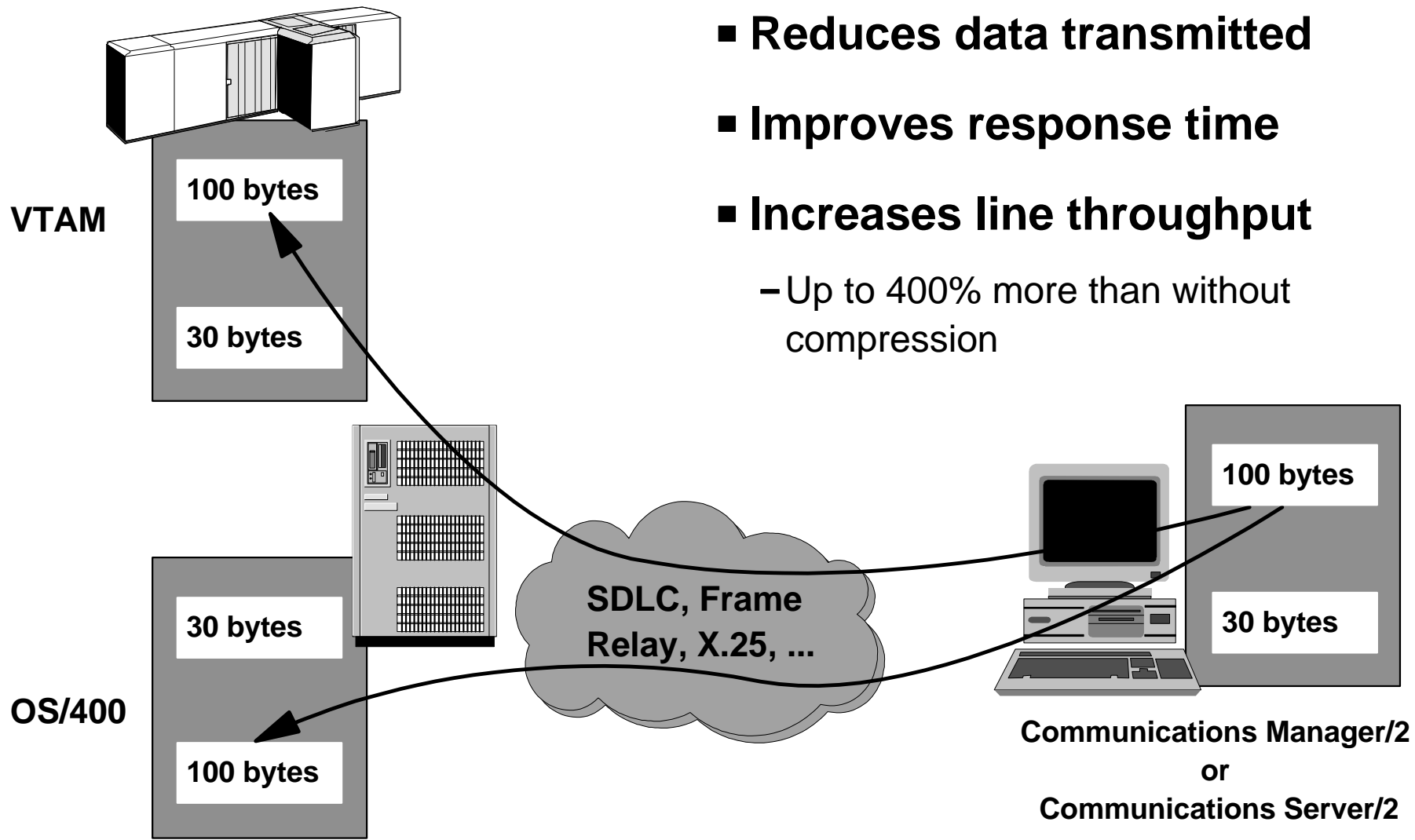
Performance

URL: <http://www.networking.ibm.com/cms/cm2perf.html>

IBM Software

Data Compression

- RLE or LZ9 session compression
- Reduces data transmitted
- Improves response time
- Increases line throughput
 - Up to 400% more than without compression



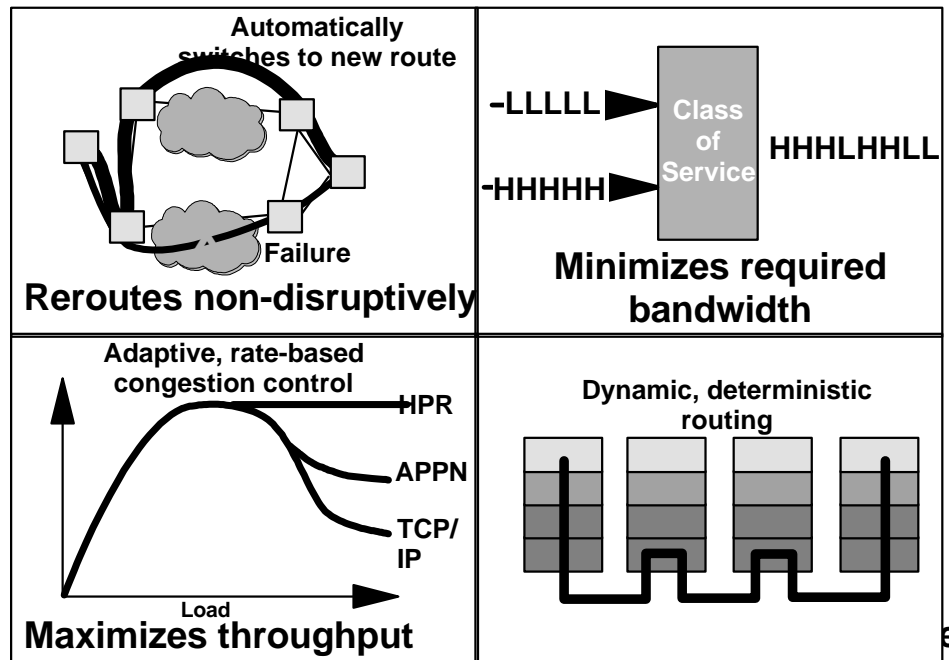
IBM Software

SNA Transmission Priority

- **Transmission Priority (TP) is integral part of class of service (COS)**
- **SNA/APPN/HPR networks can utilize TP to prioritize data transmission across a transmission group**
- **Implementation of TP important on busy networks where probability of network congestion is high**
- **4 transmission priorities:**
 - Network (session control data)
 - High (interactive)
 - Medium (default for LU sessions with no COS)
 - Low (file transfer)
- **CS/2 and OS/2 Access Feature fully implements TP for LU types 0, 1, 2, 3, and 6.2**

IBM Software

High Performance Routing



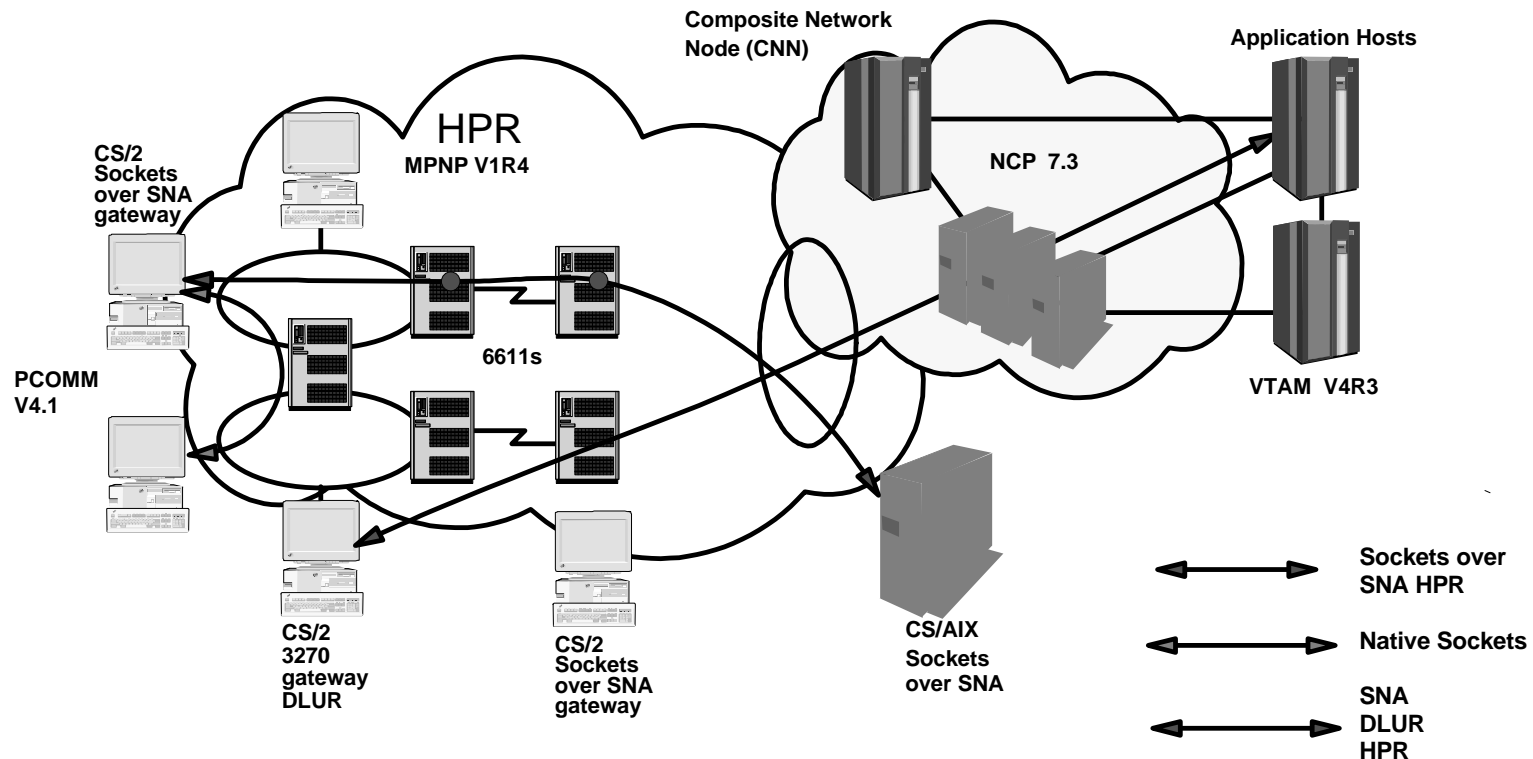
HPR is the most efficient and highest level of the protocol stacks"

Frank Dzubeck, LAN Times, 18 March 1996

- Improves network service and saves money
- Enhances the best qualities of SNA and TCP/IP
 - Prepares SNA for high-speed, switched networking
 - Dynamic resource registration identifies changes automatically
 - Maximizes link utilization, even under load
 - Automatically reroutes around failures
 - Minimizes bandwidth and improves performance
- Ready for switched networks and ATM
 - Endorsed by Cisco, Bay Networks, 3Com
 - Selected for SNA over ATM by 41-vendor APPN Implementor's Workgroup (AIW)

IBM Software

International Finance Company: Enterprise Communications Family Solution



Company: Large International Finance Company

Environment: Remote IP workstations access central RS/6000 over SNA network. Also require 3270 access and printing.

Requirements: Support multiple end user protocols with traffic prioritization, dynamic rerouting around network failures

Solution: HPR backbone with AnyNet multiprotocol software: Upgrade to HPR and DLUR (6611, VTAM 4.3, CS/2, PCOM). Implement SOC over SNA in PCOM and CS/AIX for RS/6000 access. Implement CS/2 SOC over SNA GW.

Benefits: Sessions dynamically rerouted when link outage occurs. Single point of failure eliminated. Traffic prioritization of SNA and TCP/IP data. 3270 traffic supported over APPN.

IBM Software

APIs

IBM Software

- **APPC and CPI-C**

- Industrial strength client/server LU6.2 applications between all platforms

- **LUA**

- Low level programming for LU 0, 1, 2, 3

- **X.25**

- Direct interface for virtual circuit data transmission

- **Kernel**

- Interface for controlling CS/2 components

- **System Management**

- SNA system resource administration

- **Common Services**

- Common functions such as translation, traces, messages logging, etc.

Other Enhancements

IBM Software

Other Enhancements

- **Programming Support**

- CPI-C support for Win-OS/2, enabling use of Windows CPI-C applications in Win-OS/2 environment
- User control of unlocked shared storage limit

- **Smaller Footprint**

- 5 MB hard drive for stable configuration and limited hard drive space

- **Emulator Support**

- PCOMM AS/400 and 3270 APPC/LUA Entry Level for administrative use

IBM Software

Competition

IBM Software

Why IBM

- **Premiere multiprotocol support**
- **Powerful SNA gateway**
- **Comprehensive workstation support**
- **Advanced Peer-to-Peer Networking (APPN) network node and end node**
- **Rich set of application programming interfaces (APIs)**
- **Ease of mobile computing**
- **Capacity for growth**
- **Wide range of connectivity options**
- **Systems management capability**
- **Reliability and proven quality**

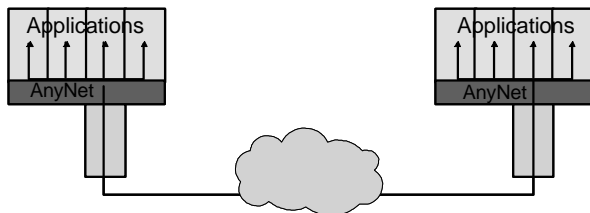
IBM Software

CS/2 and Routers

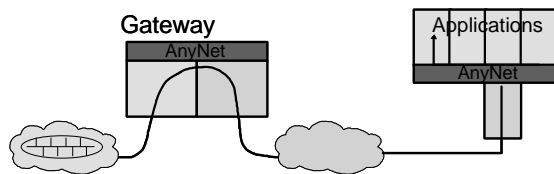
Communication Server

- Software solution
- Reduces the number of protocols in the network
- Multiprotocol combinations over IPX, NetBIOS, SNA and TCP/IP
- Addresses broader range of configurations:

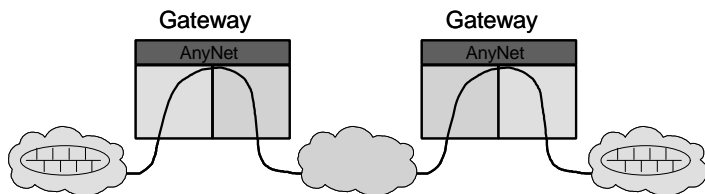
adding non native application to single network



joining 2 unlike networks



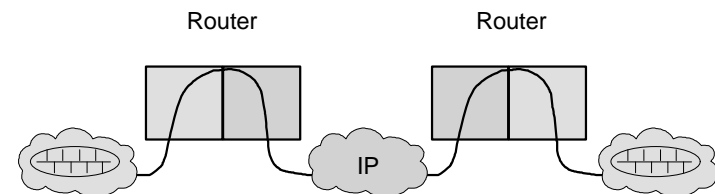
joining like networks via backbone



Routers

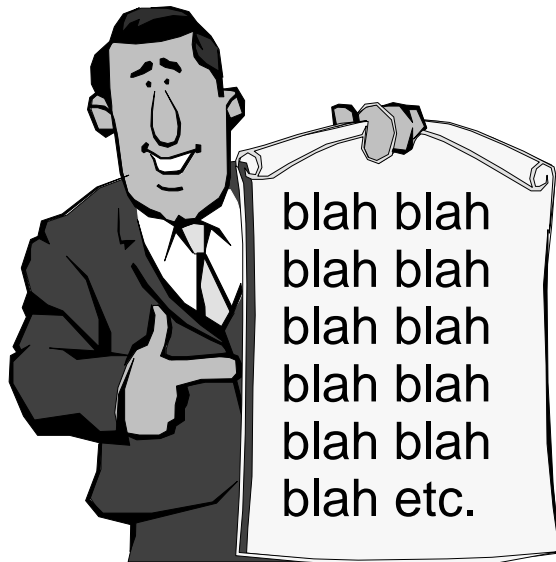
- Hardware solution
- Consolidate physical resources
- Large set of encapsulated protocol combinations over TCP/IP
- Addresses smaller range of configurations:

joining like networks via backbone



IBM Software

Make An Informed Decision -- Beware Myths Heard Around the Network



- ✘ Split-stack SNA clients are easier and less expensive for LANs than full-stack SNA
- ✘ Moving from SNA to TCP/IP is inevitable
- ✘ DLSw is necessary to avoid time-outs and inconsistent response times from running SNA applications over an IP network
- ✘ SNA LEN node is all you need
- ✘ MS SNA Server has higher capacity and performance than any other SNA gateway

- ✘ Using MS SNA Server to replace controllers and offload your mainframe is a great way to improve host performance

IBM Software

Dispel the Myths

| Myth | Fact |
|---|--|
| Split-stack SNA clients are less expensive for LANs than full-stack SNA | IBM clients are not expensive and you get improved performance |
| Moving from SNA to TCP/IP is inevitable | Not with IBM multiprotocol support |
| DLSw is necessary to avoid time-outs and inconsistent response times from running SNA applications over an IP network | Not with IBM multiprotocol support |
| SNA LCN node is all you need | Unless you want the benefits of HPR |
| MS SNA Server has higher capacity and performance than any other SNA gateway | Not compared with either CS/AIX or CS/2 |
| Using MS SNA Server to replace controllers and offload your mainframe is a great way to improve host performance | Offloading may be attractive. IBM offers several ways to offload without requiring you to move to an NT system |

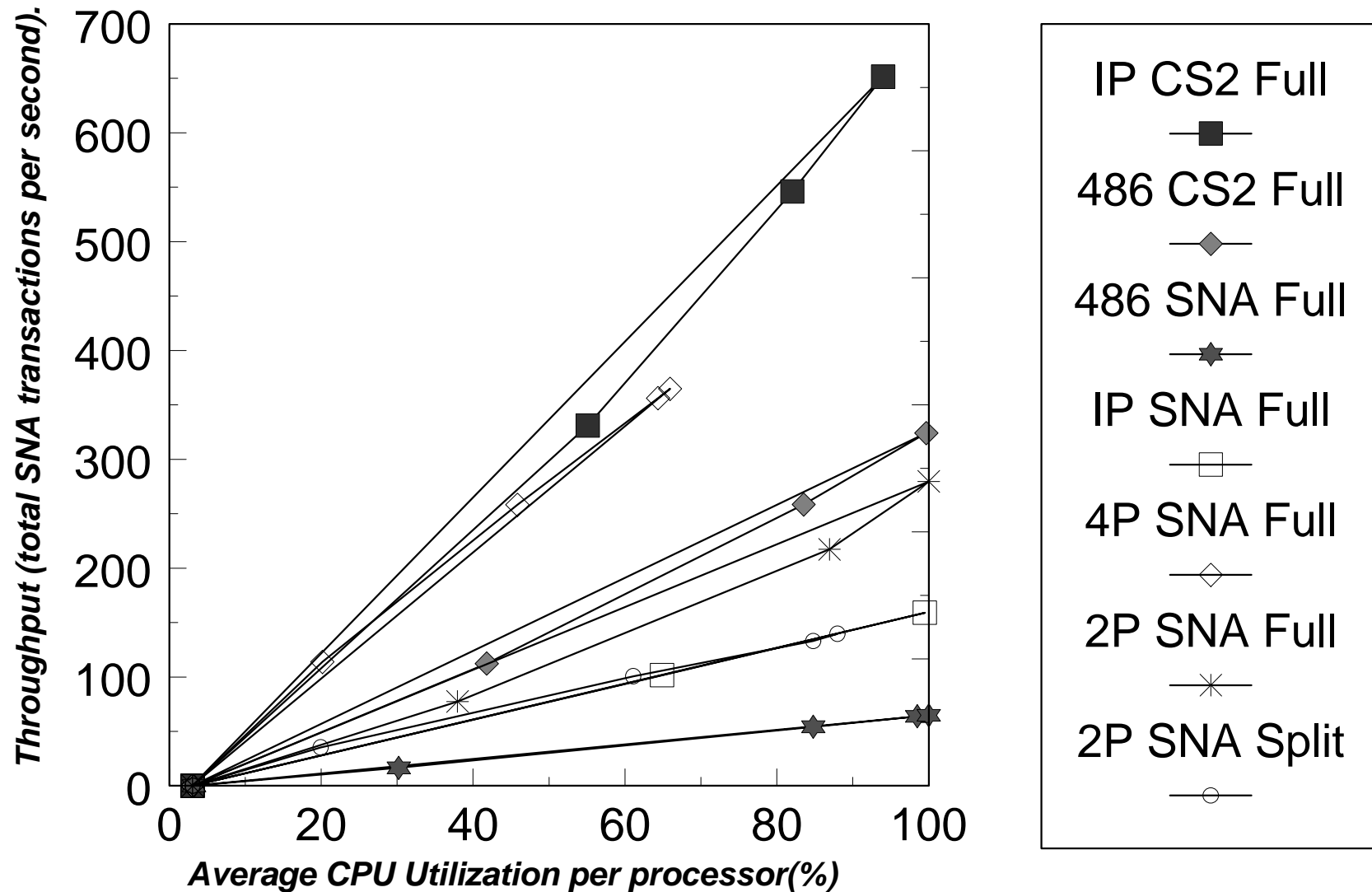
IBM Software

Broader, More Comprehensive -- Better!

| Comparison | IBM Enterprise Communications | Microsoft SNA Server |
|---|--|---|
| TCP/IP and SNA | Yes, plus multiprotocol support | Yes |
| SNA over IP | Yes, w/o encapsulation or DLSw | Yes, with encapsulation or DLSw |
| Sockets over SNA | Yes, w/o encapsulation or DLSw | No |
| APPN support | Advanced, full support | pre-APPN LEN node |
| SNA client support | Full or split stack | Split stack |
| Internet access | Yes, from SNA or IP | Yes, from IP |
| Application support | Extensive, plus AnyNet | Extensive |
| Terminal support | Native 3270, 5250, ASCII, plus TN 3270, TN5250, and 3270 access to UNIX (IBM and ISVs) | Native 3270, 5250, ASCII plus TN3270 and TN5250 (from ISVs) |
| Data compression | Yes | No |
| Security | Server, client, and session level | Server level |
| Administration/ Management | Local or remote | Local or remote, tied to Windows NT |
| Scalability | Proven, unmatched capabilities | |
| Function, protocol, and connection alternatives | Very extensive | Extensive |
| Server systems supported | OS/2, NetWare, AIX/UNIX, OS/400, S/390 | Windows NT |
| Client systems supported | DOS, Windows, WIN 95, WIN NT, OS/2, NetWare, AIX, plus third party emulators | Third party emulators |

IBM Software

SNA Gateway CPU Utilization vs. Total Gateway Throughput 16 Mbit/s Token Ring Environment



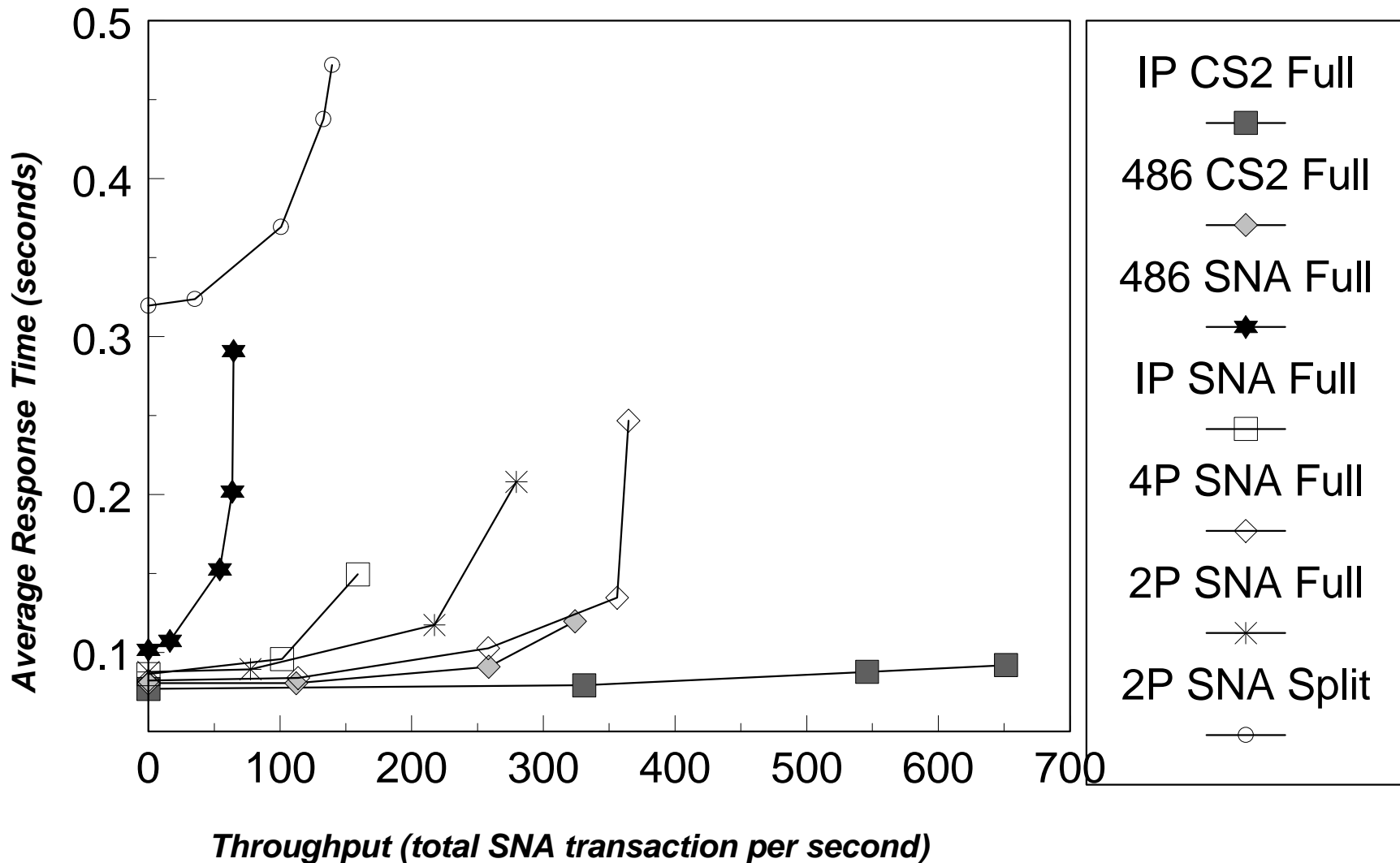
Note: High throughput and lower CPU utilization is better, i.e. higher grade lines are better

URL: <http://www.networking.ibm.com/cms/cm2perf.html>

Source: The Tolly Group, September 1996

IBM Software

SNA Gateway Response Time vs. Total Gateway Throughput 16 Mbit/s Token Ring vs. Environment



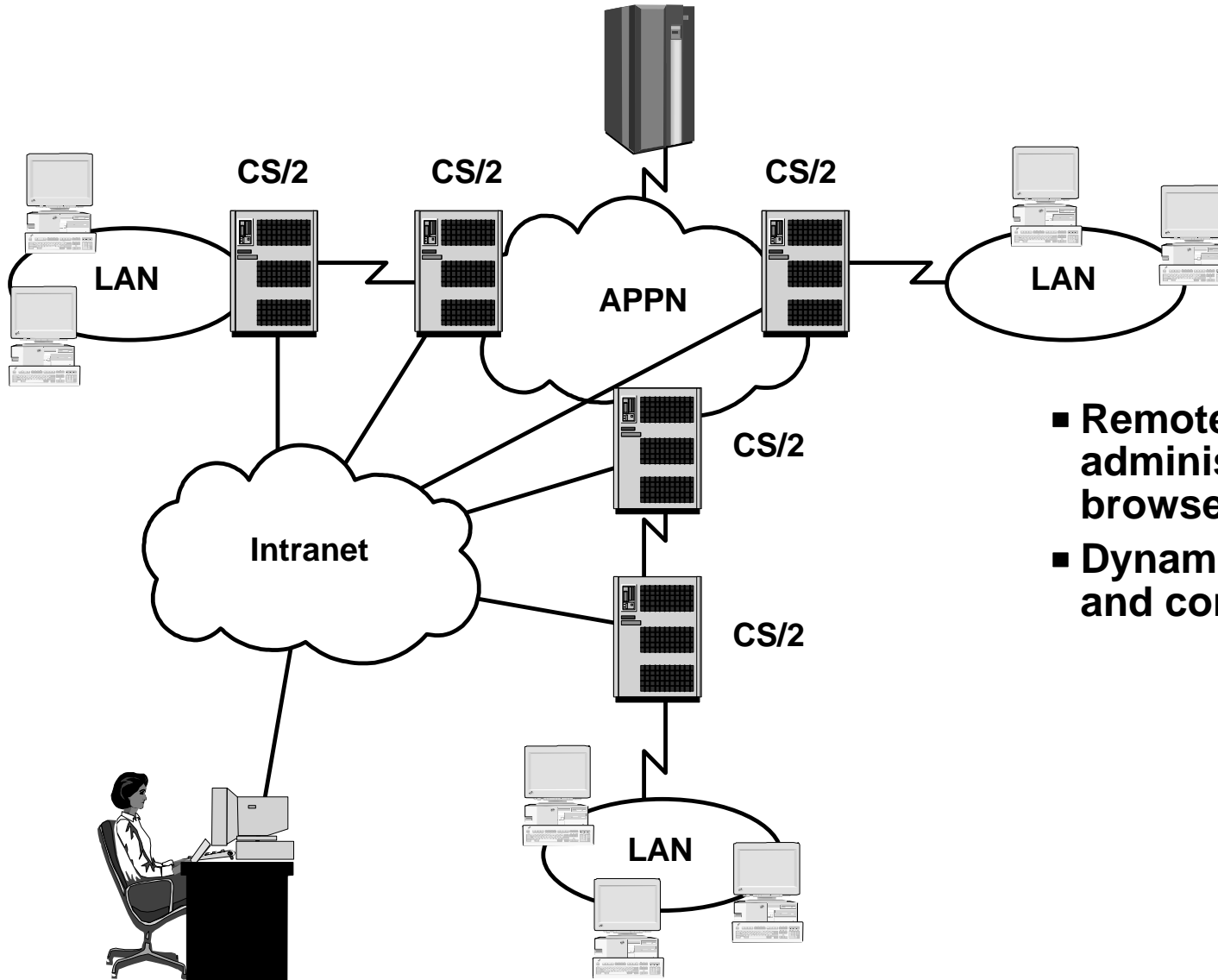
Note: Lower numbers are better. URL: <http://www.networking.ibm.com/cm2/cm2perf.html>
 Source: The Tolly Group, September 1996

IBM Software

Ease of Use

IBM Software

Web-Based Administration (Now)



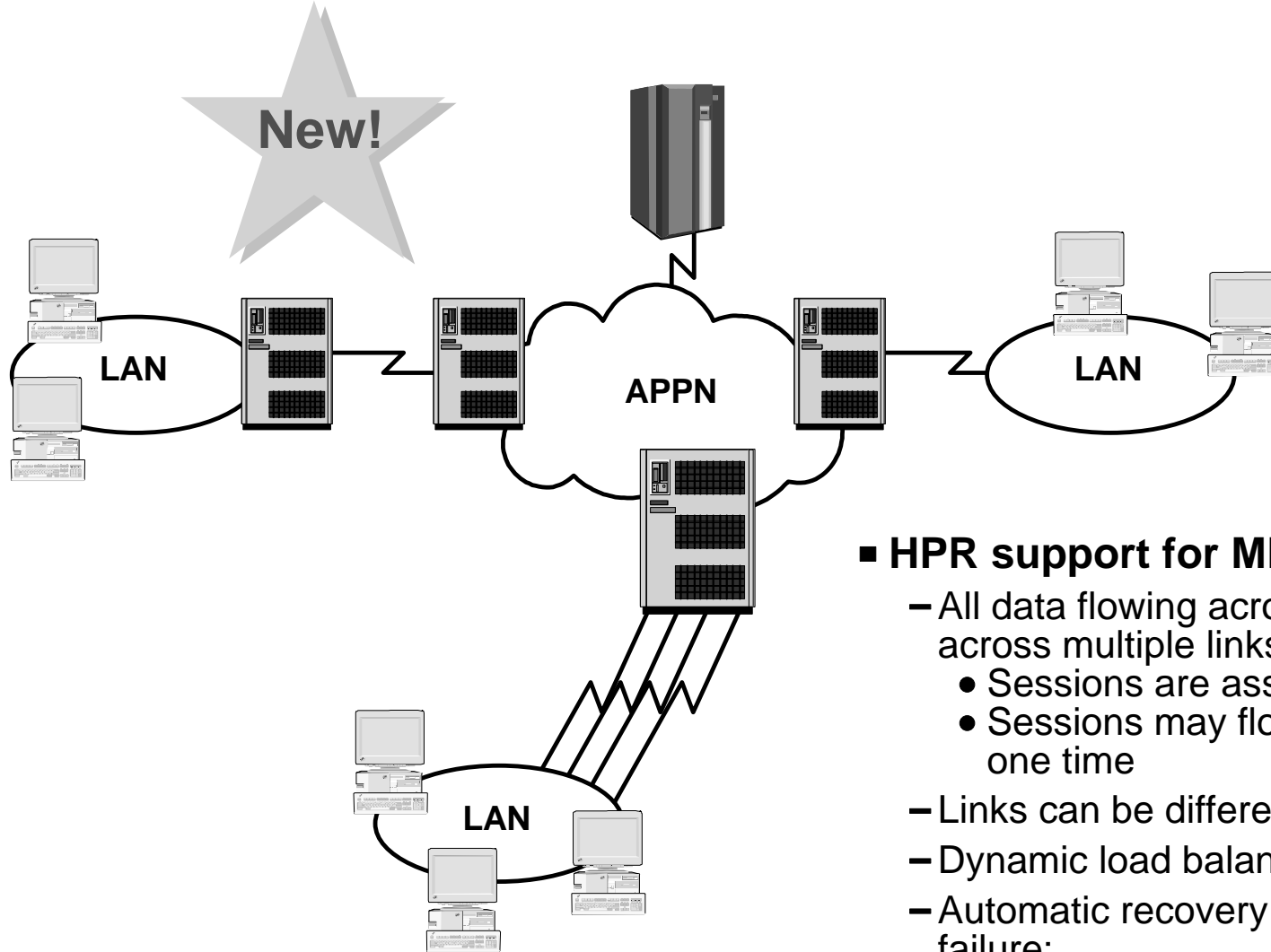
- Remote Web-based administration via a web browser
- Dynamic administration and configuration

IBM Software

Wide Area Support

IBM Software

MultiLink Transmission Group (MLTG)

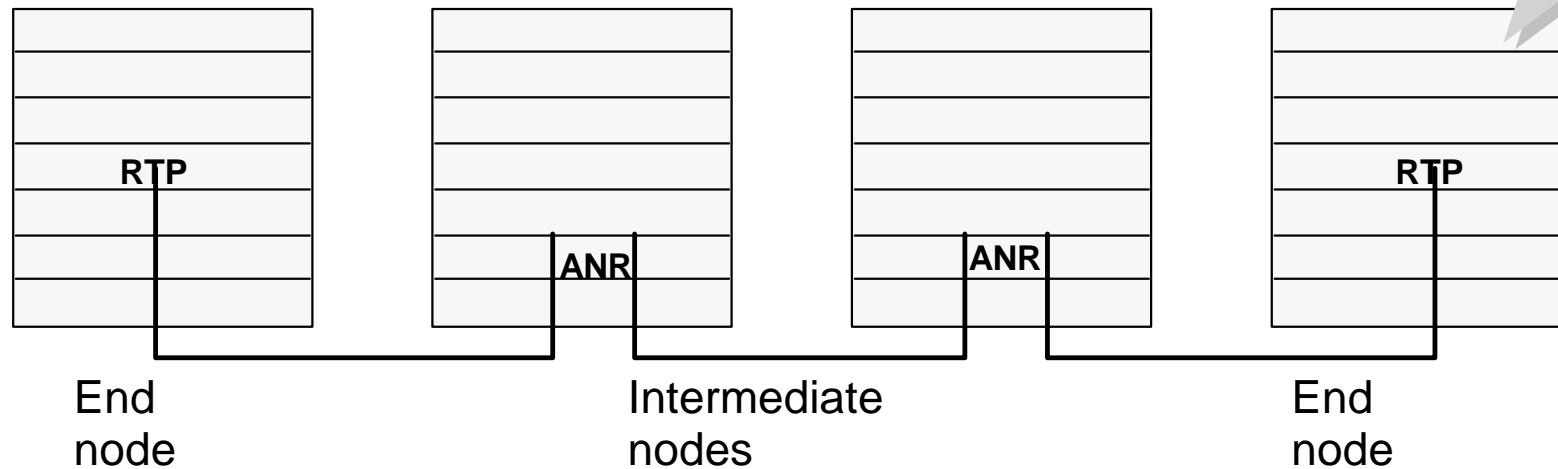


■ HPR support for MLTG

- All data flowing across the TG is balanced across multiple links
 - Sessions are assigned to one TG
 - Sessions may flow over several links at one time
- Links can be different link types
- Dynamic load balancing across links
- Automatic recovery and balancing on link failure:
 - Sessions are re-routed over the remaining links in the TG

IBM Software

HPR over Wide Area (New)



■ CS/2 V4.1 and 4.1 supports HPR over:

- Token-Ring and Ethernet LANs
- ATM LAN emulation connections
- Frame relay connections

■ Future release candidates:

- SDLC
- General DLC (for deep adapters)
- IDLC

HPR provides automatic session recovery when there are network failures. WAN links can participate in the session recovery so sessions running over WANs do not get disruptive failures. WAN links can provide dynamic backup and recovery without session failures for primary links.

IBM Software

CS/2 Clearly More Efficient

- **Communications Server delivers better throughput with lower CPU utilization than Microsoft SNA Server**
 - Communications Server throughput running on a 486 platform is higher than SNA Server on all 486, single-, and dual-Pentium configurations.
 - Communications Server single-Pentium processor configuration has twice the throughput of SNA Server dual-Pentium processor configuration
- **Communications Server delivers lower response time under all load conditions than SNA Server**
 - Communications Server on a single-Pentium processor has lower response time than all configurations of SNA Server
 - Communications Server with single-Pentium processor preserves sub 100 ms response times at more than double the transaction load of SNA Server running quad-Pentium processors
- **Works well for both light loads and heavy loads**
 - SNA Server does not scale as well for heavy loads as Communications Server

IBM Software

OS/2 Product Comparisons 1996

| | Communications Server | CM/2 1.11 |
|-----------------------------------|--|--|
| Emulator | PCOM Combo Entry -Limitations: ■ LUA only ■ 2 sessions ■ Reduced end user -Features | CM/2 3270/5250 |
| Gateway | SNA SNA over TCP/IP Sockets over SNA TN3270E LAN Gateway (IPX, NetBIOS) | SNA |
| APPN | Network Node End Node HPR, DLUR | Network Node End Node |
| APIs | 32 bit. LUA, APPC, CPI-C, ACDI | 16 bit. LUA, APPC, CPI-C, ACDI, EHLLAPI, SRPI |
| LAN & WAN Connectivity | Coax, Twinax, ASYNC, TR, Ethernet, 802.2, SDLC, X.25, ISDN, IDLC, FDDI, Frame Relay | Coax, Twinax, ASYNC, TR, Ethernet, 802.2, SDLC, X.25, ISDN, IDLC, FDDI |
| Multiprotocol Support | SNA over TCP/IP Sockets over SNA TN3270E LAN Gateway (IPX, NetBIOS) | None |

IBM Software

Migration/Installation Sequence

■ **At the Server**

- Operating System (OS/2 Warp 3.0 or later)
- Multiprotocol Transport Services (MPTS)
- LAN Server
- Database Manager
- Communications Server

■ **At the Client**

- Operating System
- Multiprotocol Transport Services
- LAN Requester
- Access Feature
- Personal Communications Product

IBM Software

Enterprise Communications Family Prices

| Communications Server/2 | Price (\$) |
|------------------------------------|-------------------|
| Base price | 995 |
| Additional licenses | 965 |
| Upgrade | 595 |
| Upgrade (additional licenses) | 565 |
| Access feature for Windows or OS/2 | 69 |
| Upgrade Protection Option | 289 |

IBM Software

Where to go for Technical Assistance

■ Publications

- IBM eNetwork Communications Server for OS/2 Warp: Quick Beginnings
GC3-8189
- IBM eNetwork Communications Server for OS/2 Warp: AnyNet SNA over TCP/IP
GC3-8193-2
- IBM eNetwork Communications Server for OS/2 Warp: Glossary
SC31-8184

■ World Wide Web home pages:

- <http://www.ibm.com>
- <http://www.networking.ibm.com/cms/cs2abt.html> IBM page
- <http://www.networking.ibm.com/cms/cm2perf.html> IBM CS/2 page
- <http://www.networking.ibm.com/any/anyover.html> IBM CS/2 performance page
- <http://www.networking.ibm.com/is/sw-servers> IBM AnyNet page
IBM Software Servers page

■ Collaterals

- IBM Communications Server
G325-3565
- IBM eNetwork Communications Server for OS/2 Warp
G325-3596-2
- Top Ten Reasons to Buy IBM eNetwork Communications Server for OS/2 Warp
G325-3564-2
- IBM eNetwork Family Overview
G325-3702-00
- IBM eNetwork Software Family Brochure
G325-3698-00
- IBM eNetwork Solutions for Any-to Any Information Access
G325-3679-00
- IBM eNetwork Solutions for Internet to Intranet Infrastructure
G325-3679-00
- IBM eNetwork Solutions for Network Integration
G325-3680-00
- IBM eNetwork Server Overview
G325-8000

■ Application Briefs

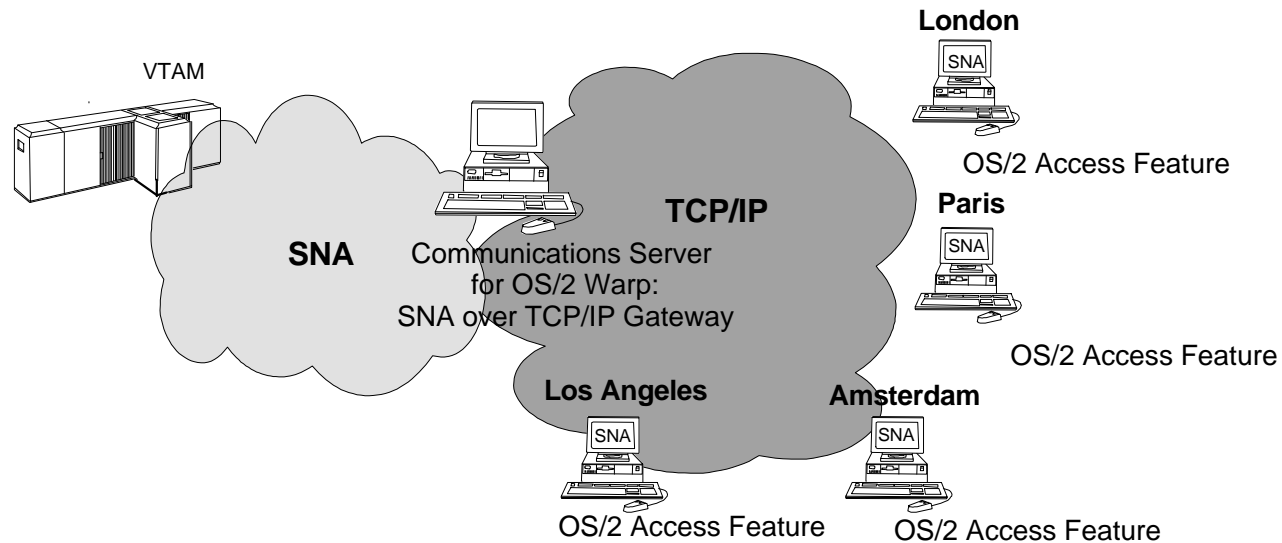
- German retailer benefits from Multiprotocol Solution
G325-3624
- Retail Supplier Implements Lotus Notes over APPN
G325-3648

■ Forums:

- OSDF21 on CompuServe
- OS2CM or AnyNet CFORUM on OS2BBS bulletin board via TalkLink
- OS2CM2 or ANYNET forum on IBMPC

IBM Software

Customer Scenario - Turner Broadcasting System: SNA over TCP/IP



G325-3585

- Company:** Major supplier of news and entertainment products worldwide
- Environment:** SNA central site in Atlanta
TCP/IP international locations
- Requirements:** Reduce costs by eliminating parallel SNA lines to remote sites
Keep SNA-based shipping and inventory application accessible to end-users
- Solution:** Communications Server for OS/2 Warp at central site
OS/2 Access Features on end-user workstations
- Benefits:** Reduced line costs
Easier management
No modification to application

IBM Software