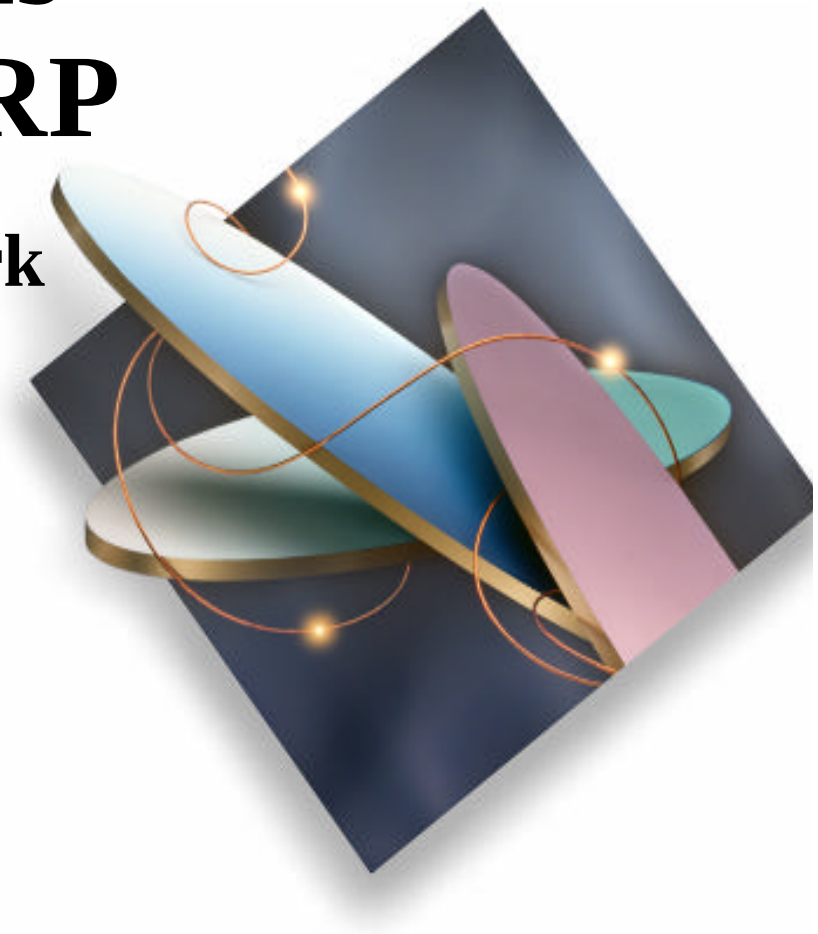
IBM Communications Server for OS/2 WARP

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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IPX, NetWare	Novell
Lotus Notes	Lotus Development Corporation
SAP	SAP AG
R/3	SAP AG

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

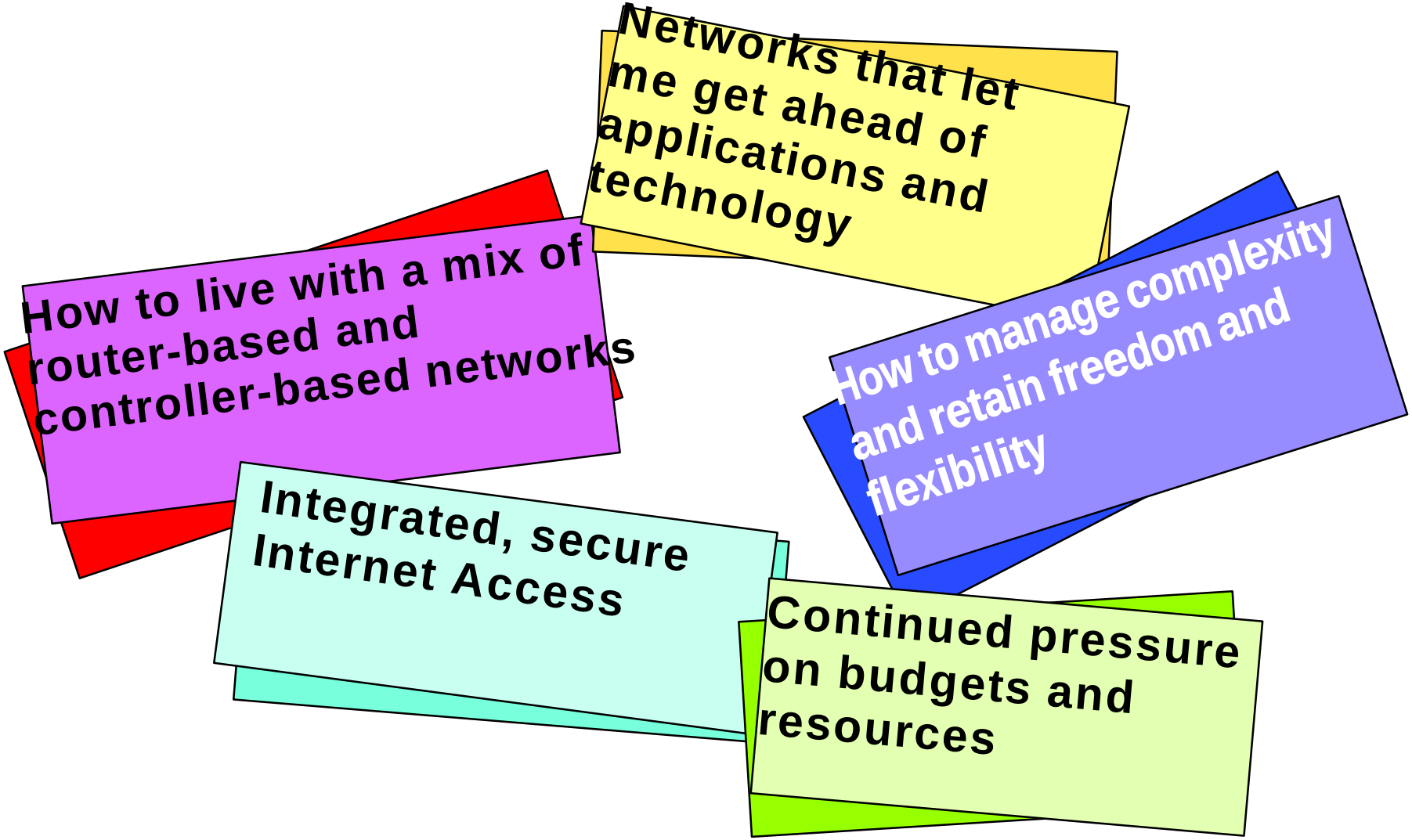
Acronyms

APPC	**Advanced Program to Program Communications**
APPN	**Advanced Peer to Peer Networking**
ATM	**Asynchronous Transfer Mode**
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**

Agenda

- **Introduction**
  - Communications Server
  - Product Evolution
  - Packaging
- **Key Functions**
  - Connectivity
  - SNA Gateway
  - Integrated Multiprotocol Support
  - Performance
  - APIs
  - Other Enhancements
- **Competition**
- **Prices**
- **Technical Assistance**

Old solutions are no longer sufficient...



... New approaches are required.

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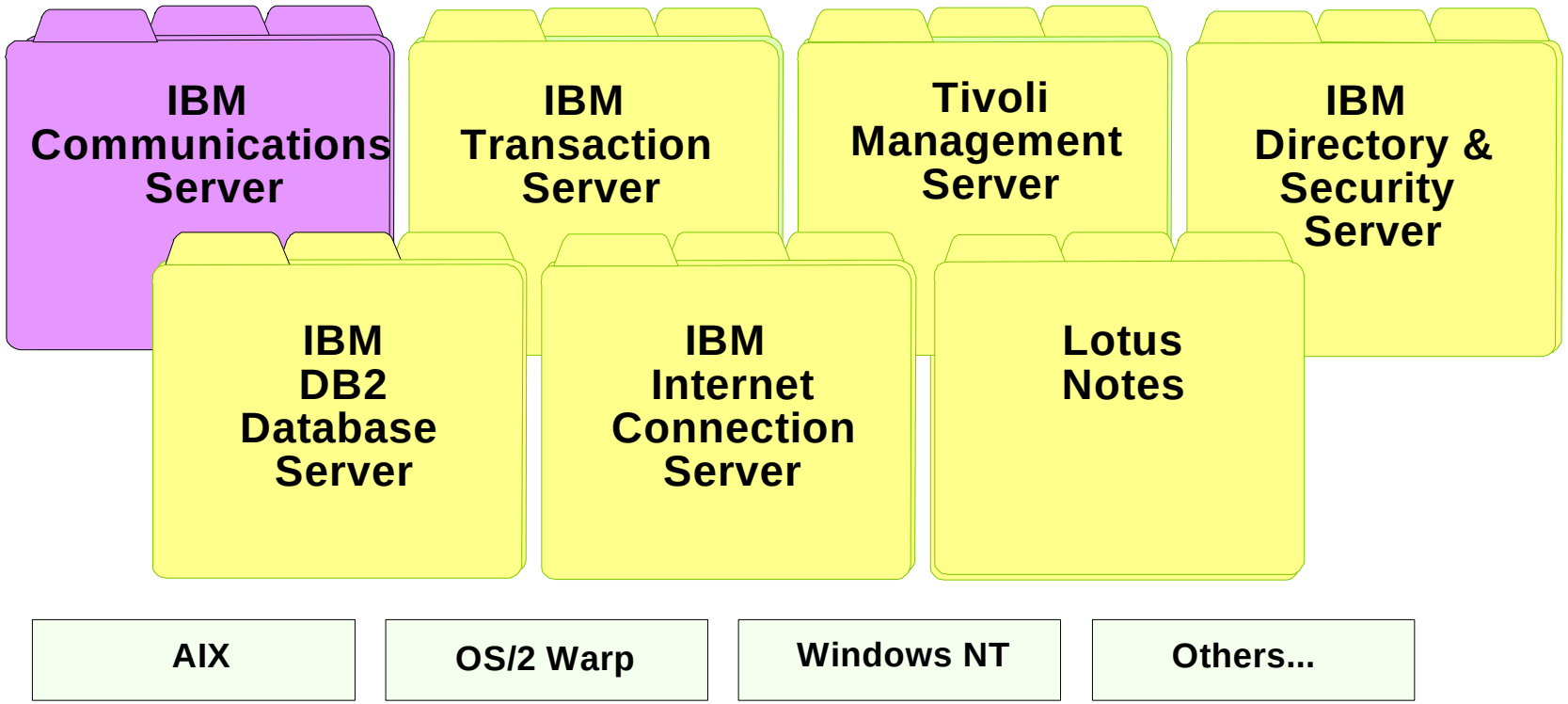
IBM Software Servers

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

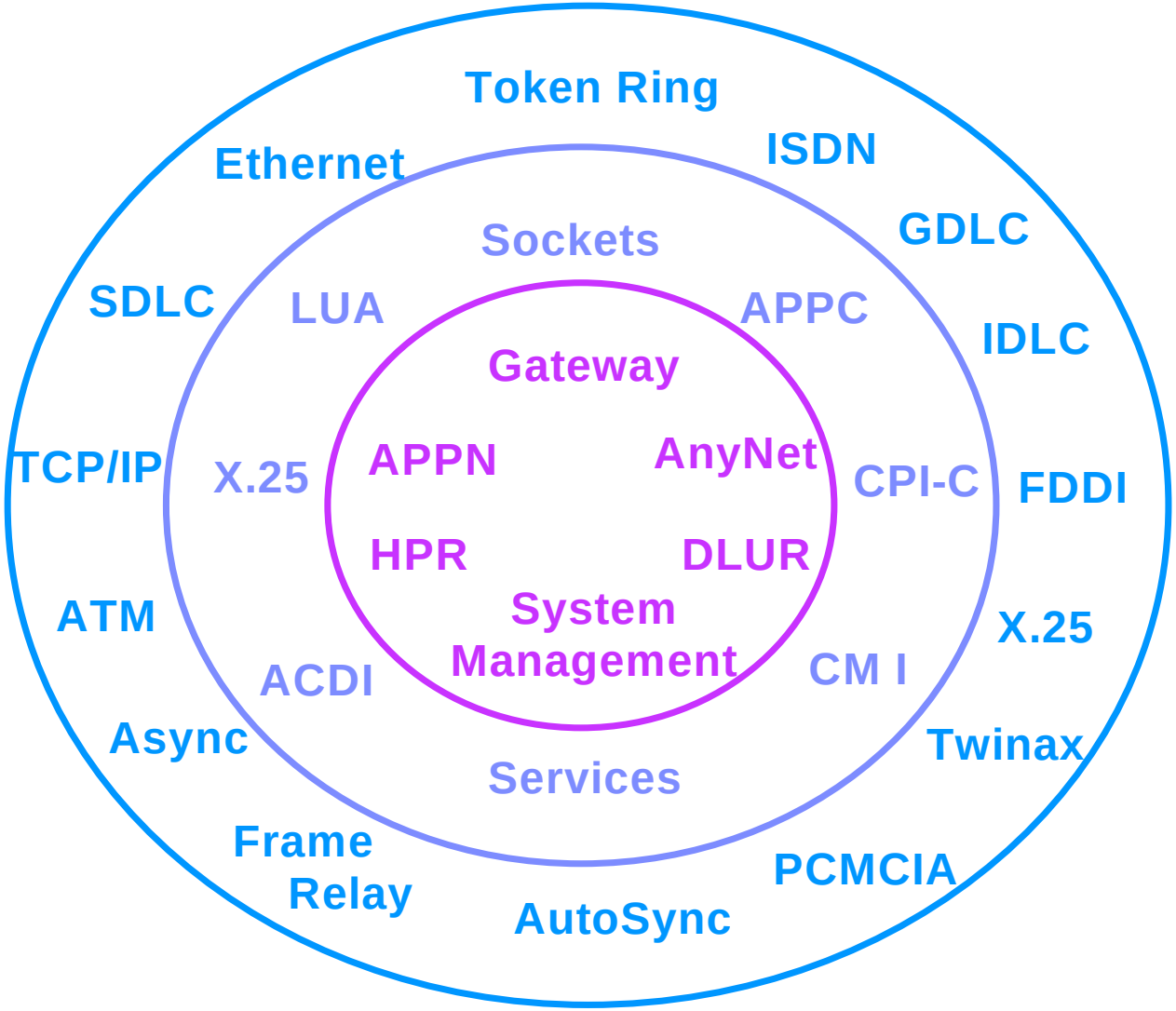


Introducing Communications Server

- **Enables workstations to communicate with other workstations as well as S/390 and AS/400 hosts**
- **Provides a powerful multiprotocol gateway, allowing SNA, IPX, NetBIOS, 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**

Communications Server, a Complete Multiprotocol Engine!

- ✓ *Functions*
- ✓ *APIs*
- ✓ *Connectivity*



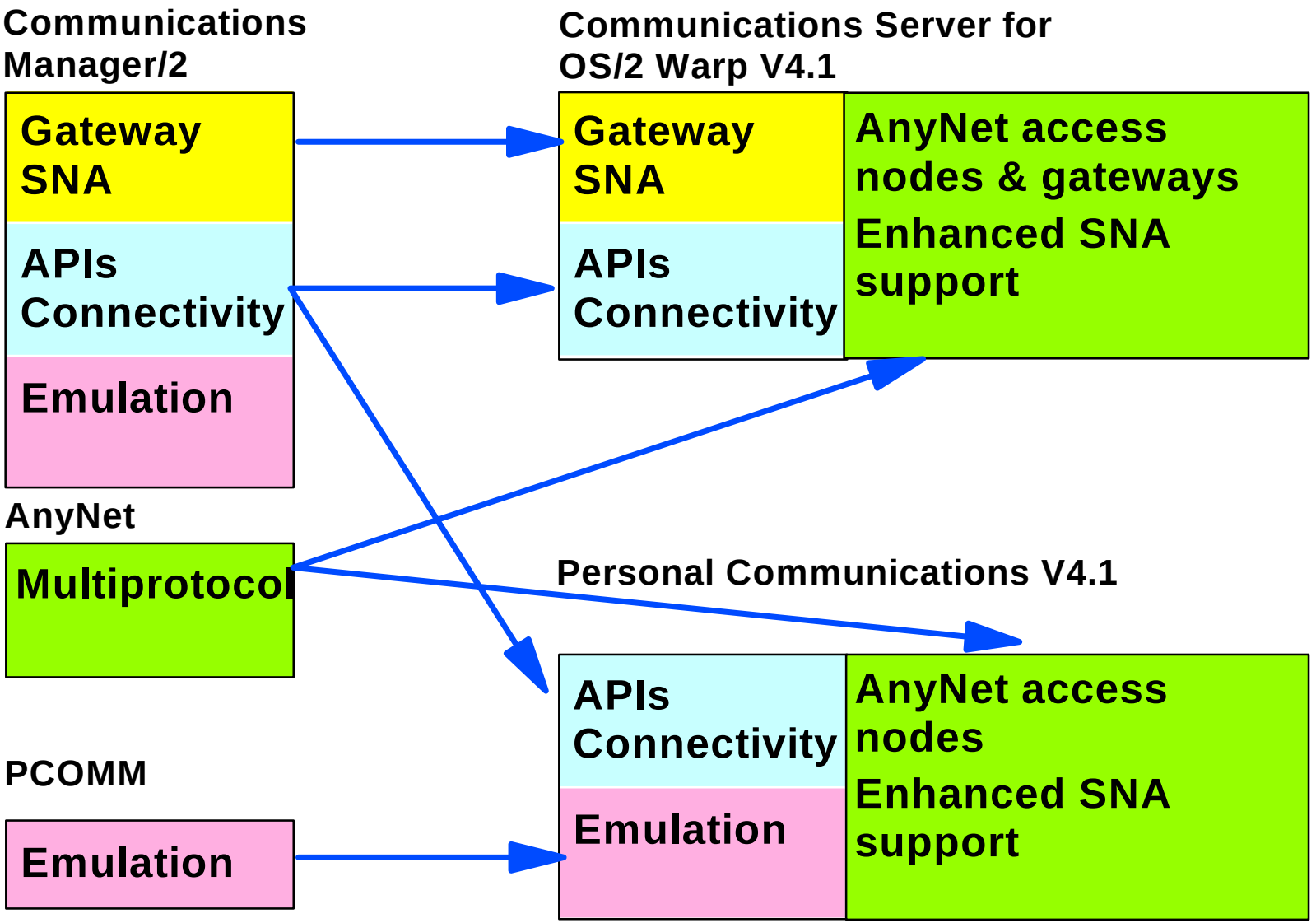
Product Evolution: Existing Desktop Communications Products

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

- **Personal Communications Offerings**
  - DOS/Windows
    - PCOMM/3270 V4.0
    - PCOMM AS/400 V4.0
    - PCOMM Toolkit for Visual Basic OS/2
    - PCOMM/3270 V4.0
    - PCOMM AS/400 V4.0

- **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

Product Evolution: Simpler and More Flexible



Consultant Quotes

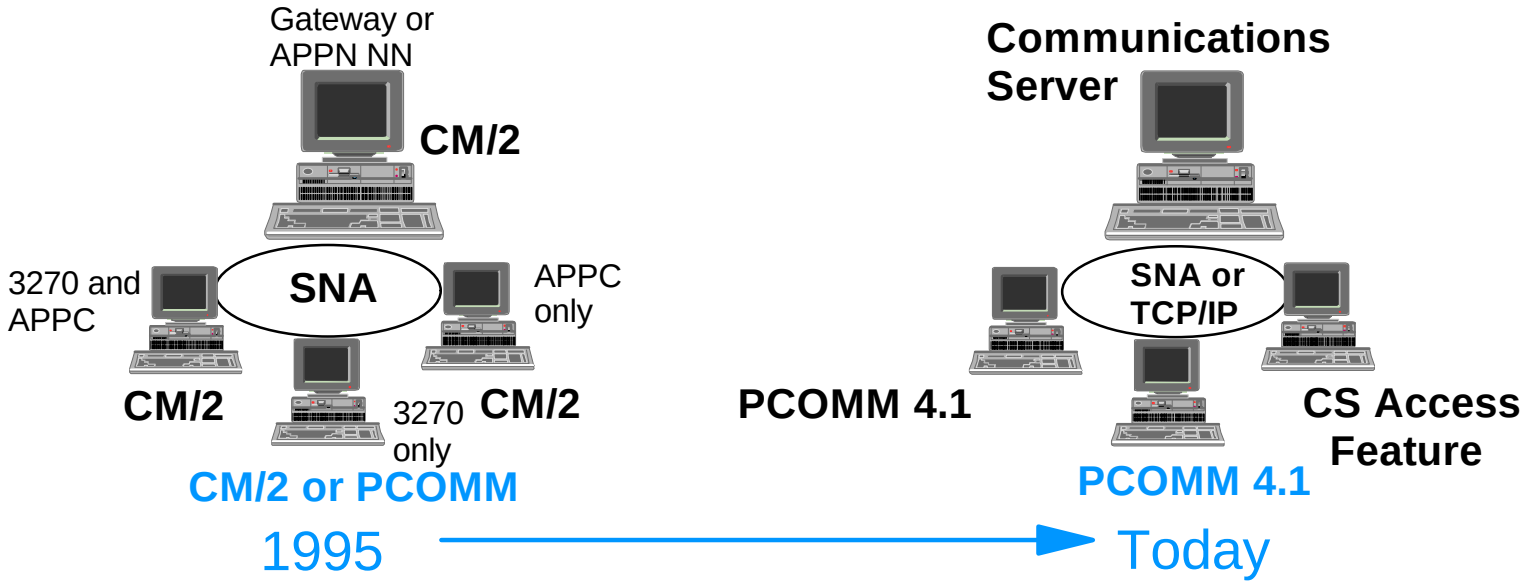
"What IBM is offering is more robust and tailorable to specific solutions than Microsoft's products are."

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

Communications Server for OS/2 Warp



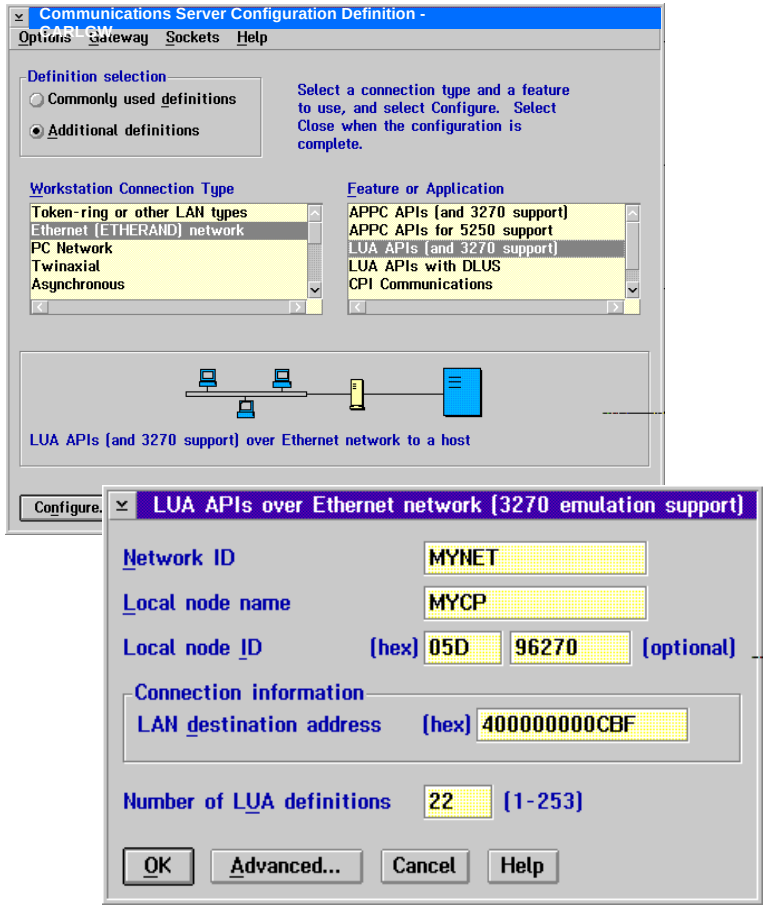
- **Server is multifunction gateway**
  - Much more than simple CM/2 repackage
  - One time charge; no per-seat or per-session charges
  - Continued gateway support for DOS, OS/2, Windows, Windows 95, Windows NT, Apple SNA gateway, NetWare for SAA gateway, etc.
- **OS/2 and Windows Access Features included**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

New, All-in-one Packaging

- **All server installation files**
- **All adapter and protocol configuration (LAPS) files**
- **All client Access Features**
- **Entry PCOMM for server administration**
  - AS/400 & 3270 Entry Level
- **Development tools, APIs, and samples**
- **Complete online documentation ir .INF, Book and LIST3820**

Single CD-ROM for server and client installation

Simplified, Graphical Configuration



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

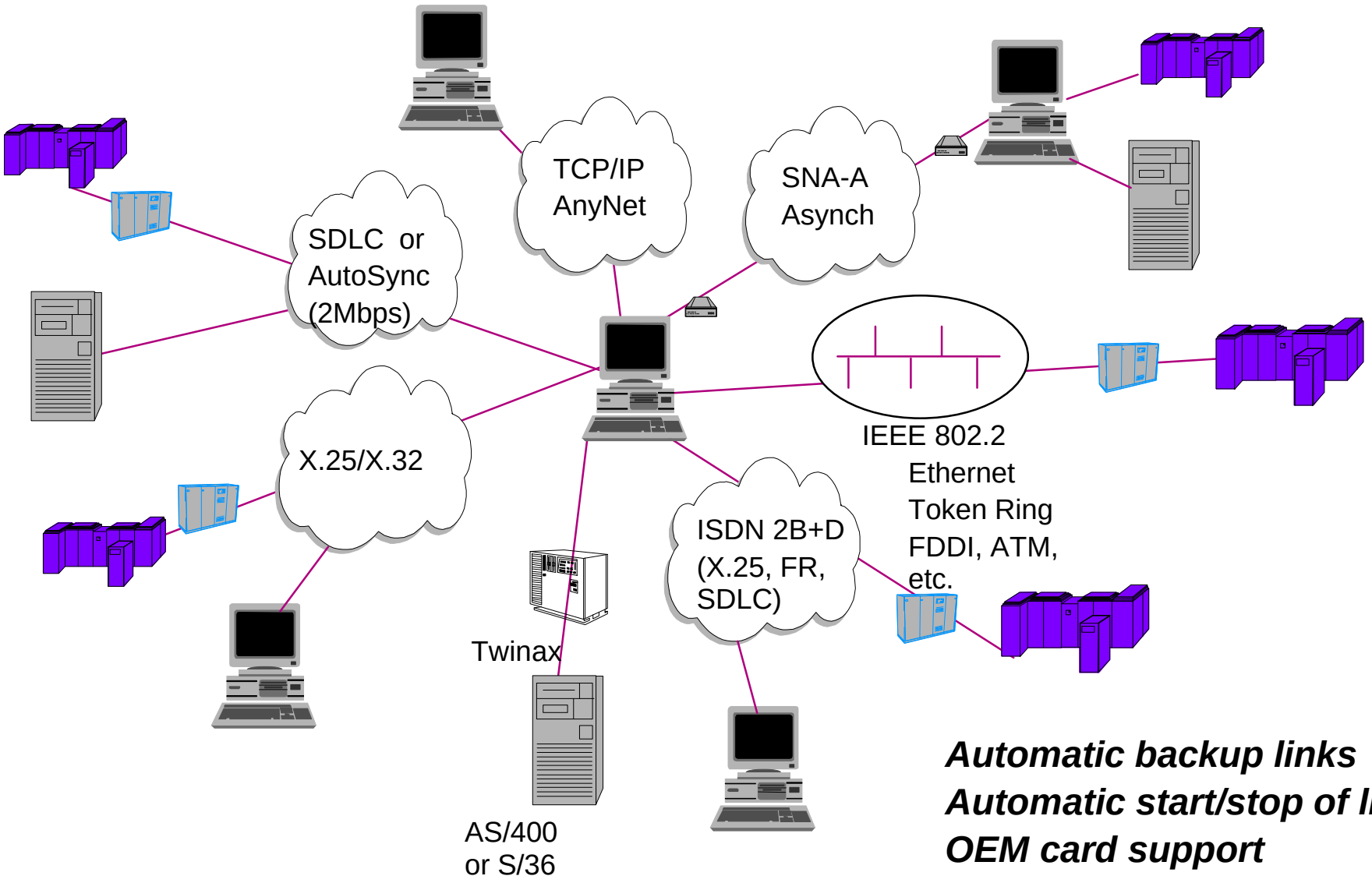
Key Functions

- **Connectivity**
  - Frame Relay support now integrated (New)
- **SNA Gateway**
  - Dependent LU Requester (DLUR)
  - Self-defining Dependent LUs (SDDLU)
  - Backup Link (New)
- **Integrated Multiprotocol Support**
  - Sockets over SNA
  - SNA over TCP/IP
  - LAN Gateway (IPX & NetBIOS) (New)
  - TN3270E Server (New)
- **Performance and Reliability**
  - Data Compression
  - SNA Transmission Priority
  - High Performance Routing

Connectivity Enhancements

- **OEM WAN card support (e.g. Eicon, MicroGate, Synaptel, ARN Informatique)**
- **Frame Relay Support (New)**
  - 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,
- **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

Connectivity Anywhere



Automatic backup links
Automatic start/stop of links
OEM card support

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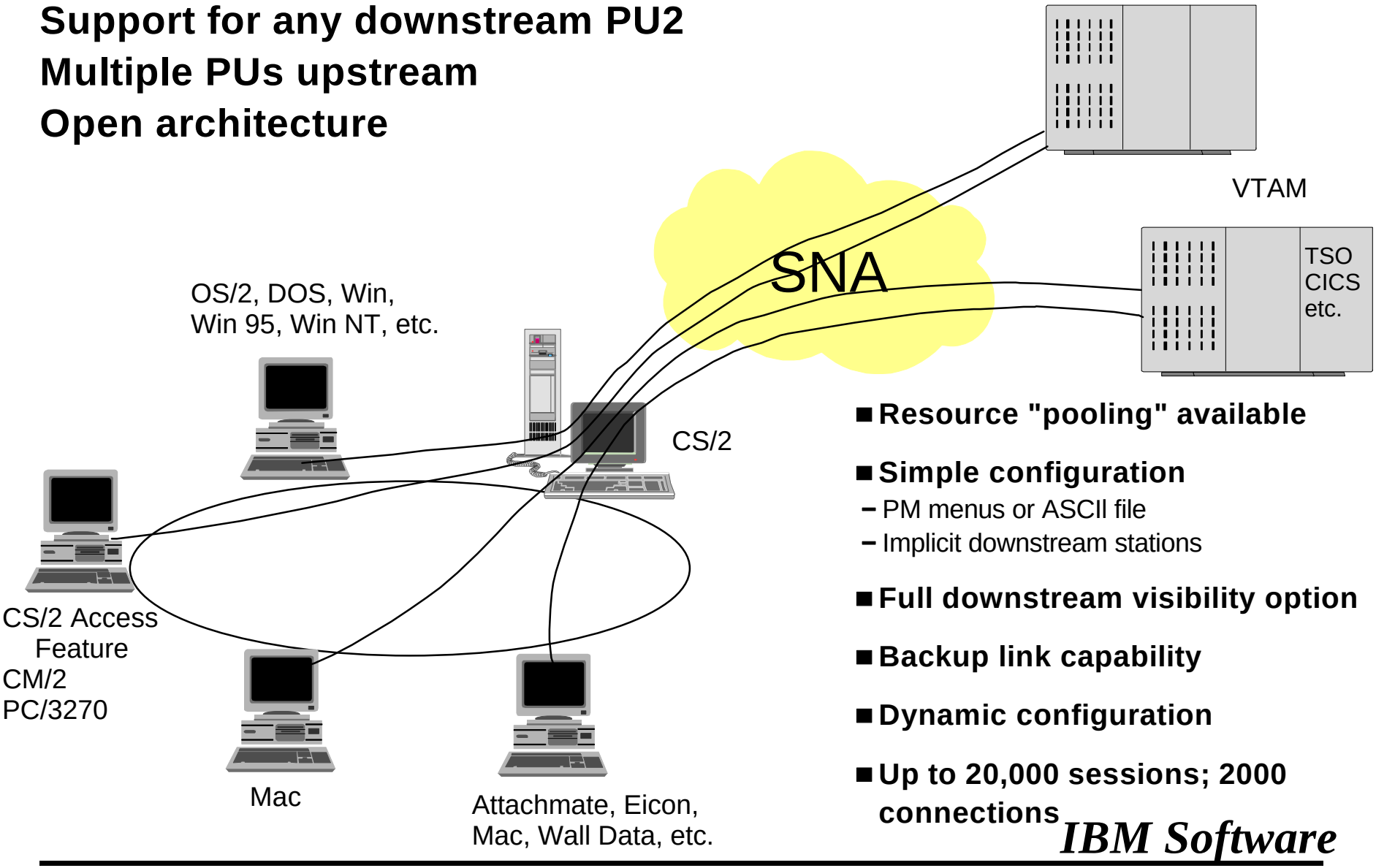
SNA Gateway

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**

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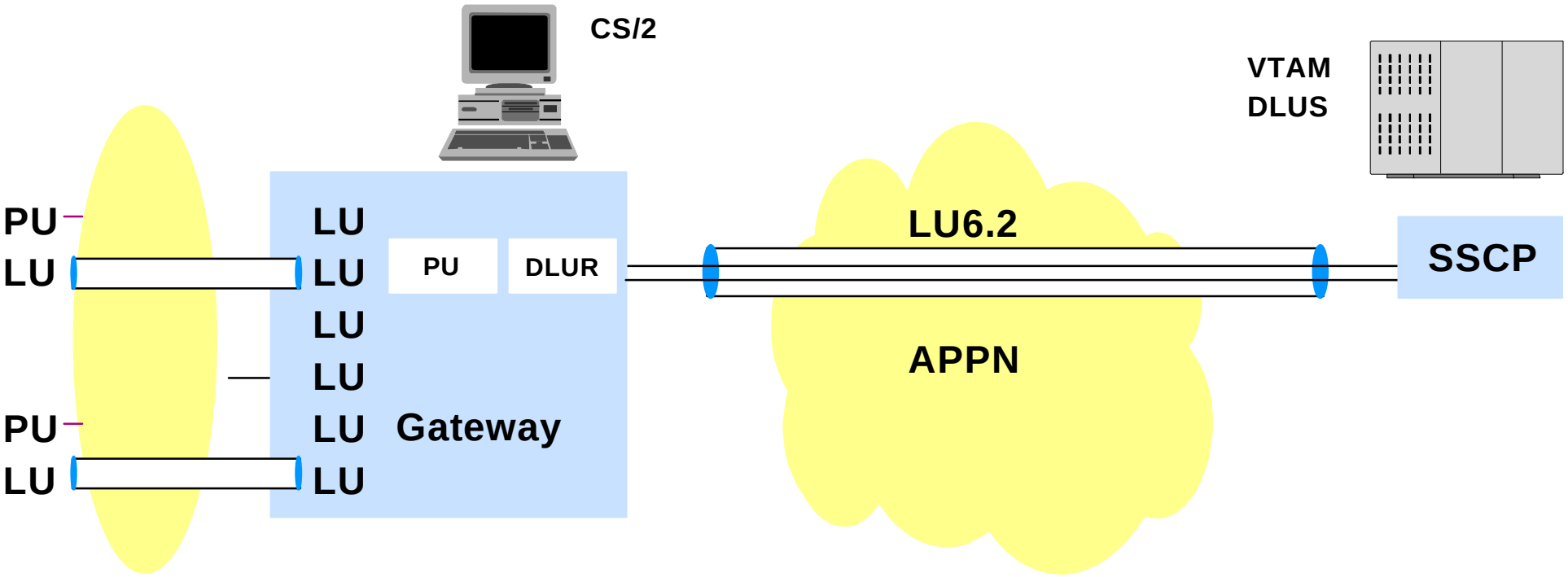
Dependent LU Requester in SNA Gateway



- **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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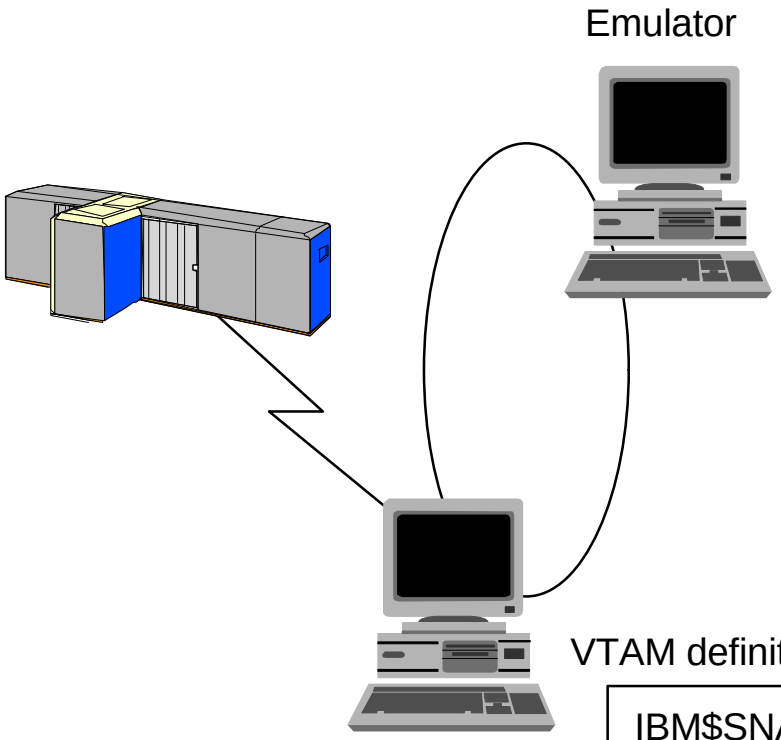
Greatly Simplified Administration With Self-defining LUs

- **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



VTAM definitions using SDDLU

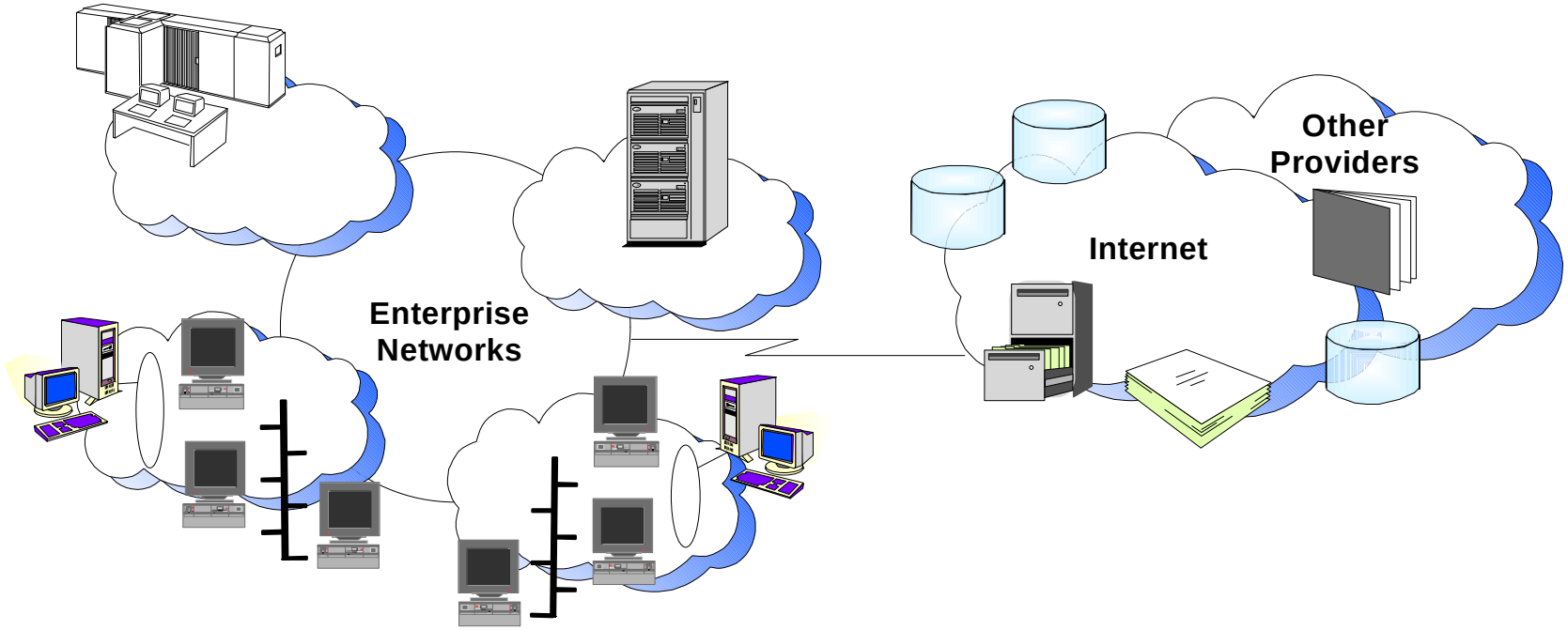
```
IBM$SNA PU ADDR=C1
                LUSEED=LUx
3278@    LU
```

VTAM definitions before SDDLU

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

Integrated Multiprotocol Support

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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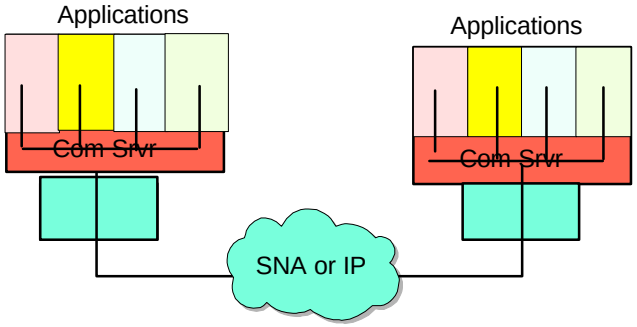
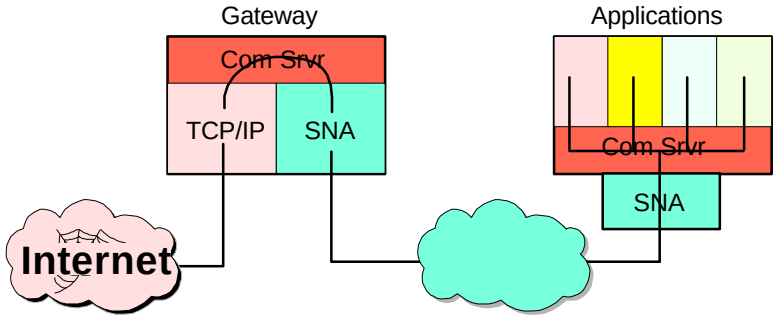
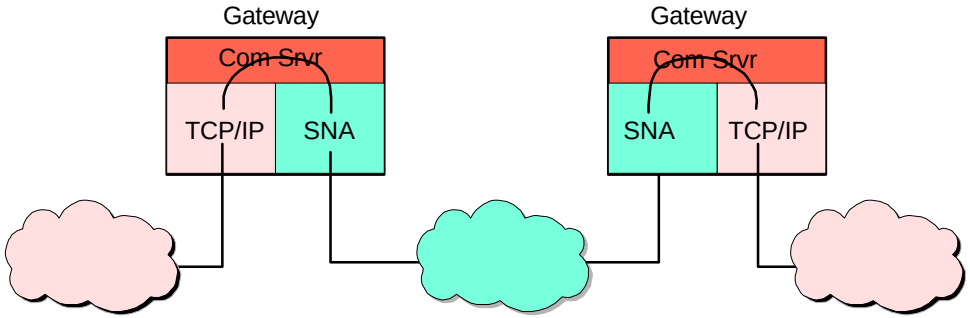
Advanced Multiprotocol Support



Access node: Supports nonnative application



Single gateway: Joins 2 unlike networks



Paired gateways: joins two like networks with unlike backbone

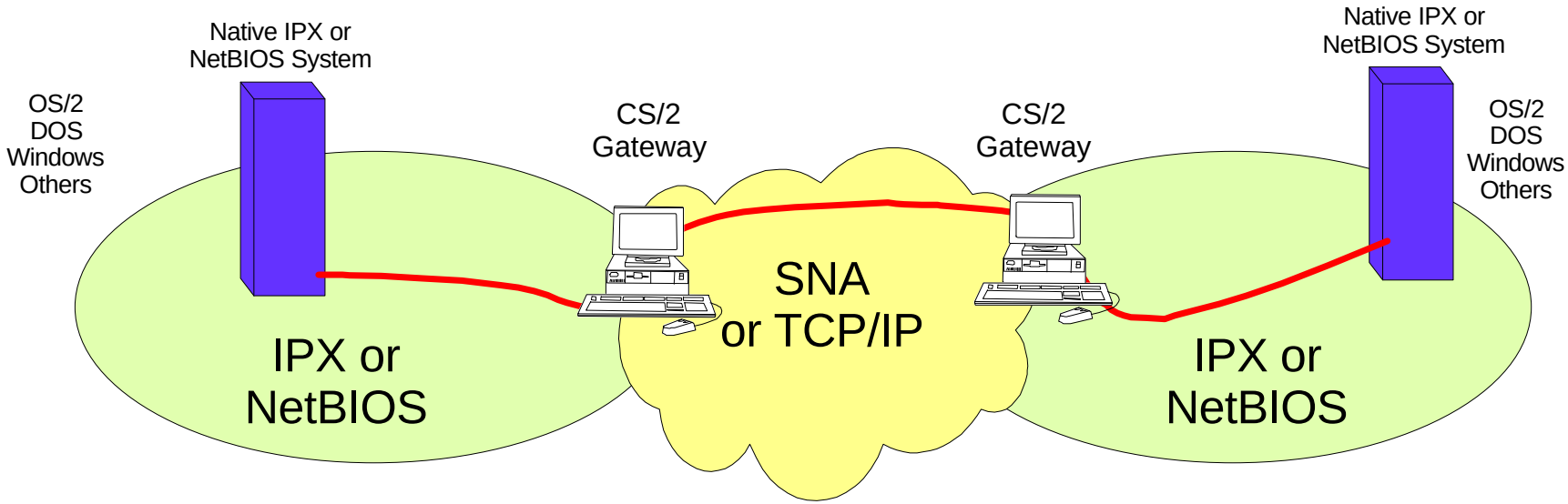
- **Simplifies application selection, network design, and operation**
  - e.g. Internet access from SNA and IP
- **Expands application scope and gives end users broader choice of applications**
- **Award-winning, standards-based, software solution**
  - Compensates for differences in protocols
  - Solutions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

Enterprise Technology Network World 1993 Award

Data Comm Magazine Hot Products

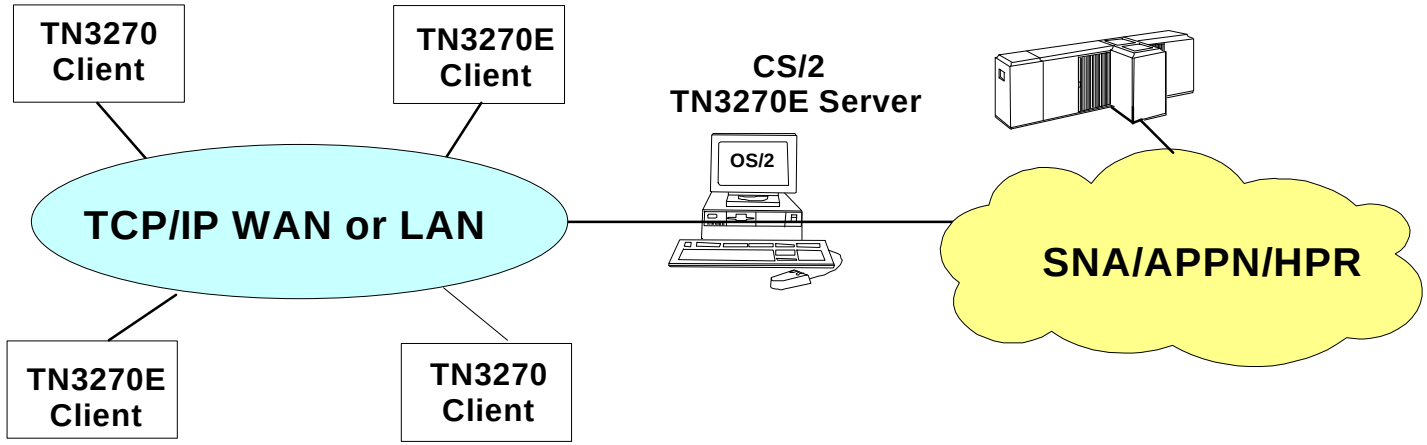
IBM Software

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



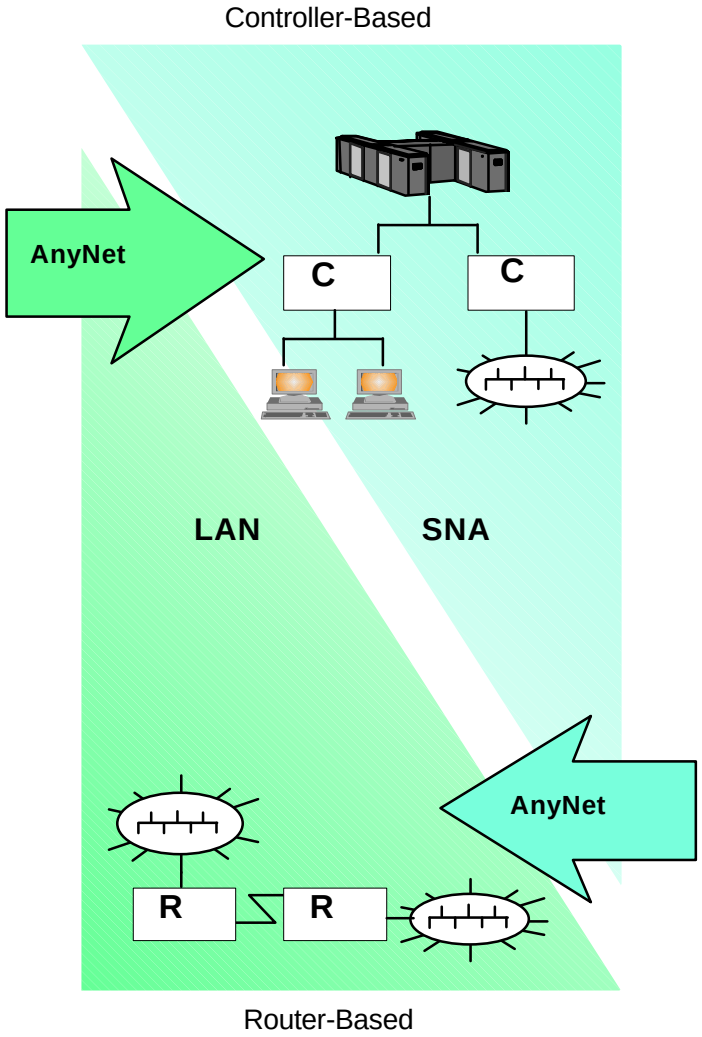
- **IPX over SNA Gateway and NetBIOS over SNA Gateway**
  - Compatible with LAN to LAN over WAN (LTLW) and 2217 Multiprotocol Concentrator
- **IPX over IP Gateway and NetBIOS over IP Gateway**
- **Protects SNA and IP backbones by filtering IPX and NetBIOS broadcasts and caching names**

TN327OE Server



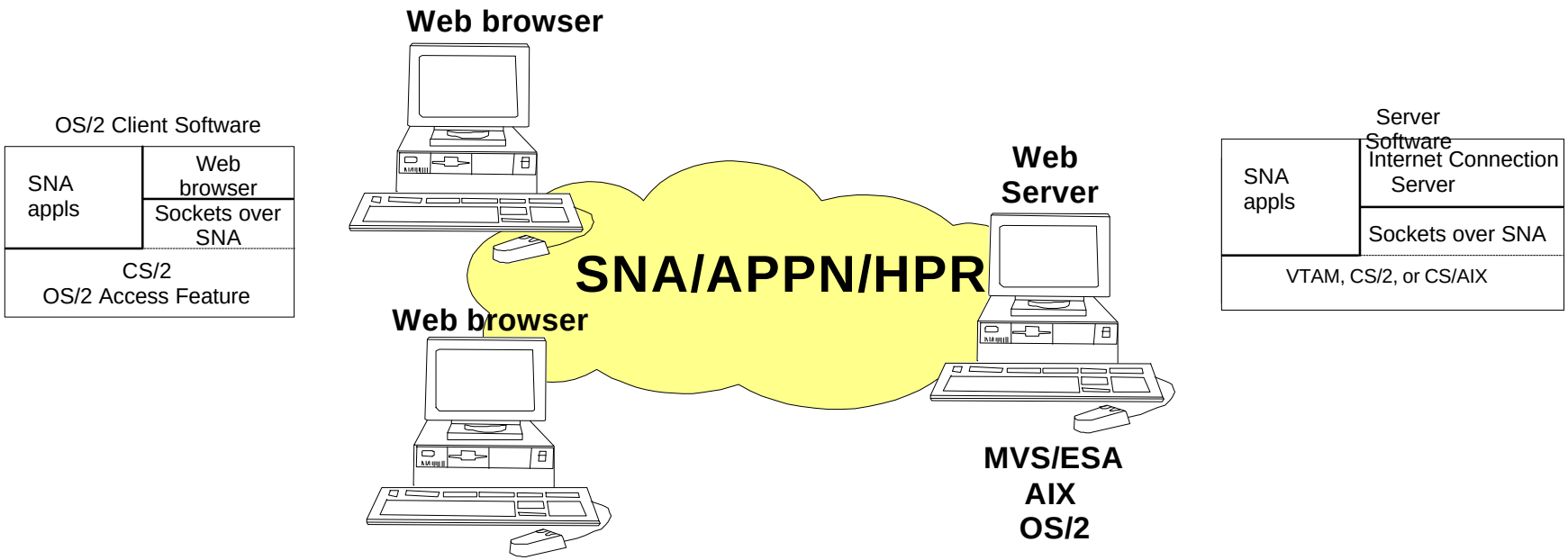
- **Supports traditional TN3270, RFC1646, RFC1647**
  - no IP on host
  - no SNA on workstations
  - HPR-capable from gateway to host with non-disruptive sessions
  - LU1, LU2, and LU3 devices
  - LU name assignment
  - Print services
  - ATTN, SYSREQ keys
  - SNA response handling

Multiprotocol Concentration Advantages



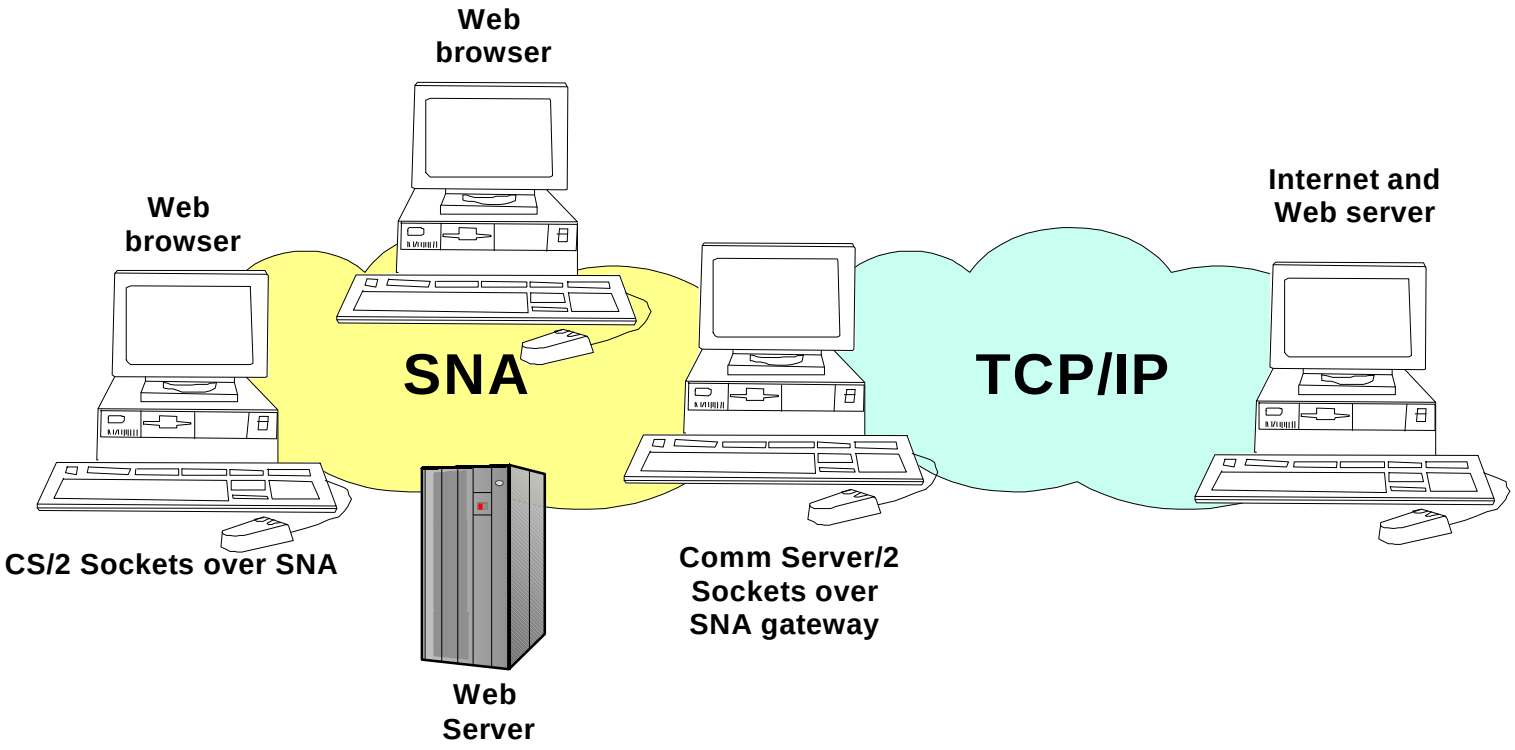
- **Single backbone protocol concentration eliminates complexity of multiple protocol stacks**
- **No modifications to applications**
- **Non-SNA applications running over SNA benefit from SNA networking features:**
  - cost-effective bandwidth utilization
  - predictable response times
  - traffic prioritization
  - 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

Sockets over SNA - Intranet



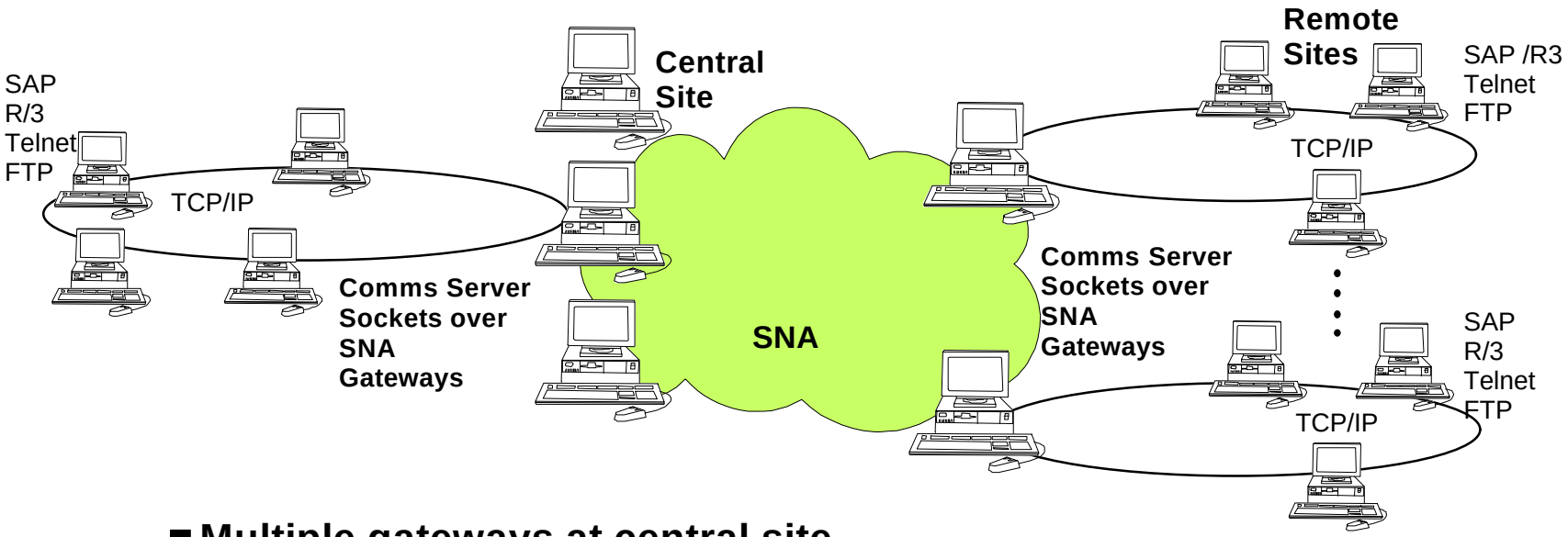
- **Web browser and server applications run on SNA/APPN network**
- **No separate TCP/IP communications stack on workstations or server**
- **Collaborative development of hypermedia for internal web site**
- **Access Internet applications from existing network without expanding network support**

Browse WWW from Your SNA Workstation!



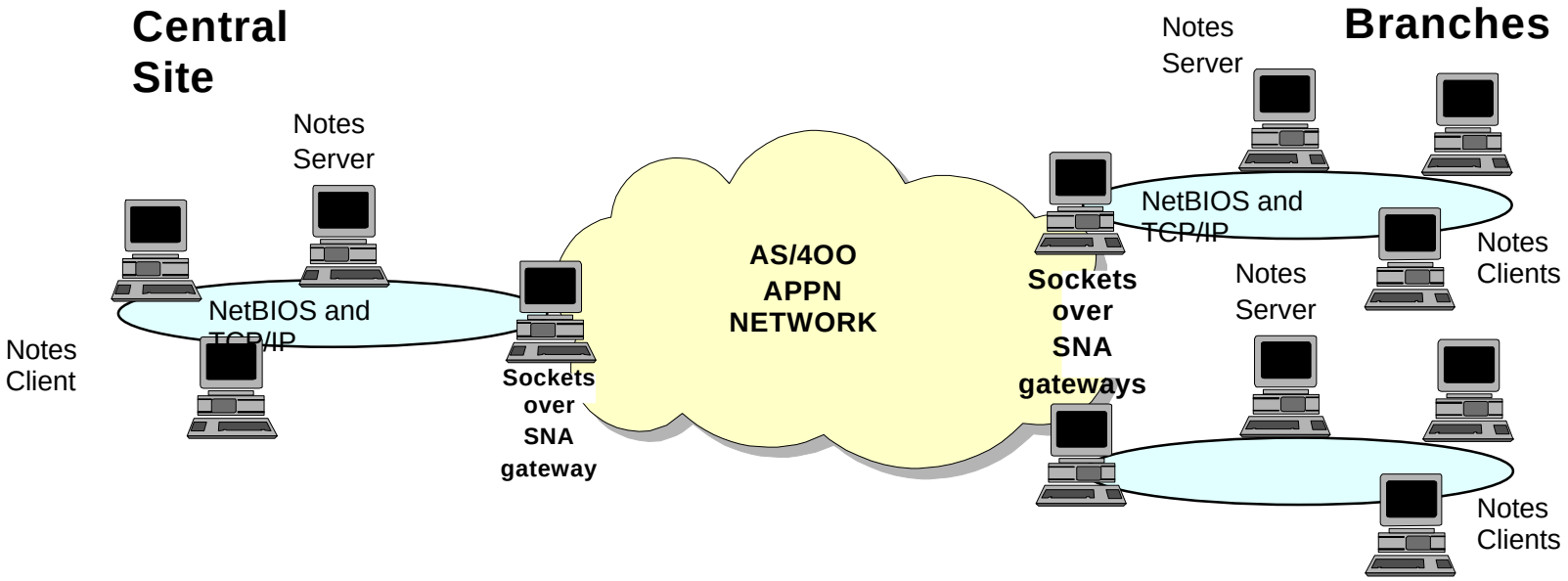
- **SNA end-users access Internet via web browsers while staying connected to SNA network**
- **Internet users can access Web server in SNA network**
- **Other sockets appls can be used in same configuration: eg. FTP, Telnet, SAP R/3, DCE, SNMP, Lotus Notes**

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**

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

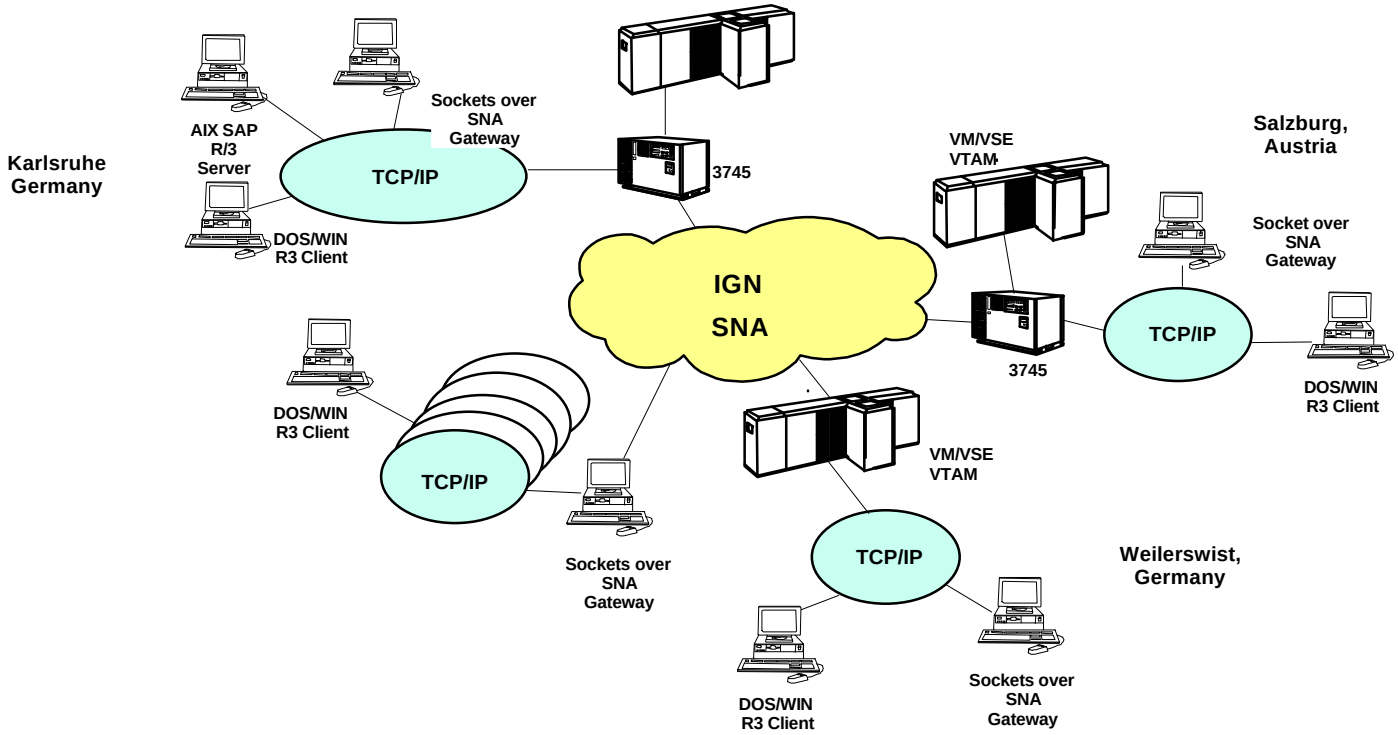
Solution: Branch LAN interconnection using Sockets over SNA gateways in Communications Server for OS/2 Warp #BATCH class of service used for Notes traffic so 5250 traffic is not impacted

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.raleigh. ibm.com/cm2/cm2test3.html
http://www.software.ibm.com/is/sw-servers/communications/cmssuc03.html

Customer Scenario - Filiadata: SAP R/3 over SNA



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

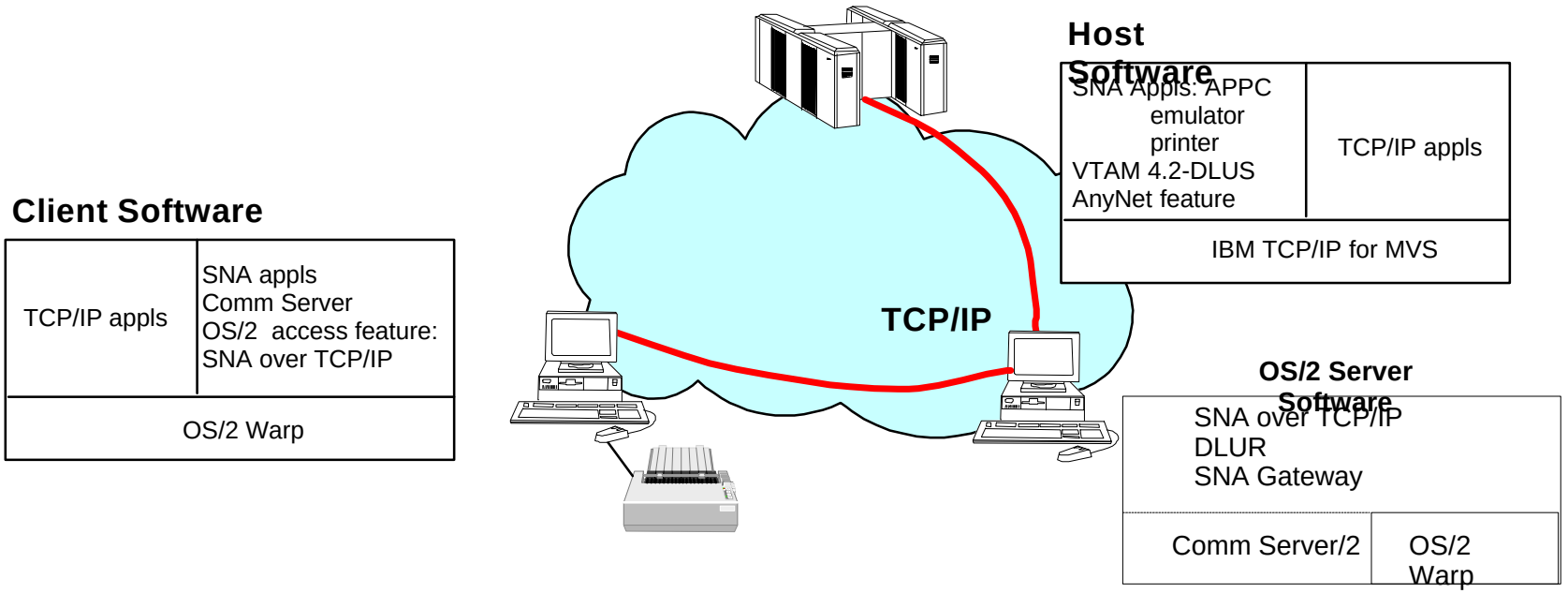
Solution: Paired Sockets over SNA Gateways (available in Communications Server for OS/2 Warp)
to connect remote store over IBM Global Network to SAP R/3 server site

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

Traffic prioritization for SAP R/3

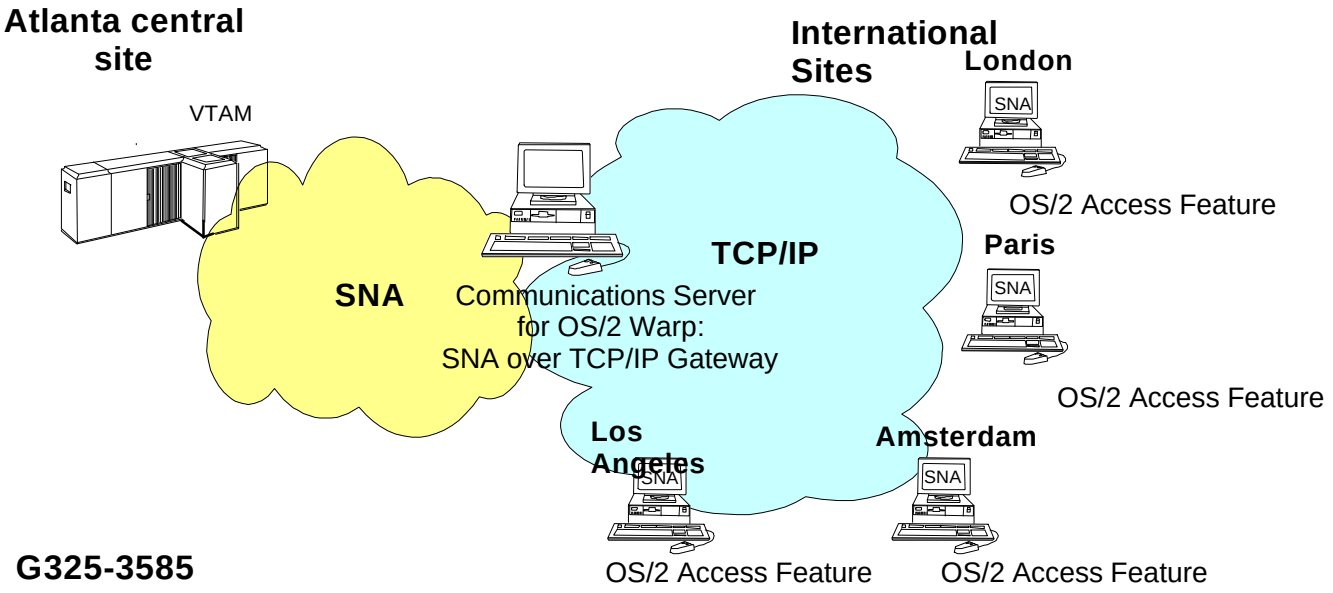
Brochures: G325-3624 application brief, G325-3640 SAP R/3 over SNA solutions

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**

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



Brochure: **G325-3585**

Company: **Major supplier of news and entertainment products worldwide**

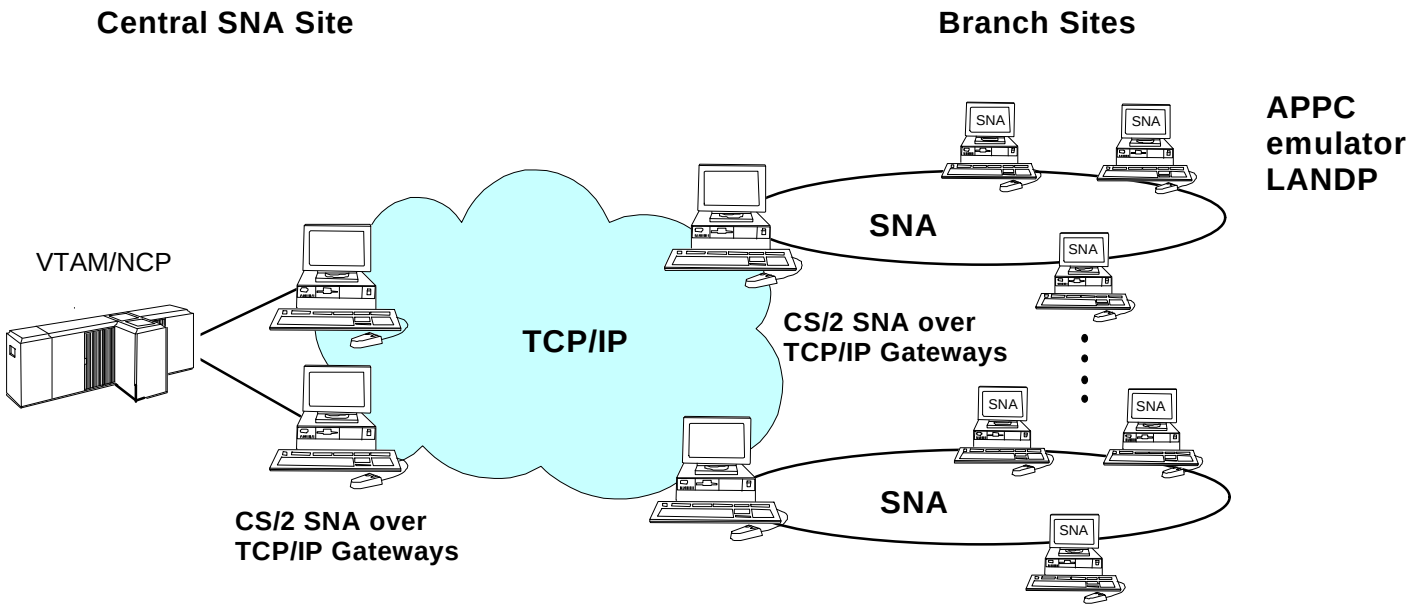
Environment: **SNA central site in Atlanta**
TCP/IP international locations

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

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**

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

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

Multiprotocol Customer References

APPC over TCP/IP

Caisse Nationale de Credit Agricole, France

- Industry: banking
- Products: AnyNet/MVS and AnyNet/6000
- Key applications: DB2 on MVS and DDCS/6000

Chevron

- Industry: petroleum
- Products: AnyNet/2
- Key applications: DB2/2

Pacific Bell

- Industry: telecommunications
- Products: AnyNet/MVS, AnyNet/2, AnyNet/6000
- Key Applications DB2, DB2/6000, X: Change

Tennessee Valley Authority

- Industry utilities
- Products: AnyNet/MVS and AnyNet/2
- Key applications: DB2, CICS

Turner Broadcasting System

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

US Postal Service

- Industry: communications
- Products: AnyNet/2
- Key applications: XCOM from Legent, DCAF

Sockets over SNA

Bank al Jazira, Saudi Arabia

- Industry: banking
- Products: AnyNet/2 Sockets over SNA Gateway
- Key applications: SNMP, Telnet, FTP

Filiadata, Germany

- Industry: communications
- Products: AnyNet/2 Sockets over SNA Gateway
- Key application: SAP R/3

Zahid Tractors and Heavy Machinery Co. Ltd, Saudi Arabia

- Industry: distribution
- Products: AnyNet/2 Sockets over SNA Gateway
- Key Applications Lotus Notes

NetBIOS over SNA

Nykredit Mortage Bank, Denmark

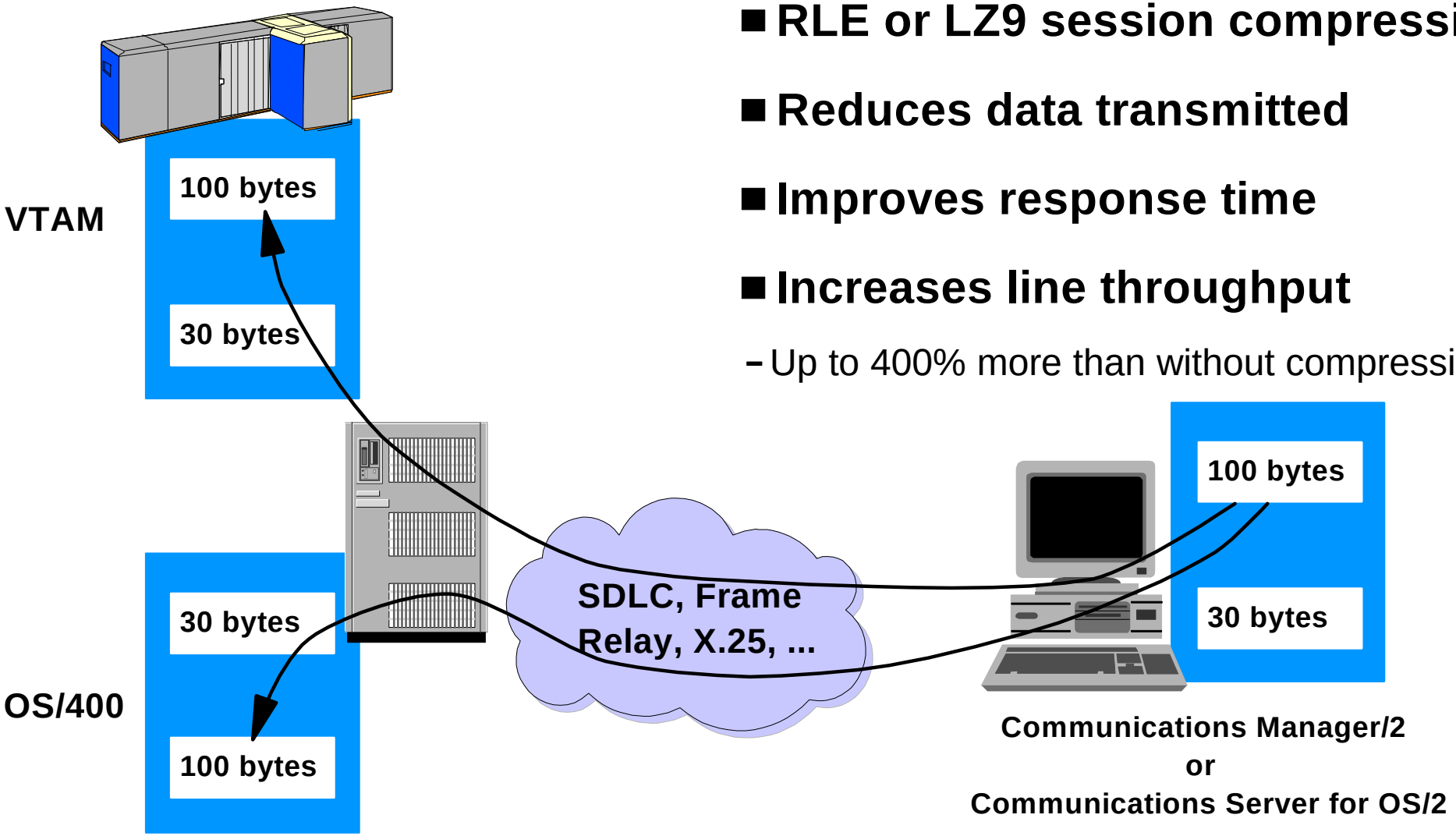
- Industry: banking
- Products: AnyNet/2
- Key applications LAN Server

Performance

URL: http://www.raleigh.ibm.com/cm2/cm2perf.html

Data Compression

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



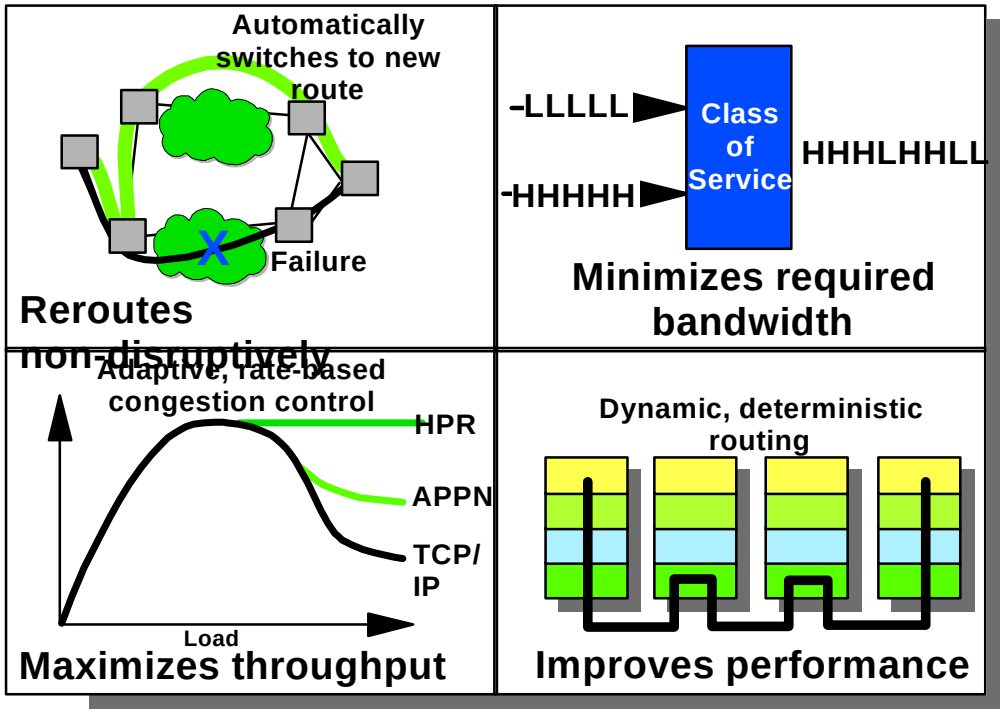
IBM Software

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

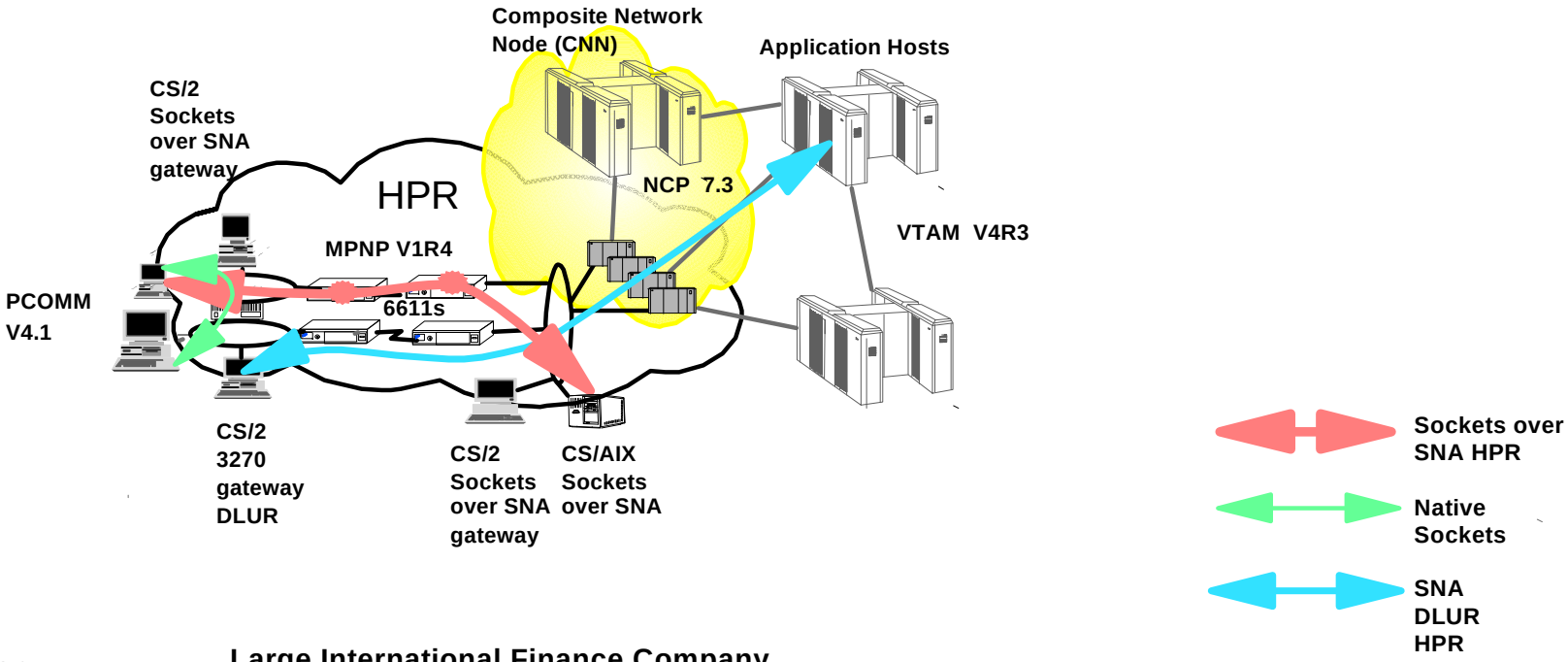
High Performance Routing



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)**

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

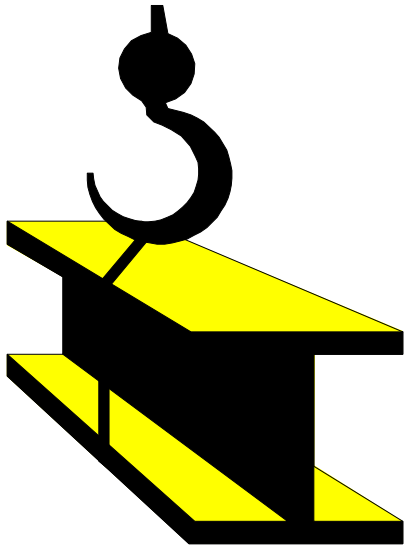
Solution: HPR backbone with AnyNet multiprotocol software: Upgrade to HPR and DLUR (6611, VTAM 4.3, CS/2, PCOM). Implement SOC over SNA in PCOM and CS/AIX for RS/6000 access. Implement CS/2 SOC over SNA GW.

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.

APIs

APIs

- **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, message logging, etc.



Other Enhancements

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

Competition

Why IBM

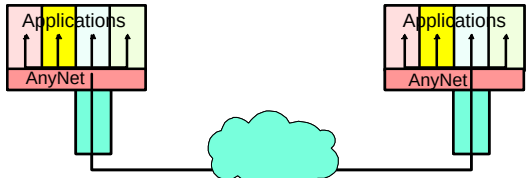
- **Premiere multiprotocol support**
- **Powerful SNA gateway**
- **Comprehensive workstation support**
- **Advanced Peer-to-Peer Networking (APPN) network node and end node**
- **Rich set of application programming interfaces (APIs)**
- **Ease of mobile computing**
- **Capacity for growth**
- **Wide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

CS/2 and Routers

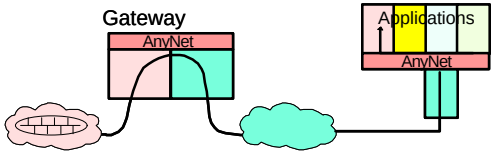
Communication Server

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

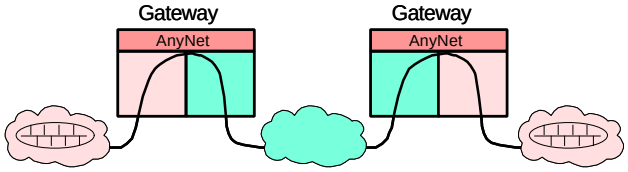
adding non native application to single network



joining 2 unlike networks



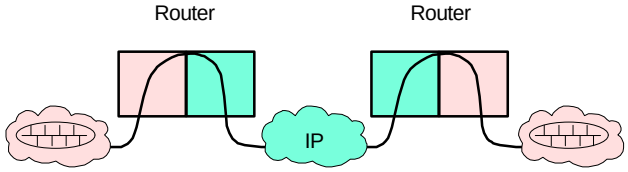
joining like networks via backbone



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



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

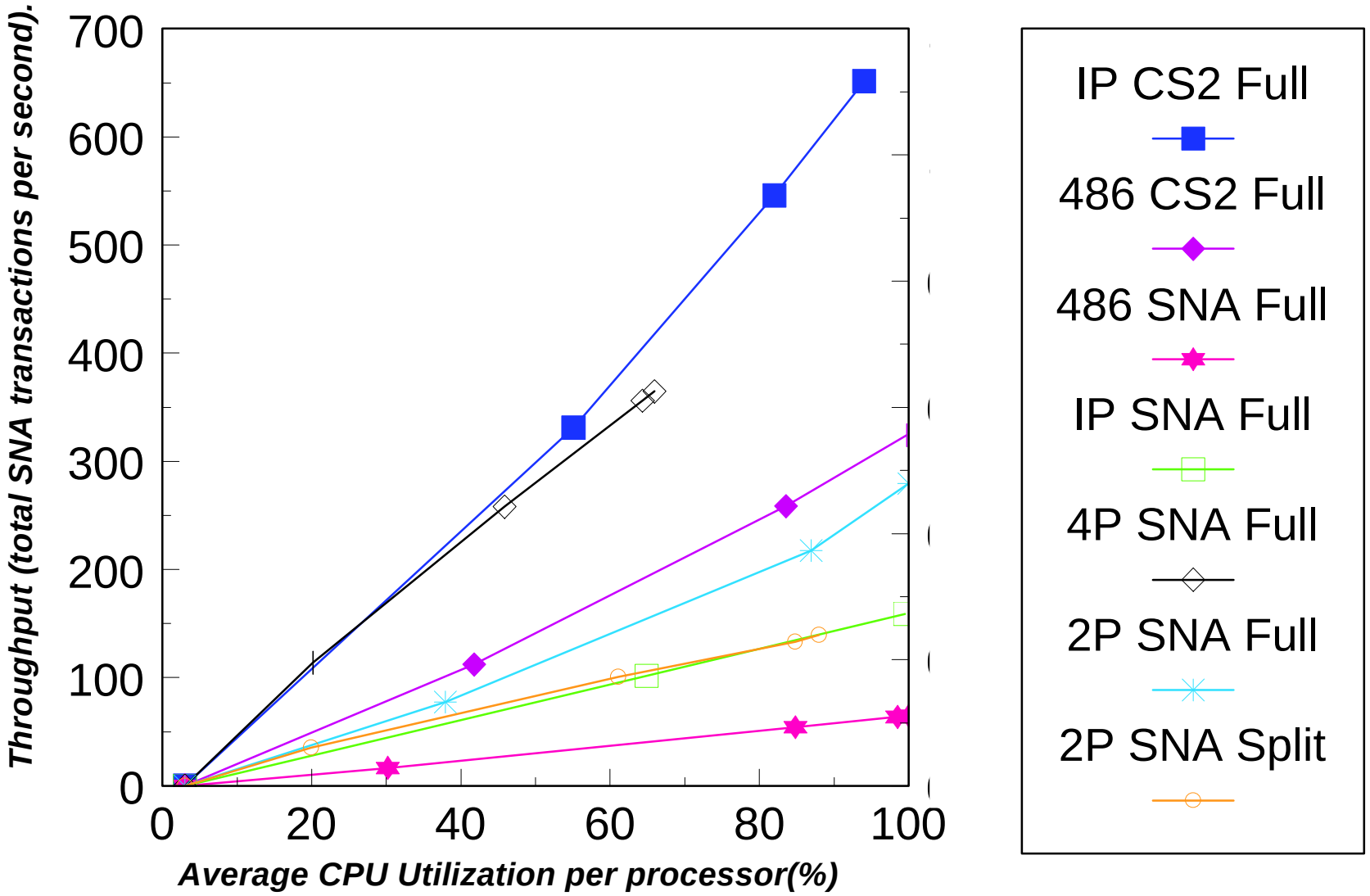
Dispel the Myths

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 LEN 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

Broader, More Comprehensive -- Better!

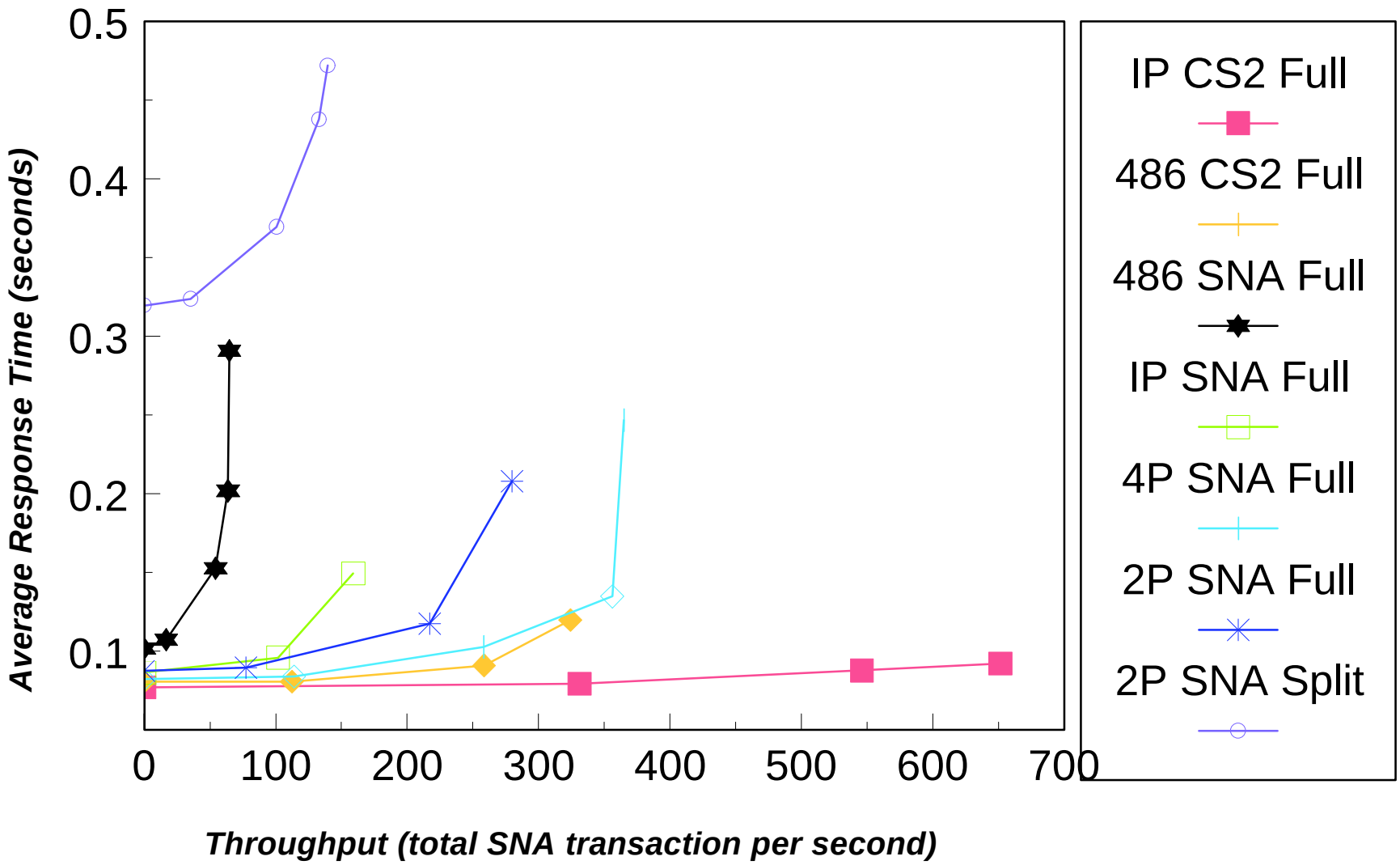
Comparison	IBM Enterprise Communications	Microsoft SNA Server
TCP/IP and SNA	Yes, plus multiprotocol support	Yes
SNA over IP	Yes, w/o encapsulation or DLSw	Yes, with encapsulation or DLSw
Sockets over SNA	Yes, w/o encapsulation or DLSw	No
APPN support	Advanced, full support	pre-APPN LEN node (minimum)
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 operating 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

SNA Gateway CPU Utilization vs.Total Gateway Throughpu
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.raleigh.ibm.com/cm2/cm2perf.html
Source: The Tolly Group, September 1996

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



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

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 singe-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

OS/2 Product Comparisons 1996

	Communications Server	CM/2 1.11	PCOM 4.1	AttachPak	Warp Connect
Emulator	PCOM Combo Entry – Limitations: ▪ LUA only ▪ 2 sessions ▪ Reduced end user – Features	CM/2 3270/5250	PC/3270 PC/400 Combo TN3270 TN5250	PC/3270 Entry – Limitations: ▪ OS/2 only ▪ 2 sessions ▪ Reduced end user – Features	TN3270
Gateway	SNA SNA over TCP/IP Sockets over SNA TN3270E LAN Gateway (IPX, NetBIOS)	SNA	None	CM/2 1.11 "Application Environment"	None
APPN	Network Node End Node HPR, DLUR	Network Node End Node	End Node HPR DLUR	function equivalent to CM/2 1.11 less – Network Node – GW – Emulator – EHLLAPI, SRPI – WAN connectivity	None
APIs	32 bit. LUA, APPC, CPI-C, ACDI	16 bit. LUA, APPC, CPI-C, ACDI, EHLLAPI, SRPI	32 bit. DDE, EHLLAPI, SRPI LUA, APPC, CPI-C, ACDI, X.25		None
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	Coax, Twinax, ASYNC, TR, Ethernet, 802.2, SDLC, X.25, ISDN, IDLC, FDDI, IPX, TCP/IP		None
Multiprotocol Support	SNA over TCP/IP Sockets over SNA TN3270E LAN Gateway (IPX, NetBIOS)	None	SNA over TCP/IP Sockets over SNA	Sockets over SNA, IPX and NetBIOS	

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

Enterprise Communications Family Prices

Communications Server/2	Price ($)
Base price	699
Additional licenses	669
Upgrade	299
Upgrade (additional licenses)	269
Access feature for Windows or OS/2	69
Upgrade Protection Option	199

Enterprise Communications Family Prices, Continued

Personal Communications V4.1	Price ($)
AS/400 & 3270 base price	329
AS/400 & 3270 additional licenses	279
AS/400 & 3270 upgrade	139
AS/400 & 3270 upgrade (additional licenses)	109
AS/400 & 3270 Upgrade Protection Option	99
AS/400 base price	199
AS/400 additional licenses	169
AS/400 upgrade	109
AS/400 upgrade (additional licenses)	89
AS/400 Upgrade Protection Option	79

Where to go for Technical Assistance

■ Publications

- GC31-8189 Communications Server for OS/2 Warp, Version 4.0-Up and Running !
- SG24-4587 Communications Server for OS/2 Warp, Version 4.0 Enhancements (Redbook)

■ World-Wide Web Home Pages

- http: //www.ibm.com IBM Home Page
- http: //www.raleigh.ibm.com/cm2/cm2prod.html IBM CM/2 and CS/2
- http: //www.raleigh.ibm.com/cm2/cm2perf.html IBM CM/2 and CS/2 performance
- http: //www.raleigh.ibm.com/any/anyover/html IBM AnyNet
- http: //www.software.ibm.com/is/sw-servers IBM Software Server

■ Collaterals

- G325-3565 Communications Server
- G325-3596 Communications Server for OS/2 Warp
- G325-3568 Communications Server for OS/2 Warp, OS/2 Access Feature
- G325-3566 Communications Server for OS/2 Warp, Windows Access Feature
- G325-3642 Positioning IBM's Family of OS/2 Desktop Communications Software Products
- G520-8000 Software Server Overview Brochure
- G325-5207 Communications Server Family Brochure
- G325-5102 Use your SNA network for internet access
- G325-3650 Integrate SAP R/3 and your SNA or APPN Network

■ Application briefs

- G325-3624 German retailer benefits from multiprotocol solution
- G325-3585 Turner Broadcasting System benefits from Communications Server
- G325-3648 Retail supplier implements Lotus Notes over APPN

■ Forums

- OSDF21 on CompuServe
- OS2CM or Anynet CFORUM on OS2BBS bulletin board via TalkLink
- OS2CM2 or AnyNet FORUM on IBMPC