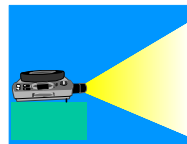


Leadership in IBM S/390 Enterprise Server Access

Part 6 : Why choose IBM?

Raj Rajan
Cisco Competitive Marketing Team
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(T/L 8-526-2351)
RAJAN@RALVM6
rajr@vnet.ibm.com
Sep., 1997



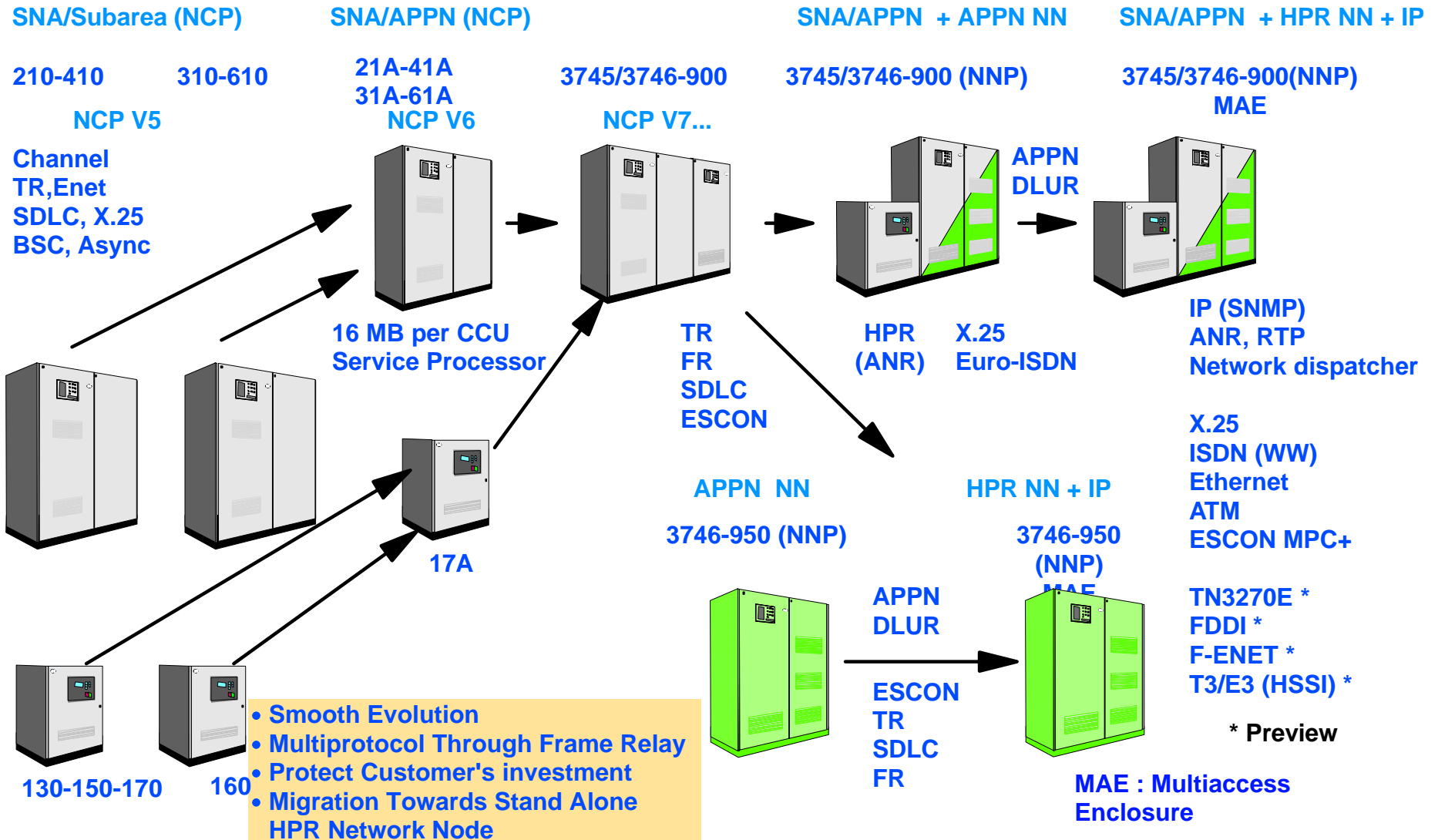


Content

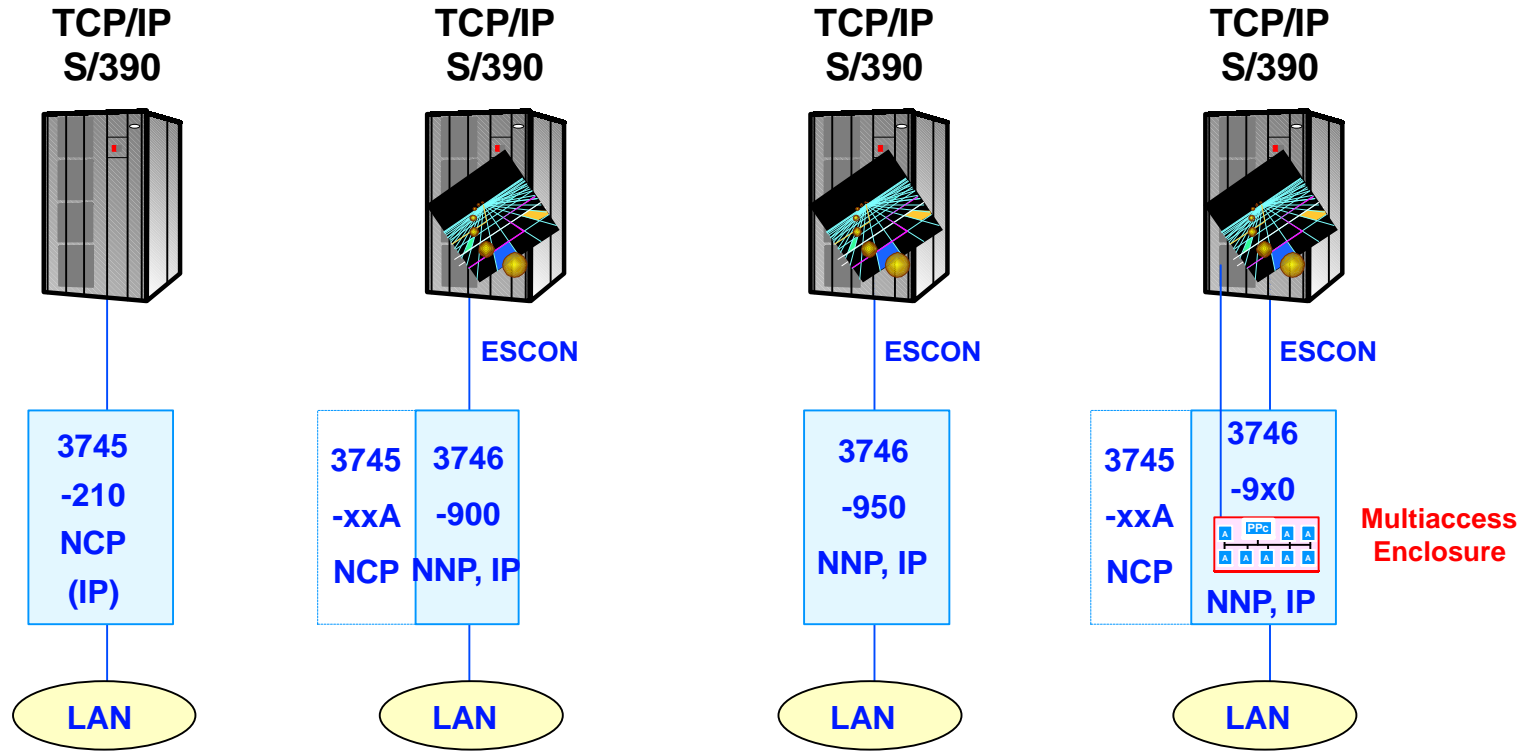
▶ IBM S/390 Server Access Leadership

- Part 1 : Considerations for S/390 Server Access
- Part 2 : Extensive TCP/IP support
- Part 3 : Leadership in SNA
- Part 4 : Testing Background
- Part 5 : WSC performance testing results
- Part 6 : Why Choose IBM for S/390 Server Access

IBM 3745/3746 Evolution



S/390 Server Access - TCP/IP Performance Growth



Transaction Rate (Telnet) 1
 (packets: IN=100 Bytes, OUT=1000 Bytes)
 Data 1
 Throughput (FTP) 1
 (packets: 4000 Bytes)

15

30

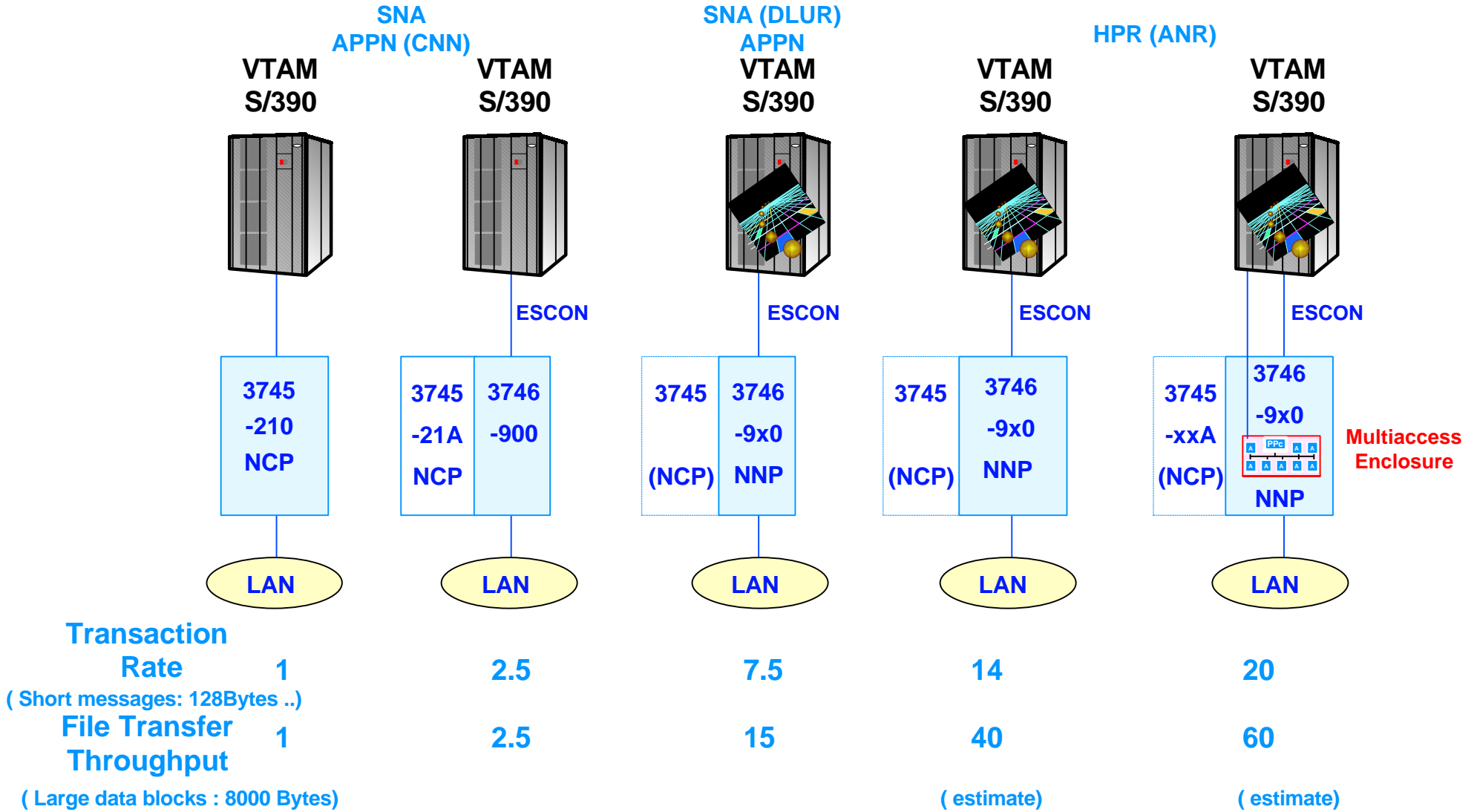
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30

30

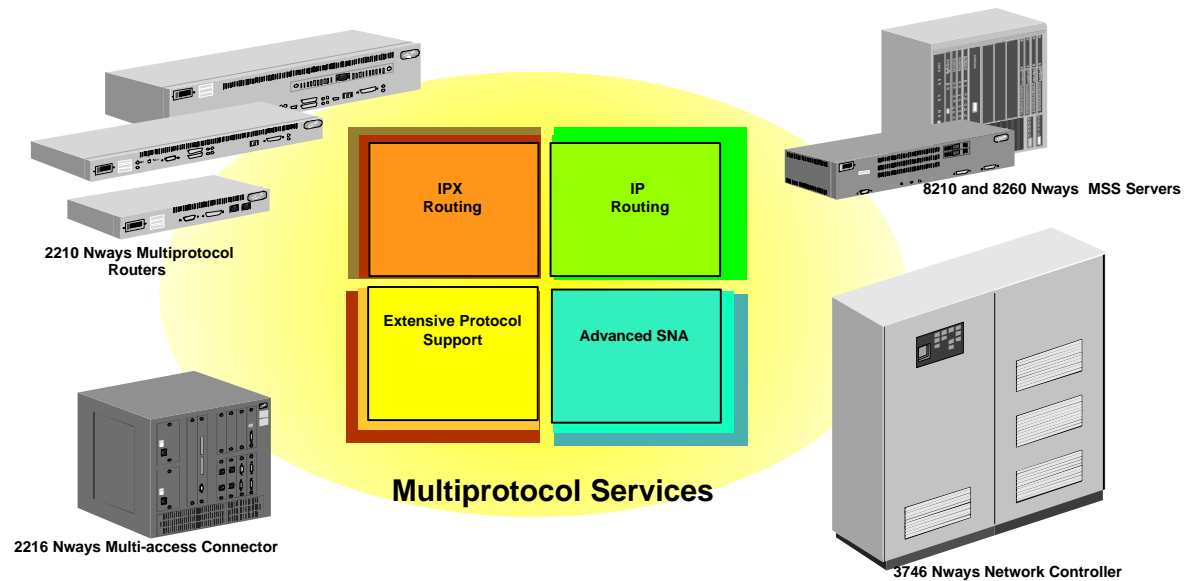
50

S/390 Server Access - SNA Performance Growth



Robust Routing Functions

Delivers interoperability and efficient use of skills and resources



Common code base for :

- Switching
- Access
- Routing

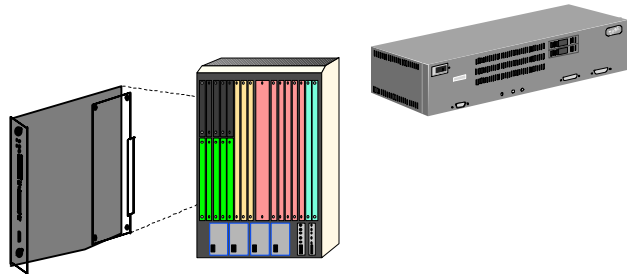
Customer Benefits :

- Efficient use of technical skills
- Easy integration of LAN/WAN networks
- Smooth migration path
- Cost effective

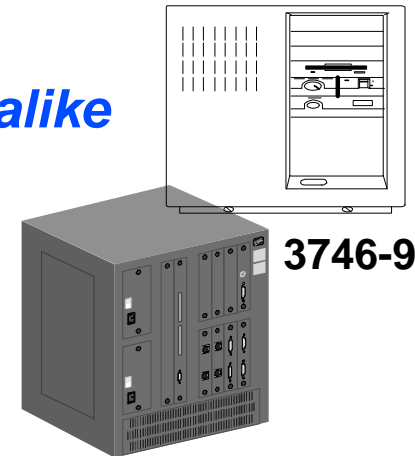
Switched Virtual Network (SVN) Routing

*Scalable connectivity, common software base
Priced right for customers and business partners alike*

MSS blade in 8260 or Standalone 8210



MSS

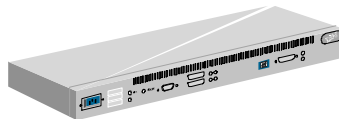


3746-9X0

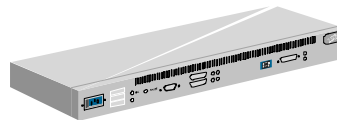
2216



**2210
Mod 1SX, 1UX**



**2210
Mod 12X**



**2210
Mod 14T, 24X**

Competitive end-to-end with *any* router vendor

Cisco routers with channel attachment

Not ready for prime time....

- ✓ **High overall costs**
- ✓ **Uncertain performance**
- ✓ **Questionable scalability**
- ✓ **Increasing complexity**
- ✓ **Forklift migration**
- ✓ **Requires multiple boxes**
 - To support SNA/APPN and TCP/IP



Cisco limitations

These limitations were observed by our technical support personnel when conducting Cisco 7507 performance evaluation

▶ Cisco 7507 testing observations

- **Low number of PUs support**
 - Were able to activate only 240 PUs out of the of 1160 configured
 - PUs had to be activated very slowly (2 second interval vs 4 PUs/sec for IBM)
- **Poor scalability**
 - Channel thrupt dropped when traffic load is increased
 - Dual Escon card performance only 110% of single Escon (SNA passthru testing)
- **CIP handling of LLC frames consumes excessive router processor cycles**

▶ Configuration limitations :

- Can store only two code images
- Importing code image from NVRAM or TFTP... overlays on the old image

▶ Bait and wait

- Yet to ship HPR support, though announced a year ago

▶ Poor Cisco *TAC support for SNA problems !!!!

- Lack of SNA problem resolution support skills
- Critsit problem remain unresolved for days

*TAC - Technical Assistance Center

IBM TCP/IP Products by Platform

System 390

**OS/390 built-in communications capabilities
Communication Server for MVS**

AIX

**TCP/IP in the AIX operating system
Communications Server for AIX**

AS/400

TCP/IP for OS/400

OS/2

**TCP/IP in OS/2 WARP
Communications Server for OS/2**

Windows 3.x and Windows 95

**Internet Connection Corporate Kit for
Windows 3.1 and Windows 95**

Windows NT

Communications Server for NT

Infrastructures for Network Growth

Enhanced End User Service for Enterprise Customers

Enterprise Extender for IP / SNA
Backbone choices for SNA and
TN3270 Clients

Network Dispatcher for balancing
Internet / Intranet servers

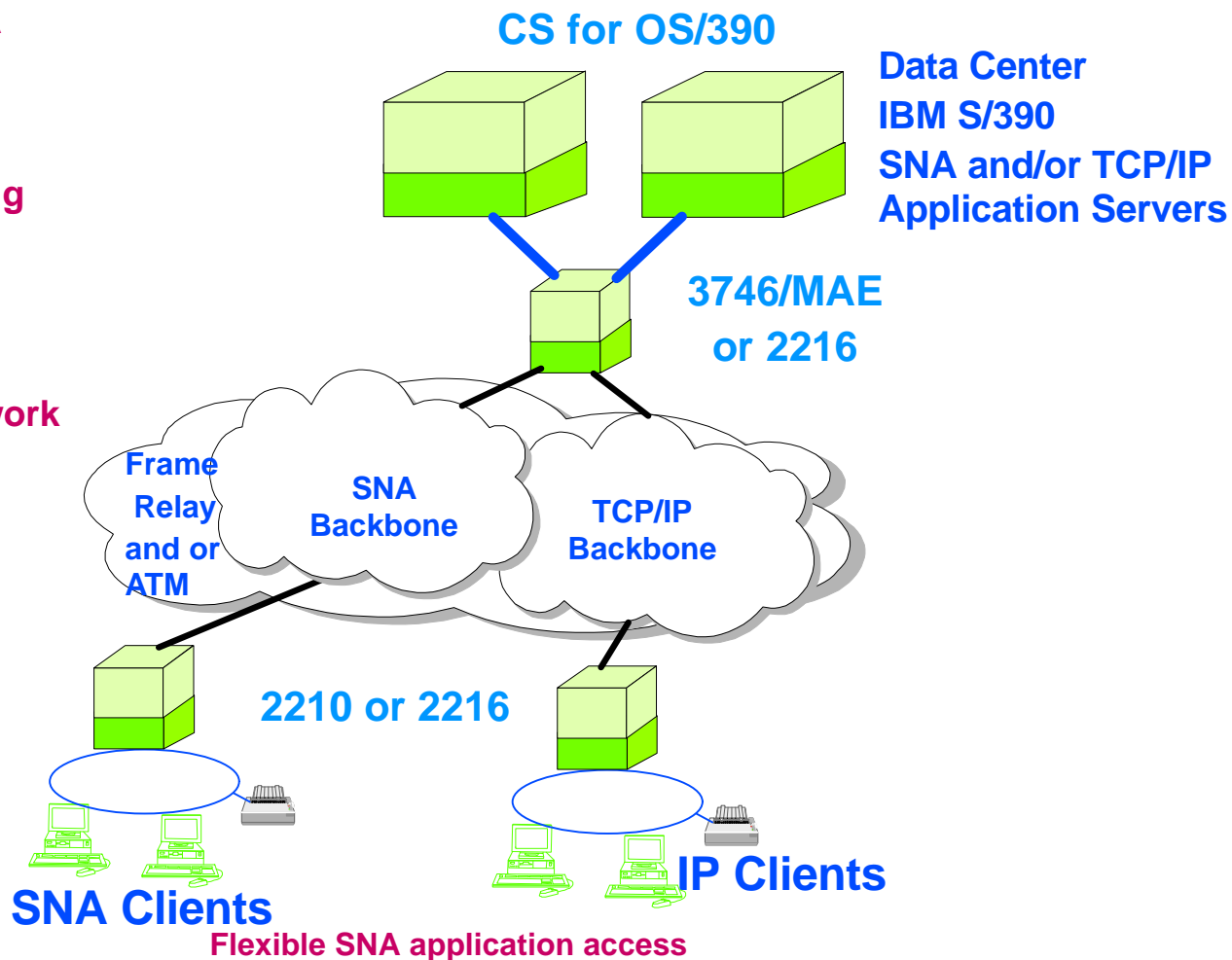
Enhanced ATM support

Branch Extender for APPN Network
Scalability and reduced cost

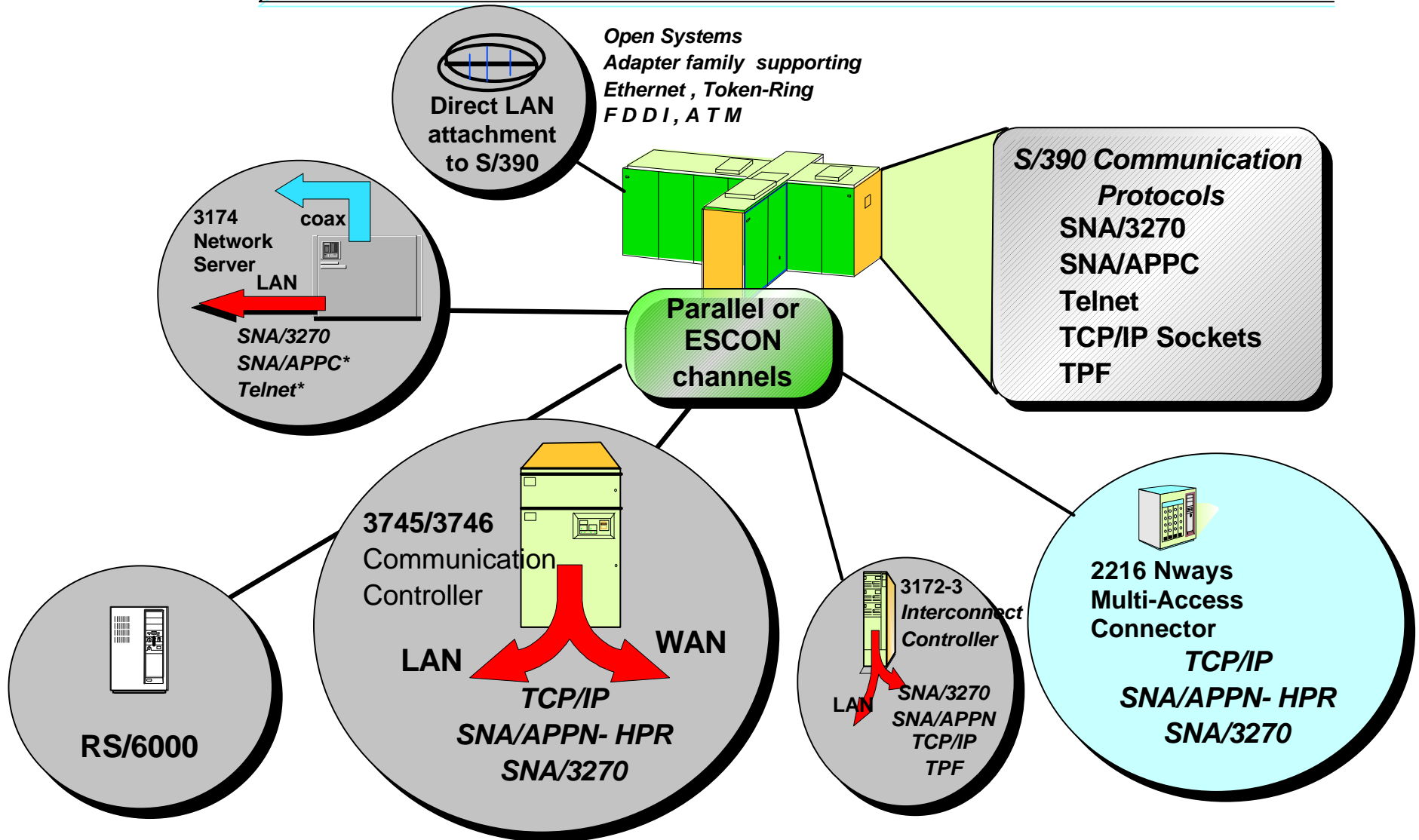
Data Link Switching

HPR

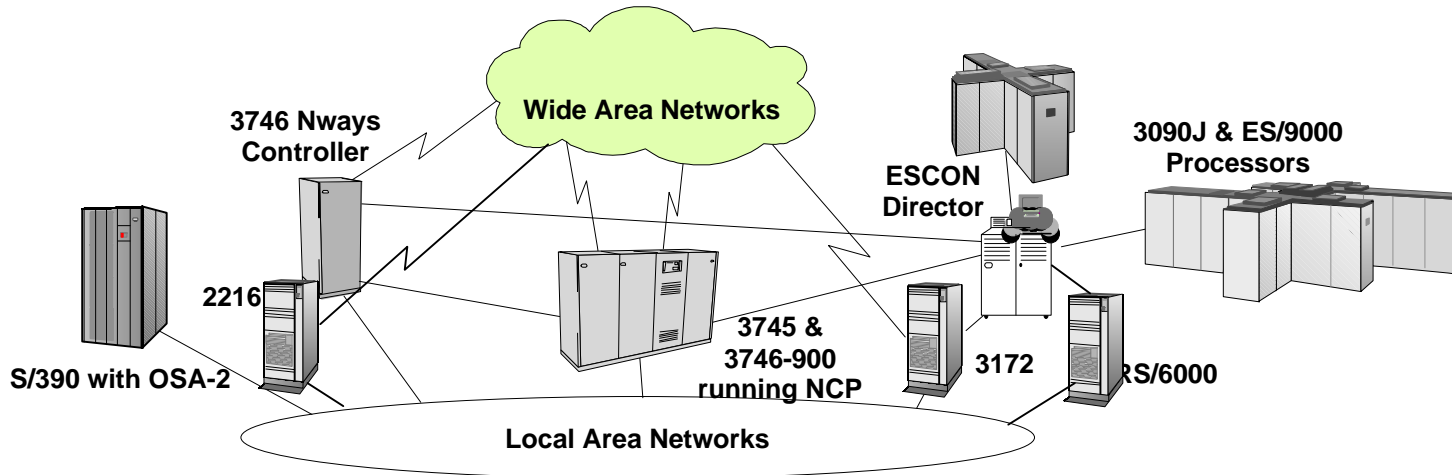
TN3270e Server



S/390 Server Access Choices from IBM

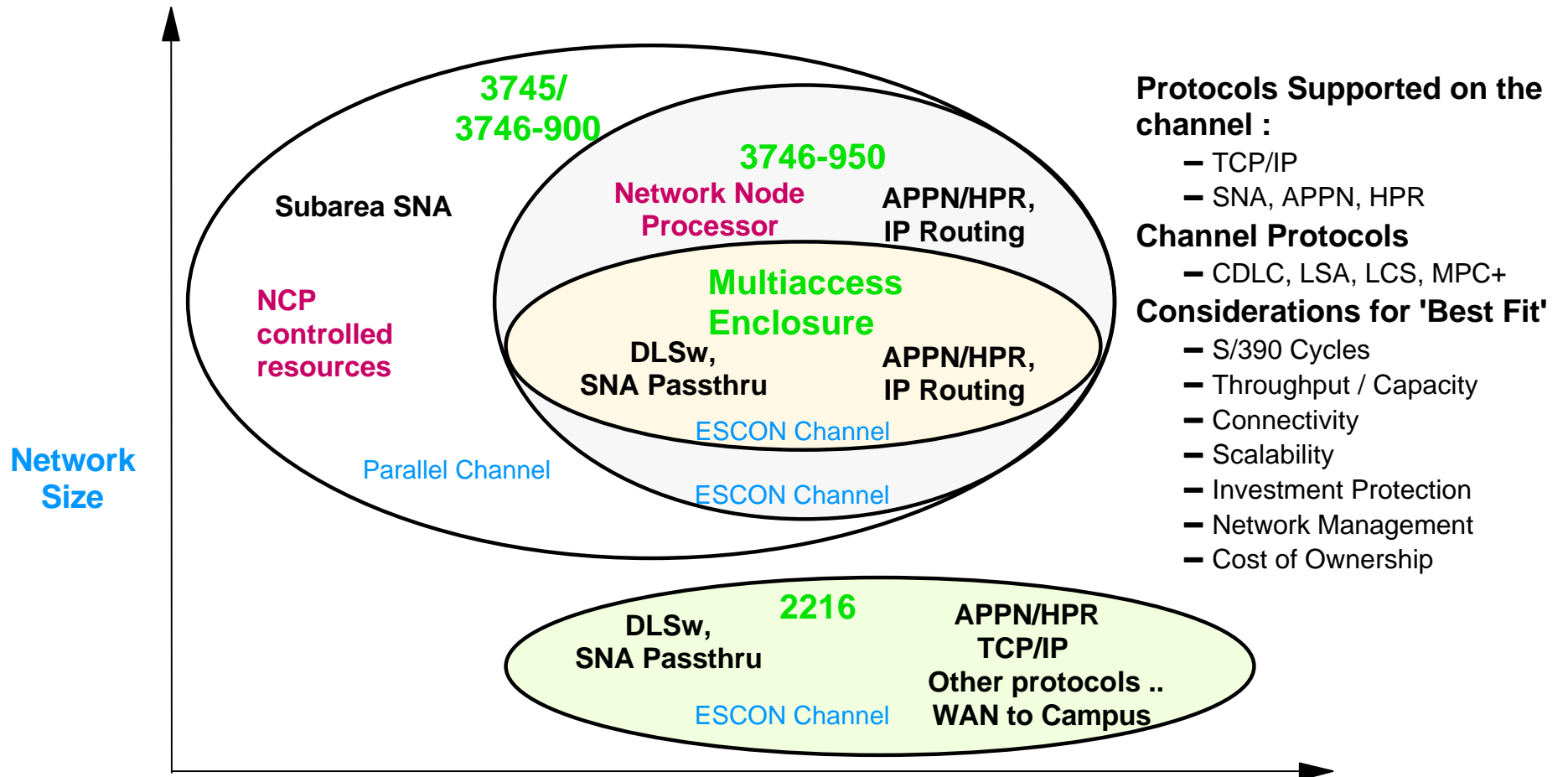


IBM S/390 Server Access Positioning

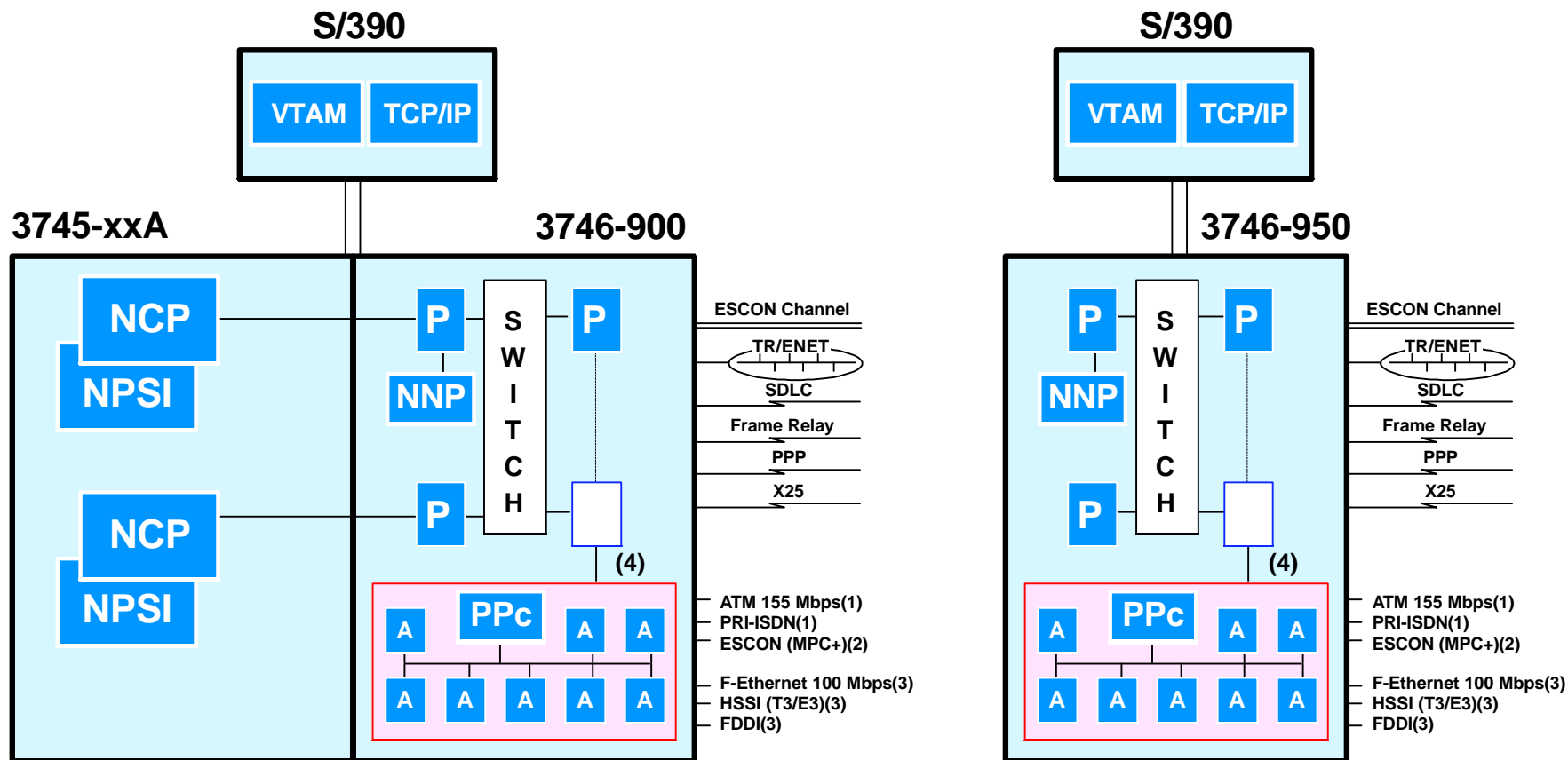


- ➔ **S/390 Open Systems Adapter 2 makes the S/390 Server a true peer to LAN Devices**
 - Synergism with MVS & VM OpenEdition
 - Utilizes S/390 Client/Server Products
- ➔ **IBM 3745 and the IBM 3746-900 Communications Controllers will continue to provide robust connectivity to Large LANs (Ethernet, Token Ring), WANs (across SDLC, X.25, Frame Relay), and multi-host sites over parallel and ESCON channels.**
- ➔ **IBM 3746 Nways Controller will provide high-performance SNA/APPN and native IP routing across LANs (Token Ring, Ethernet, Fast Ethernet *, FDDI*, ATM), WANs (SDLC, X.25, Frame Relay, ISDN) and multi-host sites over ESCON channels, and Frame Relay Switching**
- ➔ **IBM 2216 Nways Multi Access Connector will provide high performance cost effective S/390 Server Access and multi-protocol routing services to Small to Medium networks**
- ➔ **IBM 3172 Interconnect Controller will continue to provide low cost multi-host access for Ethernet, Token Ring, and FDDI LANs and for Frame Relay and SDLC WANs over parallel and ESCON channels for S/390 servers**
- ➔ **IBM RS/6000 will provide IP gateway functionality to S/390 Servers on a AIX / Unix platform**

Functional Overview of 3745/3746 and 2216



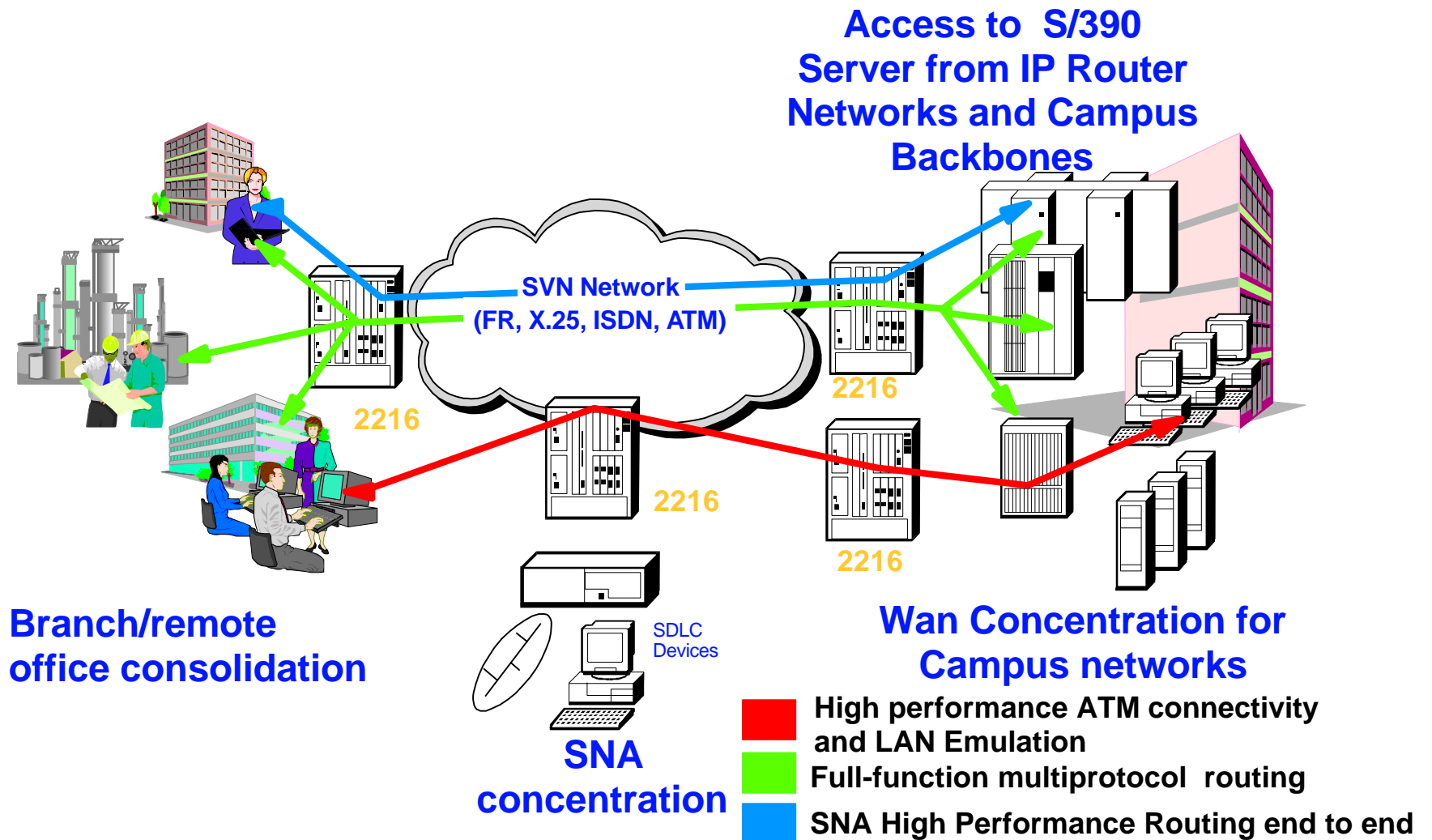
IBM 3746 - Premier S/390 Server Access



- P** Processor (+ Coupler)
- A** Adapter (=Coupler)
- Empty processor slot**
- NNP** Network Node Processor
- PPc** Power Pc

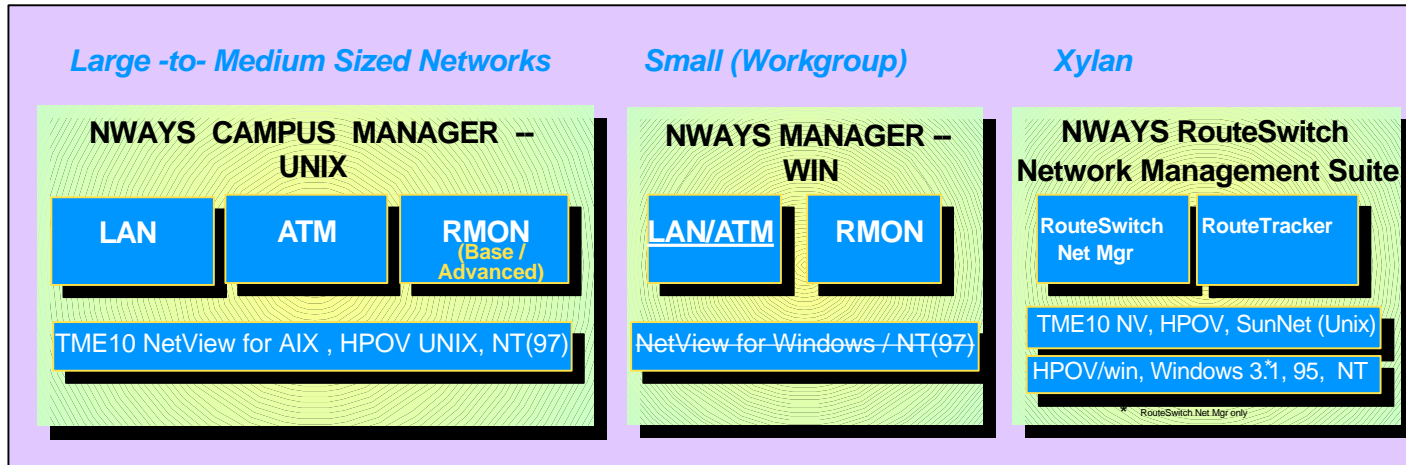
- (1) Available 6/30/97
- (2) Available 9/16/97
- (3) Product Preview
- (4) Available 6/12/98

2216 Multiaccess Connector Delivers

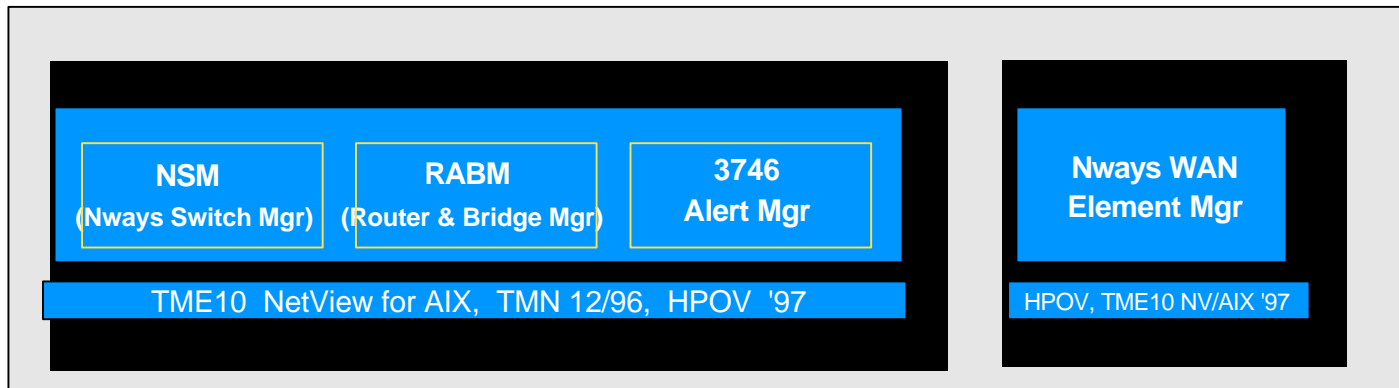


Nways Management Products

CAMPUS



ENTERPRISE

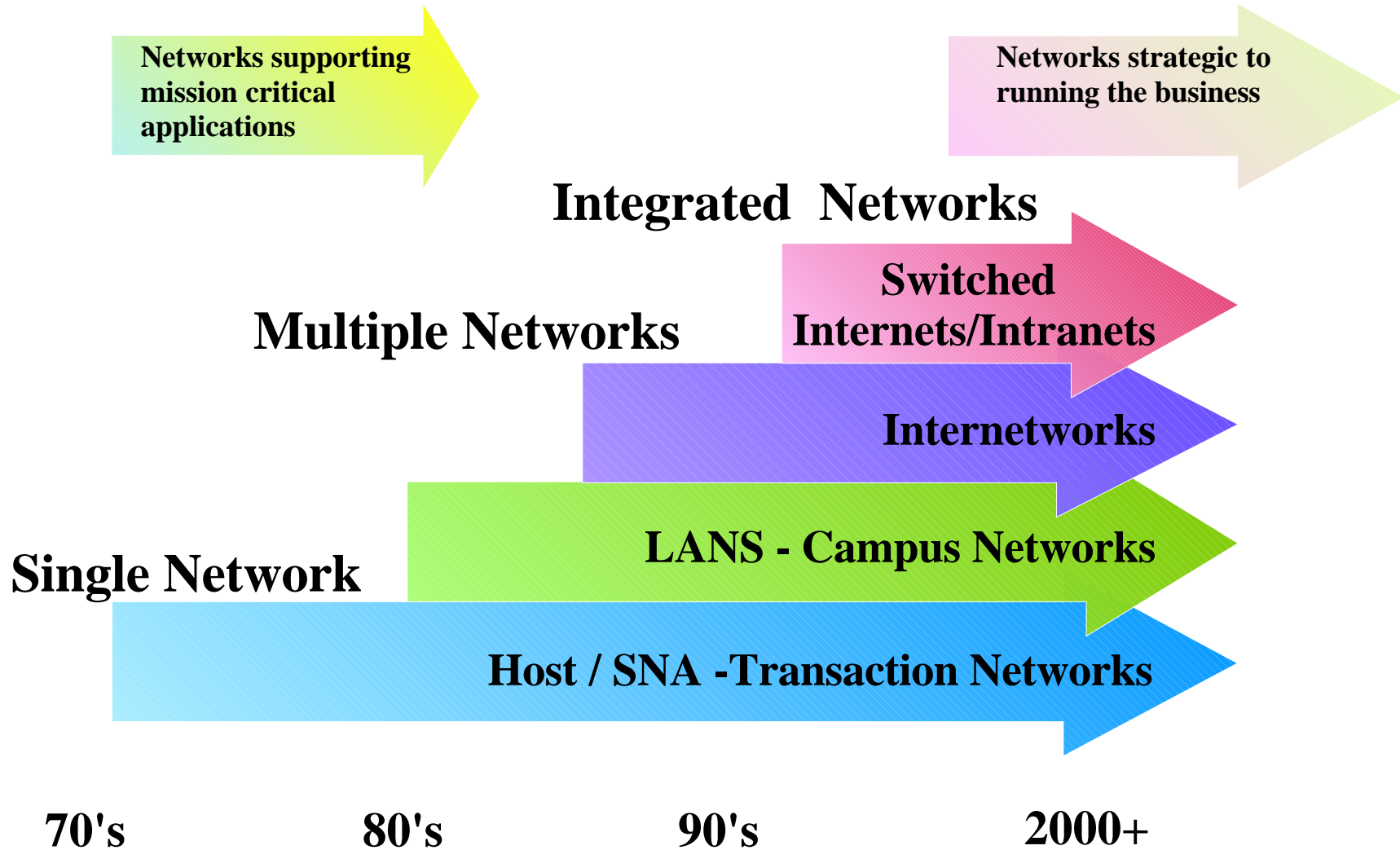




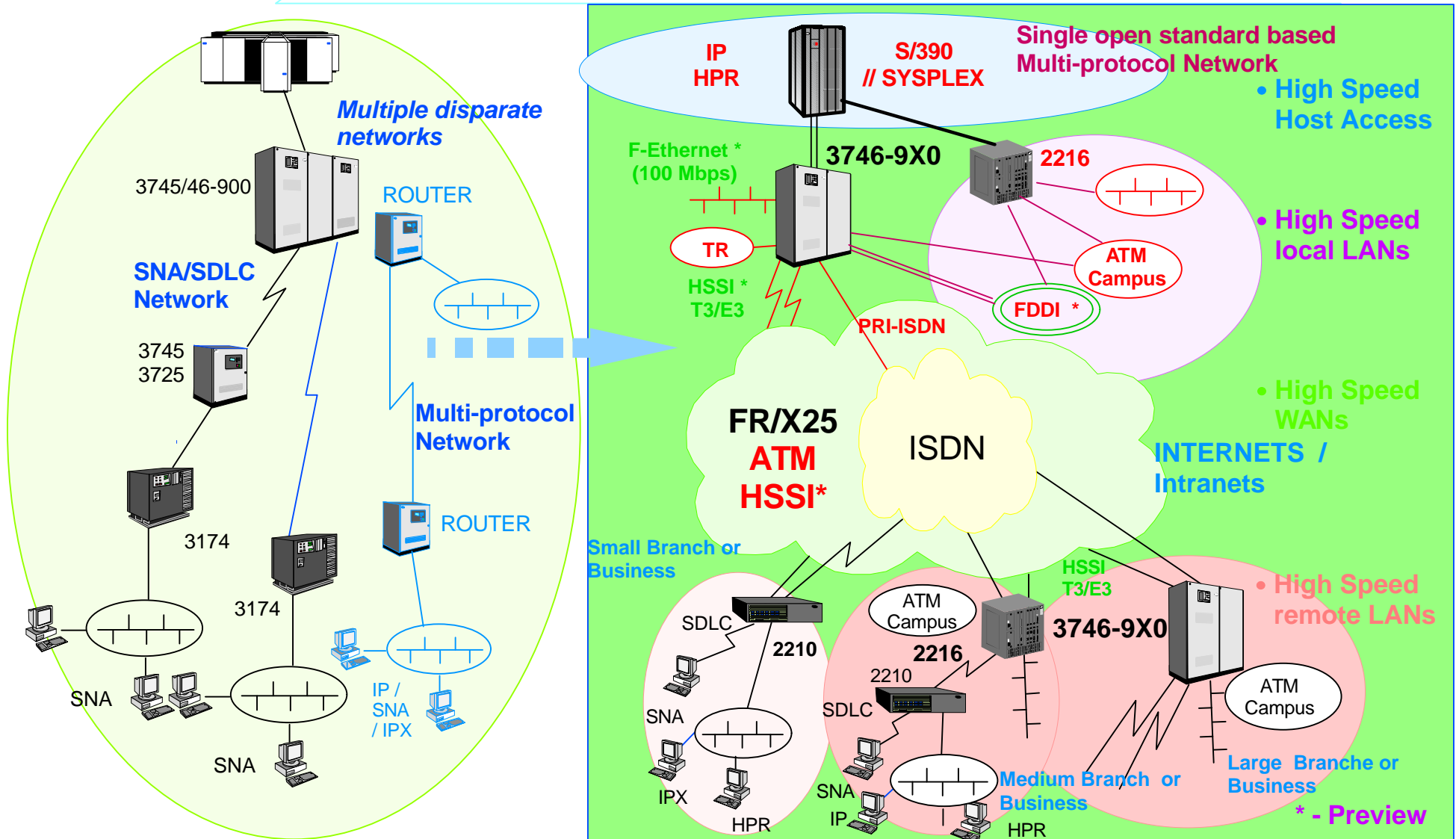
IBM Strategy & Vision

- **Protect customer investment in hardware , software, applications and skilled resources while enabling evolutionary migration to high speed networking infrastructure, integrating switching and routing.**
 - **3745 ----> 3746-900/950 ----> 3746-950 ----> Integrated Platforms**
- **Show leadership in developing standards, products and applications required to support network centric computing for new multimedia and internet / intranet applications.**
 - **MPLS (ARIS), AIW (Border Extender, Enterprise Extender, MPC, Internet2**
- **Leverage the wealth of SNA networking experience to create enhancements to TCP/IP so that it can provide the reliability and the availability characteristics required for business critical applications**
 - **Enterprise Extender, Border Extender, Distributed TN3270**

Networking Evolution

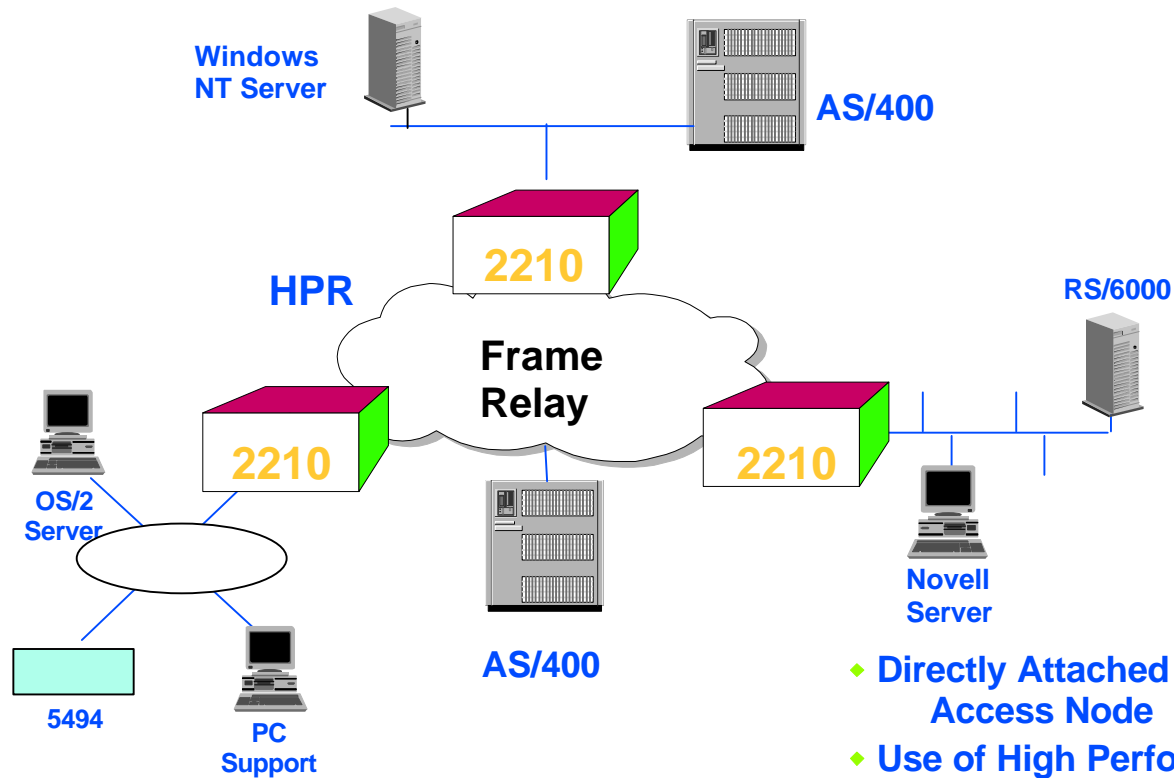


Network Computing Solutions from IBM



More Networking Computing Solutions.....

Small to Medium size businesses

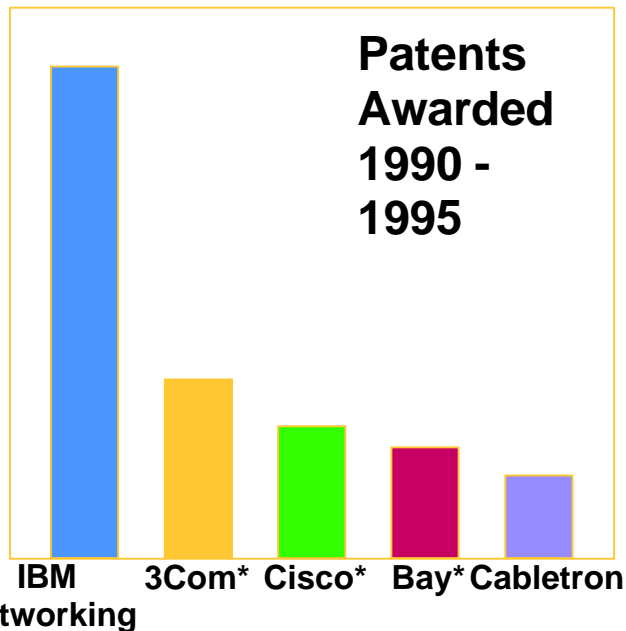


- ◆ Directly Attached AS/400 Using Boundary Access Node
- ◆ Use of High Performance Routing to Interconnect 2210's
- ◆ Availability of Additional Network Services such as Netware

IBM Networking Leadership

■ Inventions

- Prizma switch
- Aggregated Route-based IP Switching (ARIS)
- Wave Division Multiplexing
- Networking Broadband Services



* - Includes Patents Gained Through Acquisitions

■ Standards Development

- Lan Emulation
- Data Link Switching
 - ▶ Version 1 & 2
- Network Interoperability Alliance
- Committee leadership
 - ▶ IETF
 - ▶ ATM Forum
 - ▶ APPN Implementer's Workshop
 - ▶ Gigabit Ethernet
 - ▶ Multiprotocol Label Switching

■ Award-Winning Products

- Grand Prize Winner at 2 of past 4 InterOps
- Perennial Winner of Network Management Summit
- MSS Grand Prize
 - ▶ Atlanta & Paris InterOp
- 9729 Hot Products
- 2210 Tester's Choice
- 2218 Tester's Choice

Industry Recognition



Dedicated to meeting our customer's requirements with world-class Internet and intranet infrastructure solutions

Bottomline

IBM 3745/46-9X0 and 2216 offer premier mainframe gateway solutions because they provide:

- 
- ▶ **Industry leading performance and function for multi-protocol networks**
– TCP/IP & SNA / APPN / HPR
 - ▶ **Smooth migration and investment protection, supporting ever-increasing network demands**
 - ▶ **Scalable, competitive solutions to meet changing network requirements**
 - ▶ **Proven technology and support for mission critical network needs**



Why not Cisco ?

Why Cisco router gateway solutions are not right for S/390 Server access....

- 1. SNA performance poor and inconsistent**
- 2. IP performance less than IBM**
- 3. Significant increase in host MIPs**
- 4. Bus architecture with many limitations**
- 5. APPN/HPR is not yet available**
- 6. Does not support SNI & EP/BSC**
- 7. Does not scale in large network configurations**
- 8. Increase in network complexity and reliability**
- 9. Results in more complex management**
- 10. Support not well qualified to resolve SNA problems**



Why IBM ?

- **Networking Leadership in the Industry**
 - Patents, Standards, Technologies and Products
 - Performance best in the industry
 - Offers scalable evolutionary solutions
 - Robust multi-protocol support - TCP/IP, SNA/APPN-HPR
 - Committed to protecting customer investment - SW, HW, Skills & Resources

- **World Class support & service**
 - Global reach & 24X7X365 availability

- **Expertise in delivering strategic business solutions in a timely fashion**
 - Software, Internet / Intranet, Servers, Desktop, Storage
 - Sysplex, Netplex

- **Dedicated to developing long term partnership with the Customer**
 - Provide a Vision for the future
 - Deliver Networking solutions to enable Customer's gain competitive advantage