
IBM US Fast Start

An analysis of Cisco strategy & marketectures

NHD Cisco Competitive Marketing Support

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Jan. 97

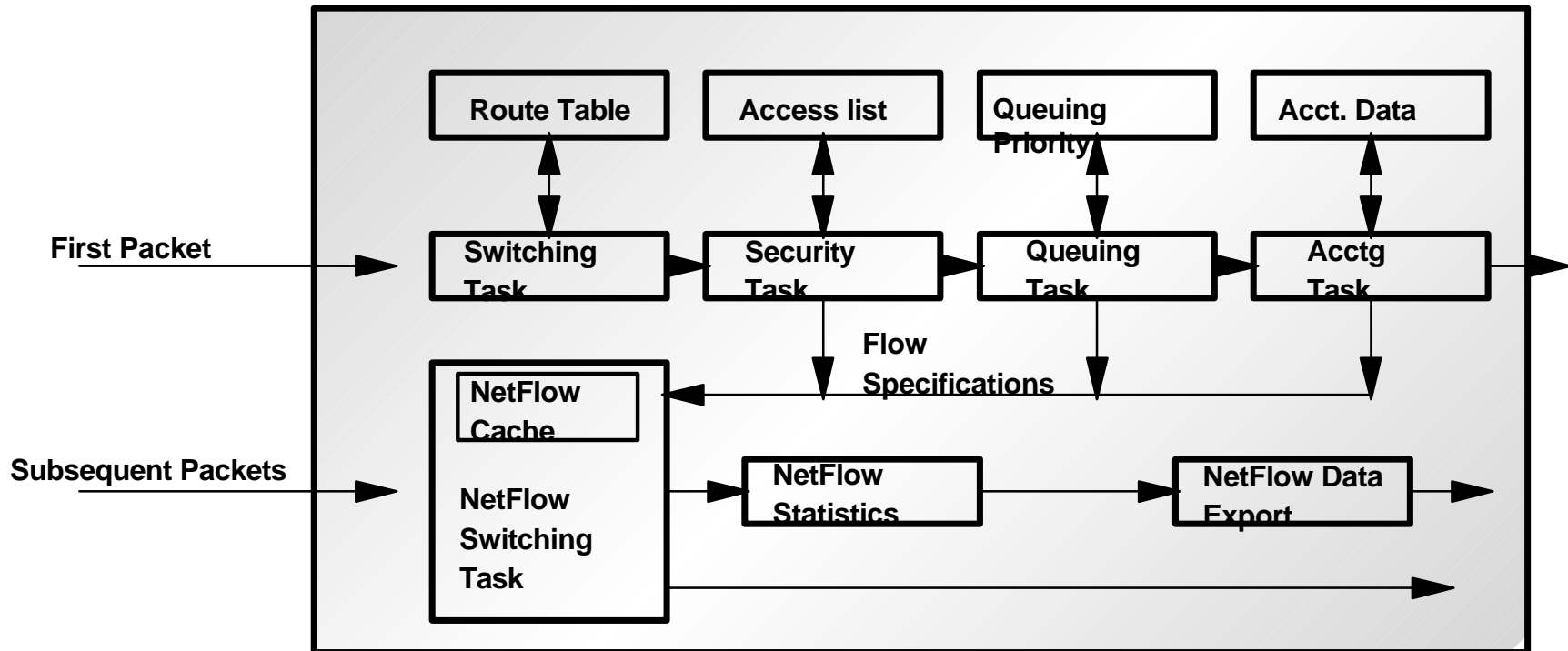


Updated April 1997
Part B (2 of 2)

Part 2 Section 3



NetFlow Switching



- **Comments on NetFlow switching:**

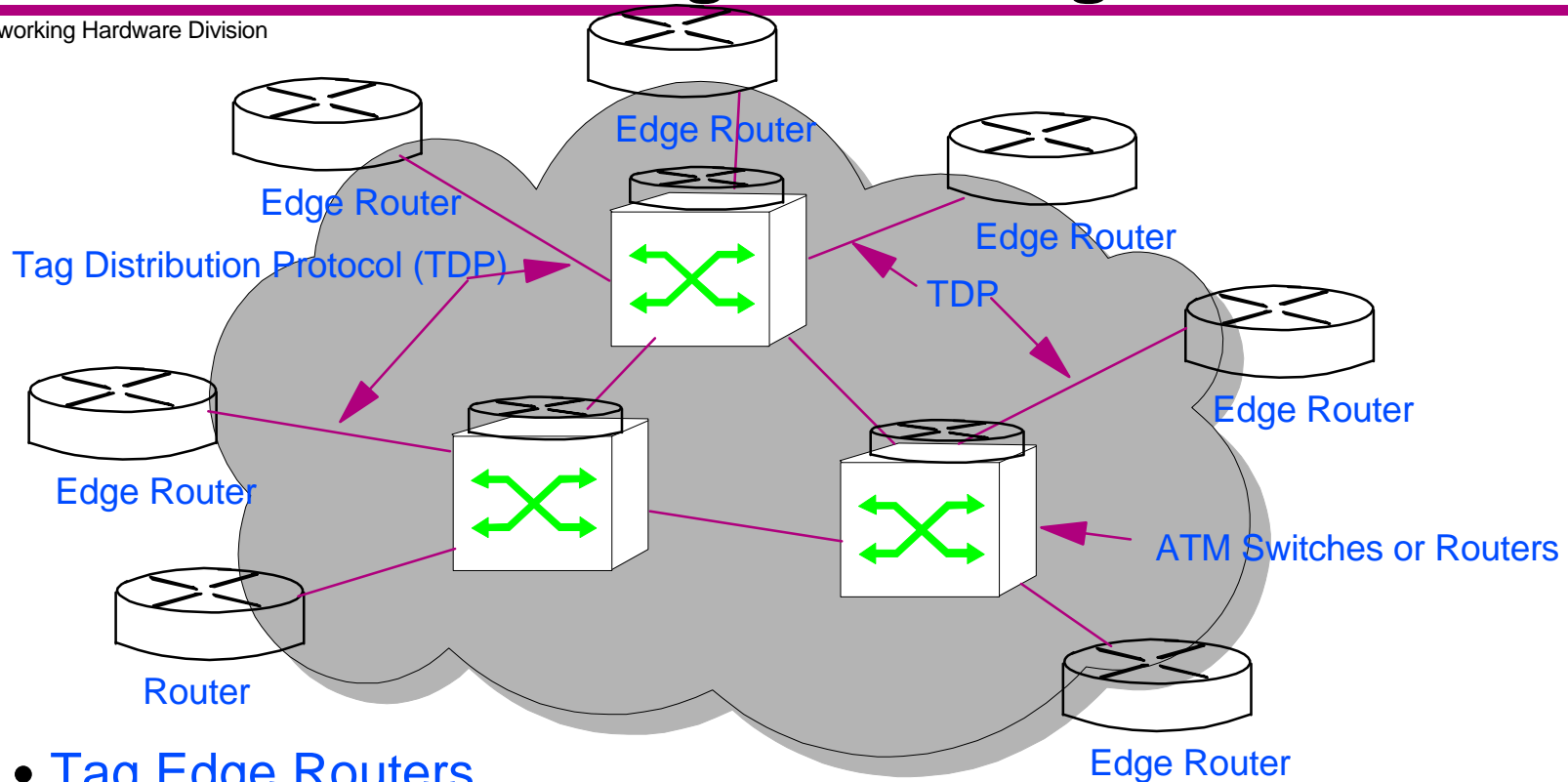
- **Cisco proprietary** technology to speed up router processing
 - Still a bus architecture - not a Switch
 - Implemented on Cisco 7000/7500
- Somewhat similar to forwarding function in IBM MSS Services framework
- **MSS is a comprehensive , scaleable, Client/Server architecture**
 - Based OPEN industry standards - NHRP, MPOA, IETF, ATM Forum

Part 2

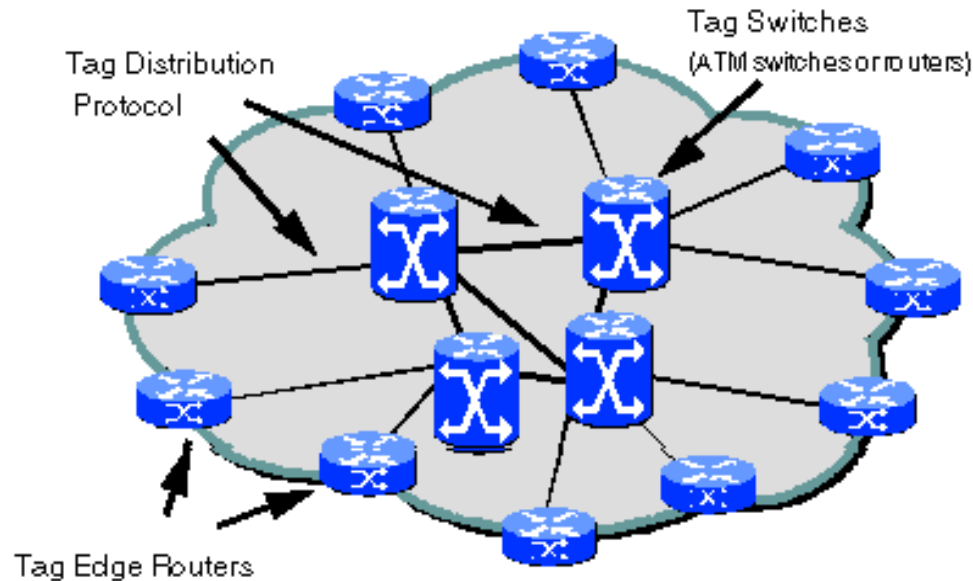
Section 4



Tag Switching



- **Tag Edge Routers**
 - Located at the boundary of the Internet, perform value added network layer services and apply tags to packets
- **Tag Switches**
 - Switch tagged packets or cells based on tags
 - May support Layer 3 routing or layer 2 switching
- **Tag distribution protocol**
 - Distribute tag info between devices in the tag switched network.
 - Works in conjunction with OSPF, BGP ...,



- Tag Switching process
 - Network devices exchange reachability info using routing protocols like OSPF, IGRP
 - New Cisco Tag Distribution Protocol establish tag-to-destination network mappings
 - Ingress edge routers in tag switching network perform Layer 3 services (NetFlow services) and adds tag to packet
 - Packets switched based on tags using tag swapping
 - Egress edge routers removes the tags and deliver the packets
- Cisco plans for tag switching
 - Standardize portions of Tag Switching via IETF
 - Deliver products starting in 1H97

Tag Switching Contd...



- Tag Switching Strengths

- Comprehensive, allowing coexistence of ATM and Non-ATM services
- Cisco router market share in ISP networks may give an edge to Cisco in pushing their agenda
- Claimed to provide multi-protocol support

- Tag Switching Limitations

- Currently Cisco proprietary, though Cisco is trying to standardize parts of it
- Results in higher overhead than the IBM proposed ARIS (Aggregate Route based IP Switching) protocol
 - ARIS allows for VC aggregation/conservation
 - Loop prevention even in the presence of transient conditions
- Does not provide the level of aggregation proposed in ARIS, resulting in limited scalability
- Does not address explicit multipath support



ARIS advantages

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- **VC Aggregation**
- **Low VC setup overhead**
- **Switches a large portion of the traffic**
- **Guaranteed loop-free paths**
- **Preserves VC's flows or standard ATM connections**
- **Scales to large networks**

Note: This is an Internet Draft, working document of IETF. Refer to the draft available on the Internet for details.



Suggested IBM response

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IBM response to Tag Switching from Cisco

- Customers Beware - Cisco marketectures like tag switching are primarily targeted towards costly, Cisco proprietary router networks
 - Examples : CiscoFusion, IOS, NetFlow switching
- IBM SVN with MSS is a truly "OPEN" architecture for integrating routing with switching
 - IBM Can deliver products supporting this architecture today.
- Ipsilon IP Switching , Cisco TAG Switching and IBM ARIS are all proposals to speed IP forwarding by exploiting the label swapping cell switching technology in ATM
- IBM is working with other vendors including Cisco to develop a robust IETF standard for "IP Switching " based on ARIS
- In the meantime, IBM can deliver robust end-to-end IP switching solutions today
 - IBM 8260 supports both Ipsilon IFMP/GSMP as well as IETF NHRP

Part 3





Selling against Cisco

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(1) Cisco says MSS is just a 'one armed router'. They will position this against their router line to show a perceived weakness in performance, interfaces, and pure routing speed.

- IBM Response: By leveraging the ATM infrastructure, MSS moves beyond the router. Cisco is protecting their router business by emphasizing the above. The whole point of MSS is to move these expensive boxes out of the data path!

(2) Cisco will imply that SVN is a two year old strategy and that IBM has not delivered on that strategy

- IBM Response: SVN was announced in September of 1995 and MSS is shipping

(3) Cisco will ignore Broadcast Manager (BCM), one of our key differentiators! Cisco will position their routers as needed for containing broadcasts...via IP sub-nets

- IBM Response: MSS/BCM, in conjunction with LANE, can greatly reduce the need for sub-nets. Several IBM customers are running 'flat networks' with this functionality

(4) Cisco has stated the following about MSS/8210:

- The 8210 has a single power supply & processor, therefore, single point of failure
- MSS is only available as a stand-alone box
- IBM Response: Redundant/backup MSSs **are** possible and MSS blades for the 8260 **are** available!



Selling against Cisco continued

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- (5) Lately, Cisco has been leading with multi-media applications (Precept IP/TV)
 - IBM Response: Counter (or lead ourselves!) with the 8300 Video Access Node or the 8260 Video Distribution Module, early ship program starting in February
- (6) Cisco will position RSVP in the router networks for delivering QoS
 - IBM Response: QOS is built into the architecture of ATM and therefore, will provide better manageability and operation of the network.
- (7) Cisco will aggressively market the USAA win against IBM, citing recent press.
 - IBM Response: While Cisco did win the hardware bid (due to IBM product unavailability), they did **not** win the services business, a multi-million dollar services contract was awarded to IBM. Stress that MSS and the strong 827x switching family are shipping today. Also, emphasize total solutions, including services
- (8) Cisco will aggressively market against delayed shipment of ATM uplinks for 8272
 - IBM Response: Cisco is **not** currently shipping an ATM uplink for Token Ring workgroup switching!



Selling against Cisco continued

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- (9) Cisco solutions will handicap the customers with via proprietary protocols like IGRP, NetFlow switching etc.to sustain their high mark up router revenue
- IBM Response: IBM solution is standards-based; allowing flexibility, investment protection, and competitive pricing
- (10) Cisco will, in the course of a bid, continually cut prices
- IBM Response: We CAN compete on price! Stress total solution and cost of ownership. Leverage the attractive price point of MSS coupled with appropriate discounts
- (11) If Cisco thinks they are losing, they will...
- drop price 3 to 4 times, discounts up to 50 - 60% !!!
 - escalate to customer executives: Chambers calling on CEO, CIO
 - IBM Response: Use executive visits judiciously, stress that IBM works with the customer. Cisco will deploy executive visits negatively, will position IBM as a risky choice
- (12) If they lose, Cisco will come back with one more price cut in a last ditch attempt
- IBM Response: Be aware of Cisco discounting practices and price accordingly, emphasize best price. If necessary, deploy 'meets comp' desk for pricing actions



Selling against Cisco continued

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(13) Cisco will position IBM as risky, Cisco as safe choice

- IBM Response: Counter with Cisco's history of discontinued products, proprietary protocols, and counter with the 8260 as a strategic platform...provides investment protection

(14) Cisco positions IBM as just an OEM vendor with no internally developed products

- IBM Response: Cisco has obtained ALL of their switching technology via acquisition while our ATM infrastructure and MSS have been developed in-house. Also stress that the Xylan relationship includes complete access to each company's technology and products

(15) Cisco promises 'Layer 3 switching' but currently still depends on their router infrastructure for the majority of Layer 3 functionality

- IBM Response: Layer 3 support and LANE incorporated in MSS, routing & switching attractively priced on one platform, available **today!**

(16) Cisco will select either a router-centric or switch-centric approach and stay with it, typically preferring the router approach, of course

- IBM Response: Lead with MSS/ATM and differentiate from router-based solution
 - Token Ring: weak switching solution, Cisco must lead with routers, counter with 8272, 8260 blade, 8274, and 8270-800
 - Ethernet: strong LAN switching solutions, counter with MSS/8260 ATM, 8260 switching modules, and 8273/4



Selling against Cisco continued

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(17) Cisco has stated that we did not participate in the University of New Hampshire interoperability testing

- IBM Response: This is false. We have participated extensively in the tests, particularly in MSS compatibility with ATM switches

(18) Cisco has extensive resources, will inundate the account with personnel and sales efforts

- IBM Response: Identify strategic key accounts and be proactive, anticipate Cisco's moves

(19) Cisco will claim that each box we sell is configured differently

- IBM Response: To counter, stress that the IP router code base is the same across the 3745, 8210, 2210, and MSS. Particularly, the configuration interface is consistent across these platforms

(20) In the Ethernet switching arena, Cisco will compete with full duplex, high port densities, and the 10/100 auto-sense capability of the Catalyst 5000

- IBM Response: Features of 827x LAN switches (disclosure may be needed!)
 - Full duplex 100M (including FL) modules currently available for 8274, Full duplex on 8271/2
 - 24 port 10M blades for 8274 coming 1H97, aggressive pricing
 - Stackable version of the 8273 also, maintains VLAN support
 - 10/100 auto sensing will be available on the 8274 platform



Road Map for Competing against Cisco

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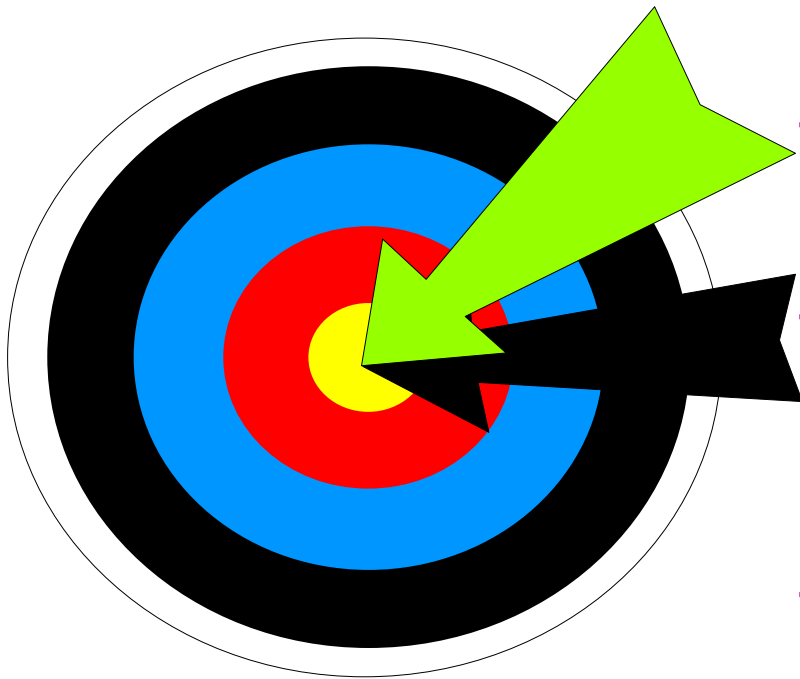
- **Change the Playing Field to Switching**
- **Establish that SVN is superior to marketectures like CiscoFusion**
- **Gain agreement that the backbone is switched...Not routers**
 - ATM or Frame Relay
- **Sell the Benefits of IBM Solutions**
 - Branch Access with superior routing products
 - Variety of Channel Connectivity Options
 - Superior LAN Switching Products
 - Best of Class ATM
- **Focus on End to End Solutions**
 - Bundle Services & Applications
 - World Class Worldwide Service & Support
 - Industry recognized Network and Systems Management



Bottom line

IBM will deliver :

- **Cost Effective Network Infrastructure**
 - S/390 host access to suit Customer requirements
 - End to End switching solutions with "No hop routing"
- **Efficient use of network resources**
 - Reduced Broadcast traffic using SVN framework
- **Improved Response Time and Guaranteed Service Levels for Current and Future Applications**
 - Eliminates router from the Network Path
 - Distributed Routing to the periphery of the network
- **Reduced Networking Administration Expense**
 - World class Network and Systems Management
- **Cost Effective Desktop solutions supporting current and emerging application**
 - Voice, Video and Data
- **Superior support and service**
 - True partnership with customers



Back-up material



NHD Framework Contd.....



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Support:

Multimedia Collaboration
Client-Server
Personal/Workgroup Productivity
Operational - Line of Business Transactions



Functions

Provide :

Integration, Scalability
Pervasiveness, Easy of Use
Flexibility, Dynamics, Multiprotocol
Reliability, Performance, Security
Open industry standards - based approach

NHD Framework Contd.....



Protocols

Enhance SNA Services
APPN/HPR, DLUS/DLUR

Deliver superior TCP/IP services
Internet/Intranet support
Advanced IP Switching

Support legacy protocols
NetBIOS, IPX, DECnet, AppleTalk



NHD Framework Contd.....

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LAN platforms

8270,8271,8273,8274,8260,8285

WAN platforms

2217,2218, 2219,2220,2225,2230

Routing Platforms

2210,2216,MSS

Host Access platforms

3174, 3172, 3745/3746-900/950,RS/6000, OSA, 2225

NHD Framework Contd.....



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LAN technologies

Token-Ring, Ethernet, Fast Ethernet, FDDI, ATM

WAN technologies

ATM, Frame Relay

Internetworking technologies

Bridging, Switching, Routing, LAN Emulation

Network Management

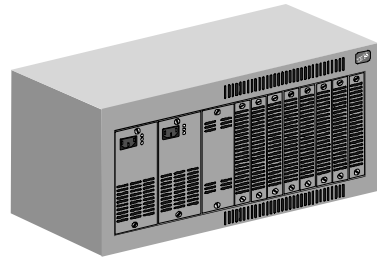
Windows and AIX/Unix based applications



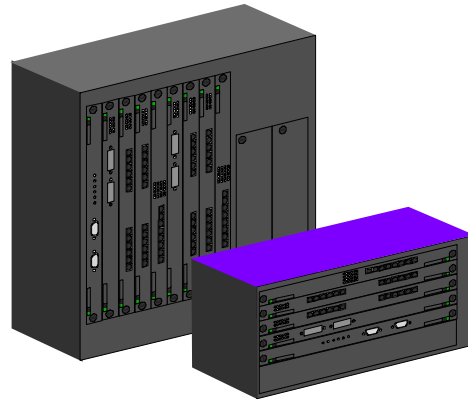
IBM LAN Switching Platforms

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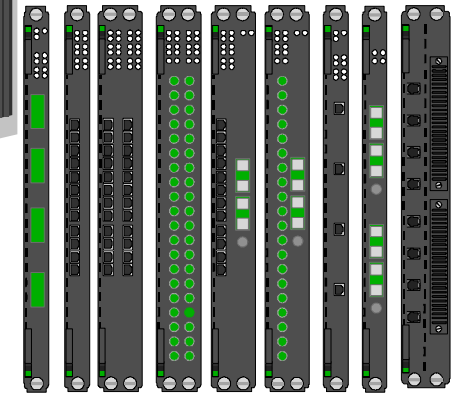
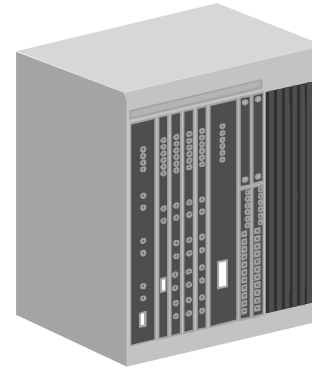
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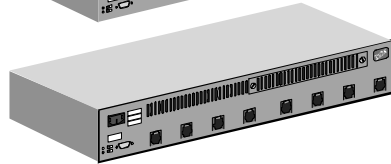
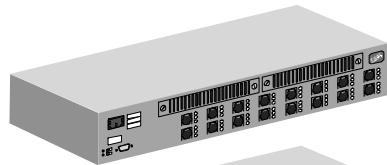
8270 modular
Token-Ring switch



8274 modular
all protocol* switch
with IP/IPX routing



All protocol * modules
for the 8260 switching hub



Expandable 8271 and 8272
Ethernet and Token-Ring switches



Expandable 8273
Ethernet switch with
IP/IPX routing

* "all protocol" includes Ethernet, Token-Ring, Fast Ethernet, FDDI, and ATM on copper and fiber

capacity (increases in steps)

Flexibility and function

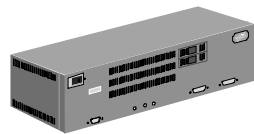


IBM routing platforms

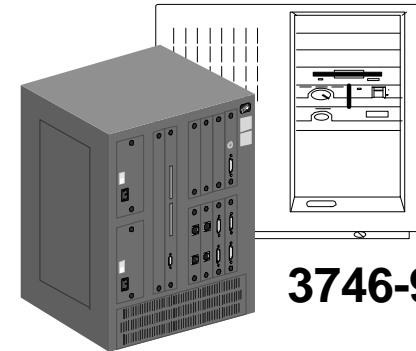
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Scalable connectivity, common software base
Priced right for customers and business partners alike



MSS

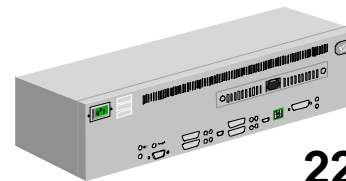


3746-9XX

2216



2210
Mod 12X



2210
Mod 14T, 24X



2210
Mod 1SX, 1UX

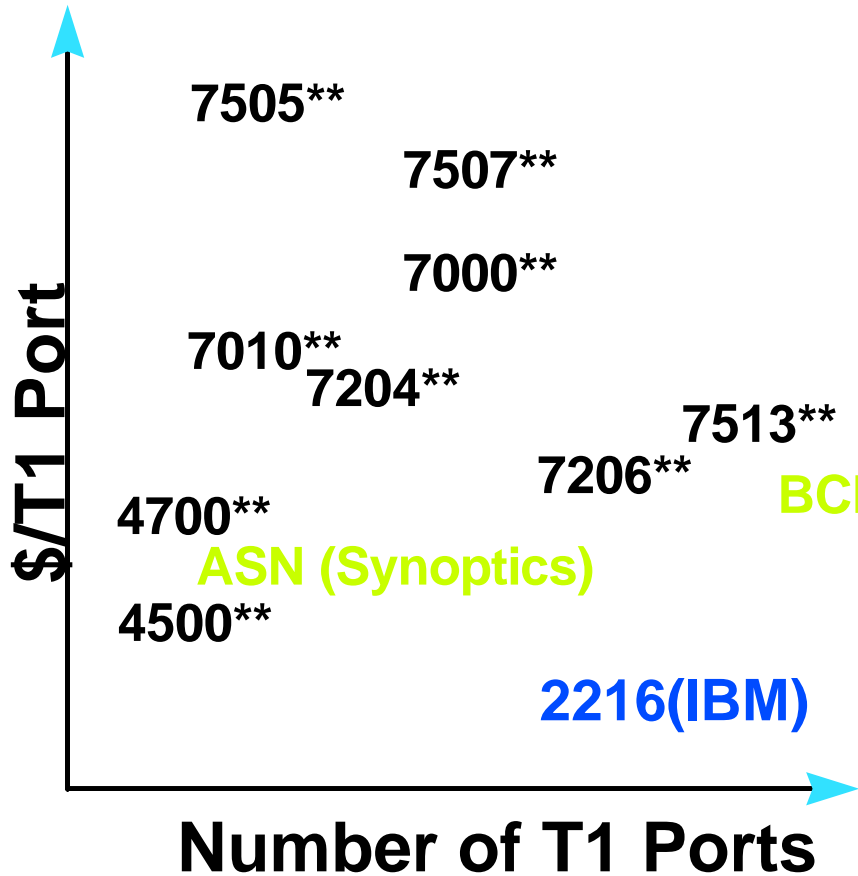
Competitive end-to-end with *any* router vendor



2216--Lowest Cost per T1 Port

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“No one else has really looked at building a high port-aggregate router mainly for the wide area” Melinda LeBaron, Gartner Group, in PCWeek 10/7/96

BCN (Synoptics)

ASN (Synoptics)

Note: Cisco Fast Serial Interface Processor has 8 ports, but can handle only 5 full T1 lines

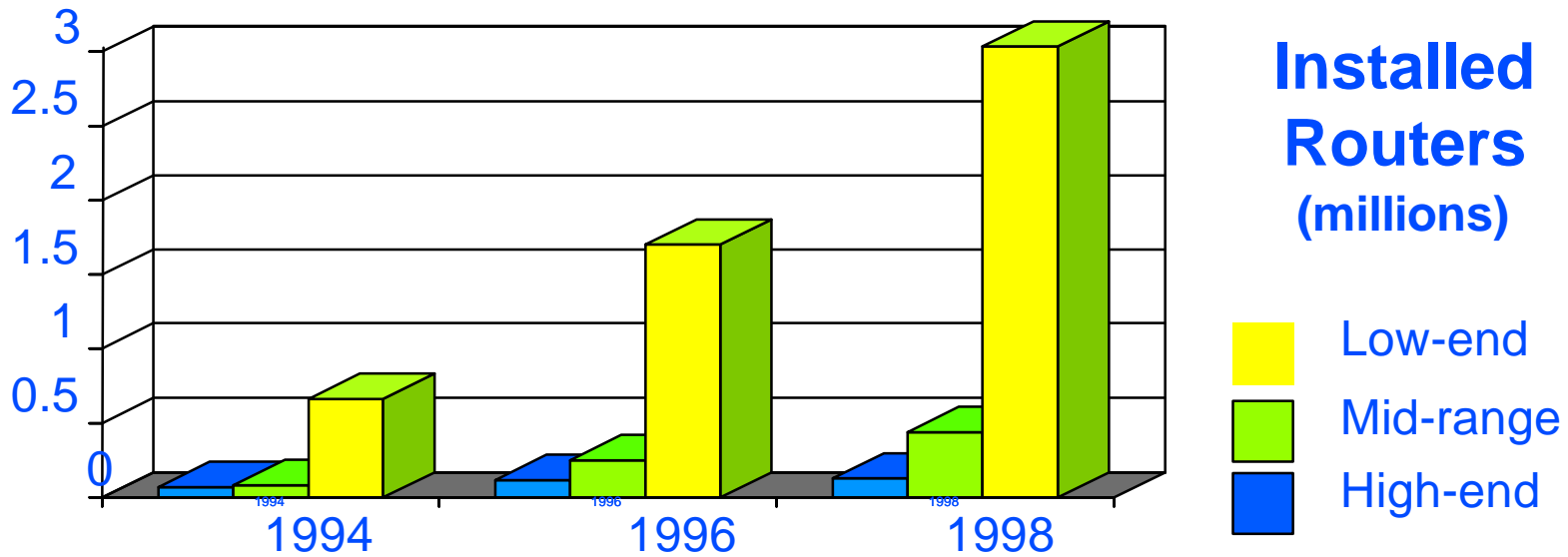
** - Cisco mid to high range routers



IBM--Fast Growing Vendor in a Hot Market

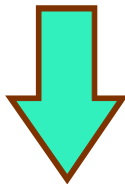
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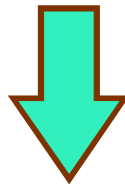


2Q96 Low-end router market share

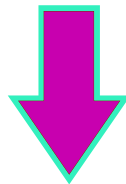
Bay



3Com



Digital



IBM



Cisco

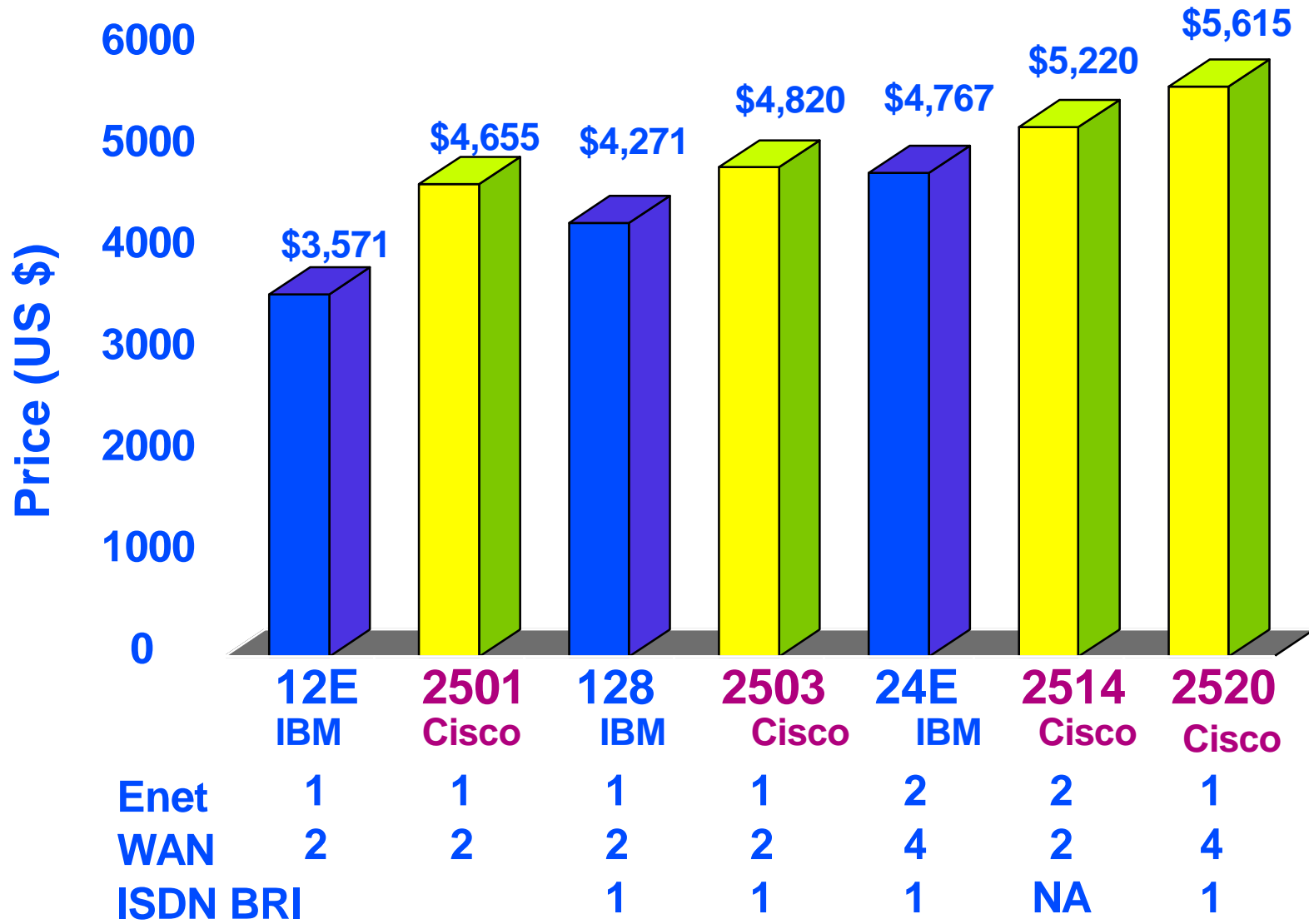
Sources: IDC 1996 Forecast
Dell'Oro Group

Branch and Regional Office Comparison (Low end)



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List prices include additional 4MB DRAM (IBM) and 4 MB flash (cisco); Base+Additional (2210), Desktop (Cisco) ; 3 years maintenance allowing for warranty. Prices as of 7/96

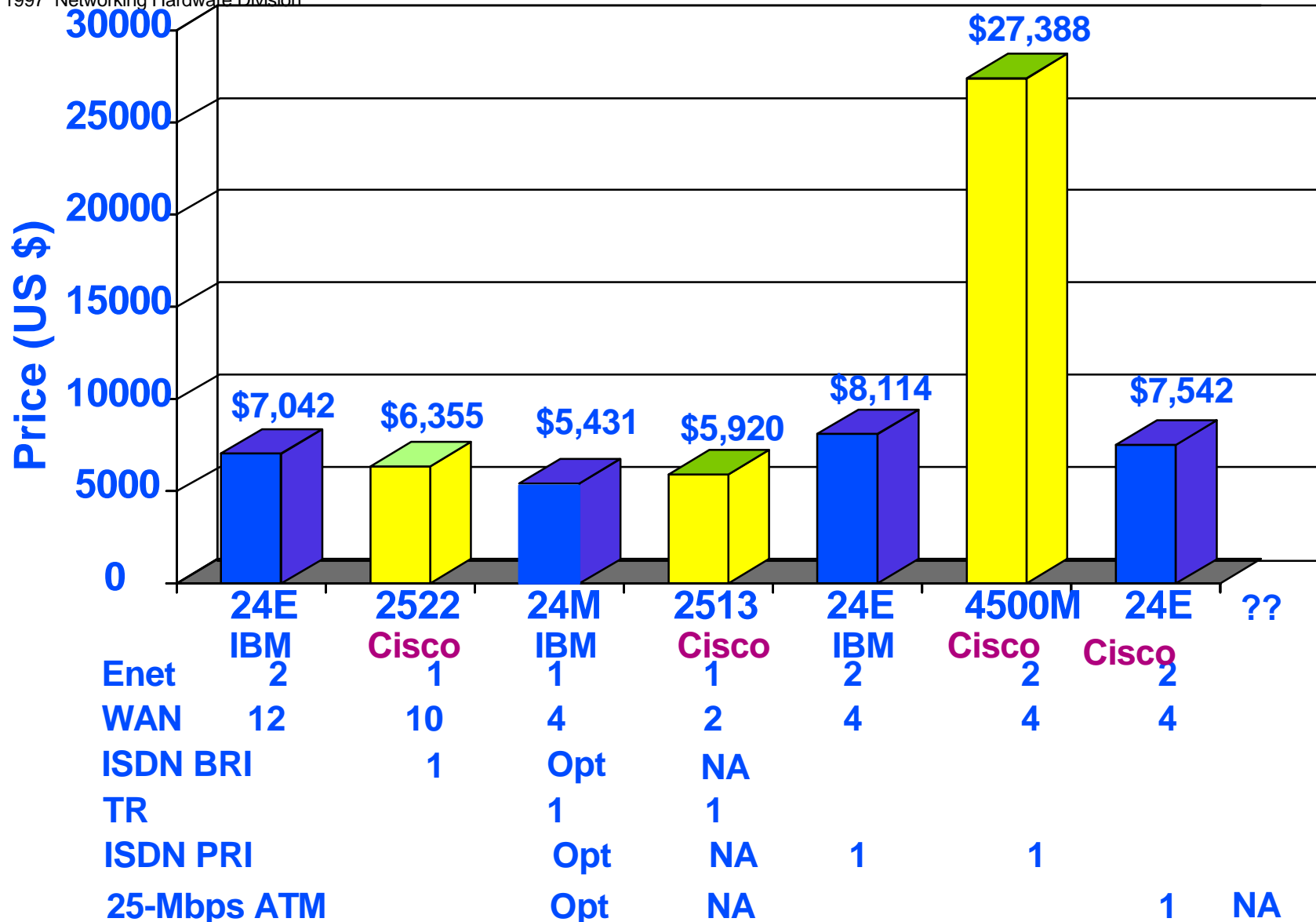
Chart 190

Branch and Regional Office Comparison (Highend)



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List prices include additional 4MB DRAM (IBM) and 4 MB flash (cisco); Base+Additional (2210), Desktop (Cisco) ; 3 years maintenance allowing for warranty. Prices as of 7/96

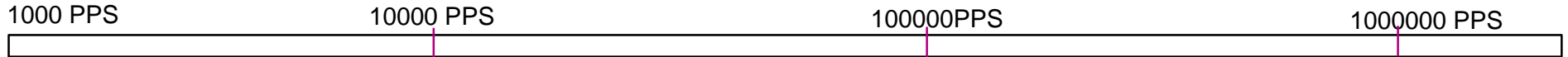
Chart 200

Market positioning of Cisco & IBM based on claimed thruput

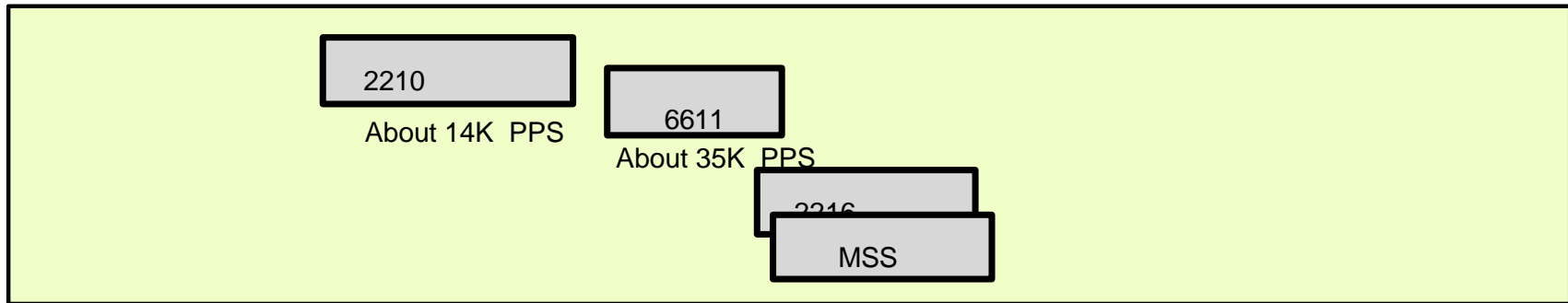


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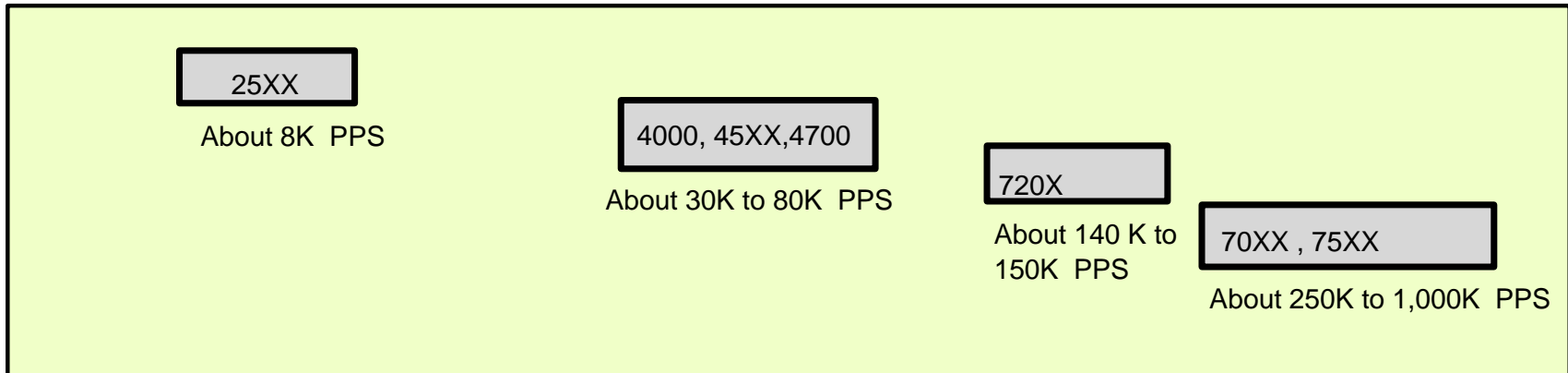
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IBM



CISCO



Note: Migration to switched networking infrastructures have generally eliminated the need for Cisco's 7XXX family of routers. In most cases, IBM products along with MSS can provide fully scaleable solutions with the need for Big Fat Routers.

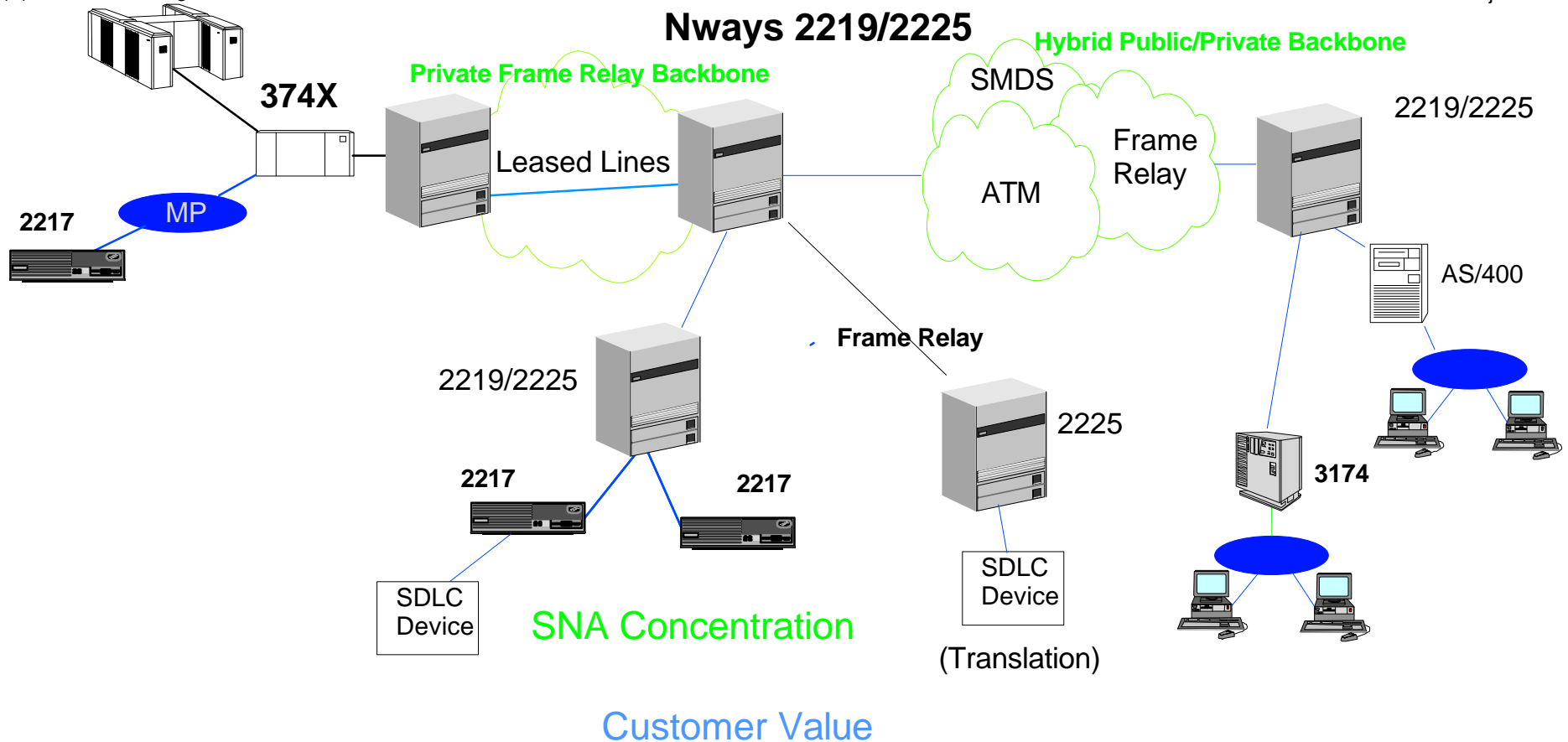
PPS - Packets per Second



WAN (Frame Relay) SNA Solution

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Enable Multiprotocol w/ 2217 AnyNet Technology
- Single Transport Protocol Efficiencies Exploiting APPN/HPR
Leverage SNA, NetView, and SNMP Management Skills
Investment Protection
Network Reliability
Direct Attach SDLC Devices using SDLC to Frame Relay Translation

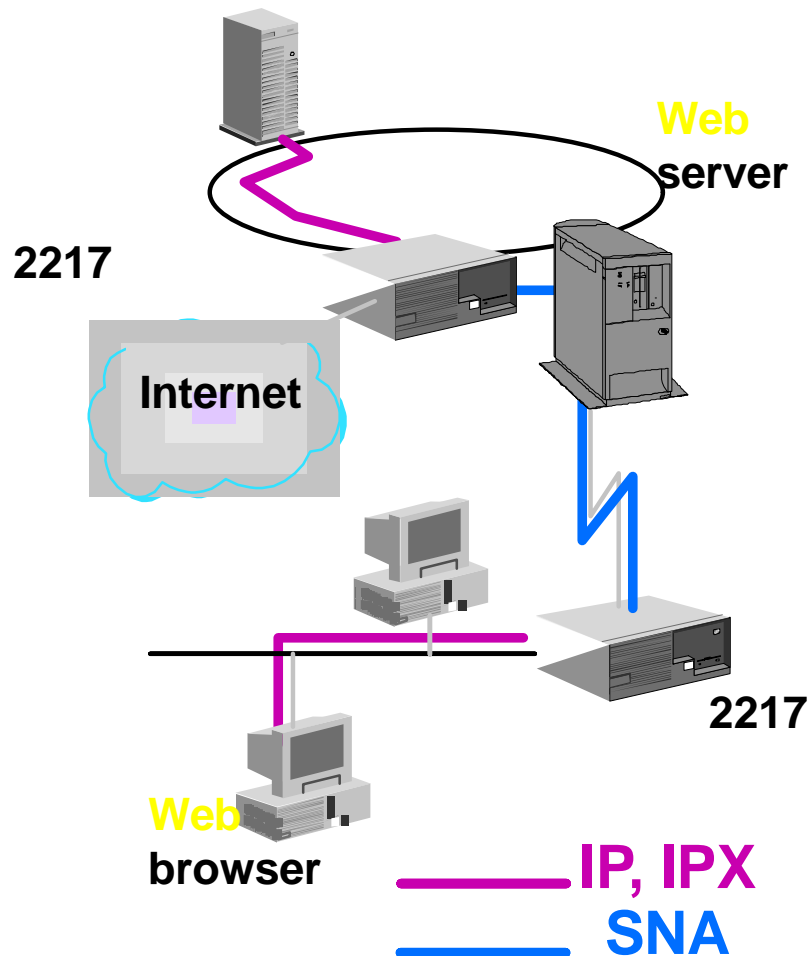


Multi-protocol Concentrator (IBM 2217)

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Enables transporting Multiprotocol traffic



Supports SNA, APPN/HPR, IP, IPX and bridging

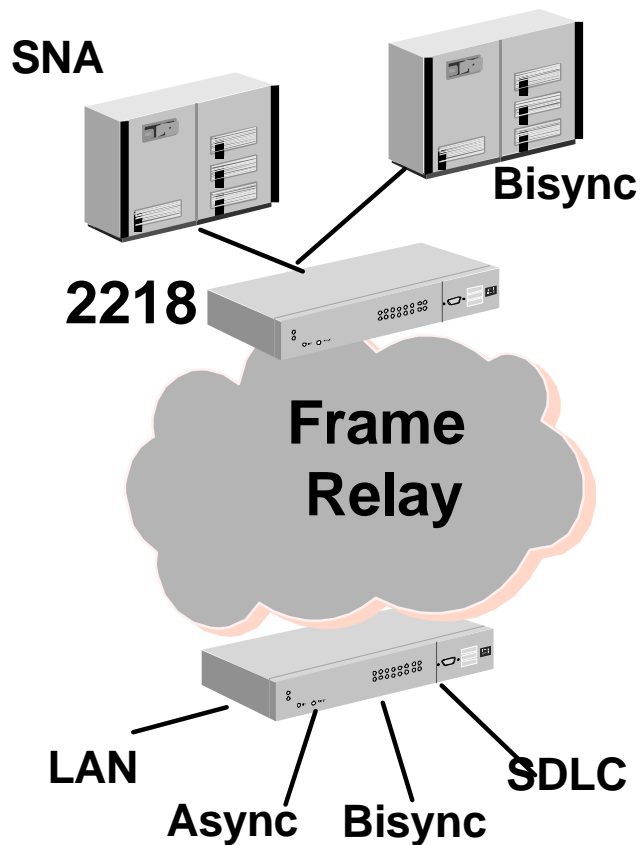
Prioritizes traffic using SNA Class of Service

Exploits investment in SNA skills, equipment, and management

Low-impact gateway for Internet access

Ideal for AS/400-based SNA networks

IBM 2218 - Frame Relay Access Device (FRAD)



Value to SNA/Frame Relay Networks

- Integrates SNA, BISYNC, and ASYNC devices
 - Outstanding network control
 - Only support for remote trace tools
 - NetView visibility

- Only SNA rerouting without session loss

- Built for Frame Relay

- Ideal solution for banking, retail, and similar SNA-centric networks



SNA and ATM

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✓ LAN Emulation

- emulates 802.3/802.5 LLC2 over ATM
- hides ATM from application
- bridging to legacy LANs possible

✓ Frame Relay

- Frame Relay/ATM Interworking
- available on all SNA devices today
- Frame Relay PVCs between SNA devices

✓ APPN/HPR

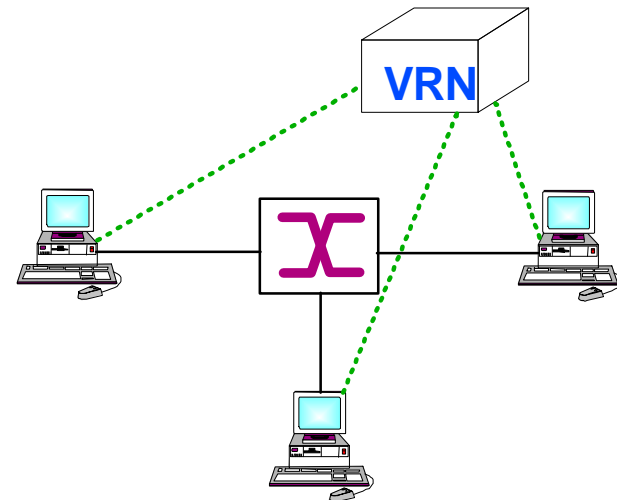
- Native ATM access

APPN/HPR over ATM

APPN HPR Node

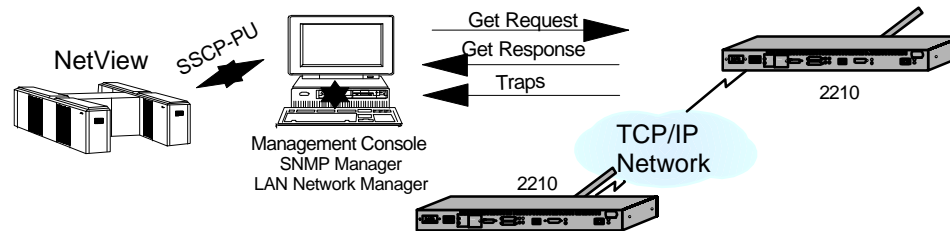
Application	
APPN HPR	
LL ATMI	
Q.2931	1483
SAAL	AAL5

ATM Connection Network



- ✓ APPN/HPR has direct access to ATM Signaling and Transport
 - ATM information included in APPN Topology Database
 - Link Definitions include Traffic and QoS
- ✓ ATM Connection Network simplify Link Definitions
 - APPN Nodes connect to Virtual Routing Node (VRN) rather than full mesh
 - APPN Nodes may connect to more than one VRN - different VRNs for different links
- ✓ SNA Application Class-of-Service "mapped" to optimal ATM Virtual Connection
- ✓ Cost-Based Route Selection
- ✓ Supports Shared and Dedicated SVC

Network Management



- **Management Products**

- NetView for AIX
- NetView for Windows
- LAN Network Manager (LNM)
- HP Open View for HP-UX

- **Management Applications**

- Nways Campus Manager LAN for AIX
- Nways Campus Manager Suite for AIX
- Nways Manager for Windows
- Nways Campus Manager - LAN for HP-UX V1.1
- Nways Campus Manager Suite for HP Open View on HP-UX V1.1
- Nways Enterprise Manager for AIX



Nways Campus Manager Suite

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ANN: 10/95 GA: 10/95 (AIX) 12/95 (HP)	ANN: 10/95 GA: 10/95 (AIX) 12/95 (HP)	ANN: 9/95 GA: 9/95 (Base AIX) 10/95 (Adv AIX) 11/95 (HP)
Nways Campus Manager LAN Mgmt of LAN networks made of: <ul style="list-style-type: none">◦ Hubs 8224,8230, 8238, 8250, 8260◦ LAN Switches 8272◦ Routers/Bridges 2210, 6611, OEM 8281	Nways Campus Manager ATM Mgmt of ATM networks made of: <ul style="list-style-type: none">◦ ATM Switches 8260 ATM◦ ATM concentrators 8282◦ ATM Bridges 8281	Nways Campus Manager Remote Monitor Base/Advanced* Basic RMON 9 Groups - Ethernet, 13 Groups - Token-Ring Advanced RMON Basic RMON Network protocol mgmt. Traffic generator tools * Advanced RMON in Suite
NetView/AIX - HPOV/UNIX		