

---

# IBM US Fast Start

## An analysis of Cisco strategy & marketectures

NHD Cisco Competitive Marketing Support

Raj Rajan

RAJAN @ RALVM6

rajr@vnet.ibm.com

Manager: Keith Ashmore

Jan. 97



**Updated April 1997**  
**Part A (1 of 2)**

---

# IBM Fast Start

## An analysis of Cisco strategy & marketectures

NHD Cisco Competitive Marketing Support

Raj Rajan

RAJAN @ RALVM6

rajr@vnet.ibm.com

Manager: Keith Ashmore

Jan. 97



# Contents

## Presentation Contents:

**Part 1 : General analysis of Cisco strategy contrasted with IBM Strategy**

**Part 2 : Analysis of Cisco marketectures with a view of IBM framework**

**Section 1 : CiscoFusion**

**Section 2 : CiscoBlue**

**Section 3 : NetFlow Switching**

**Section 4 : Tag Switching**

**Part 3 : Suggested strategy for competing against Cisco**

**Part 4: Backup material**

---

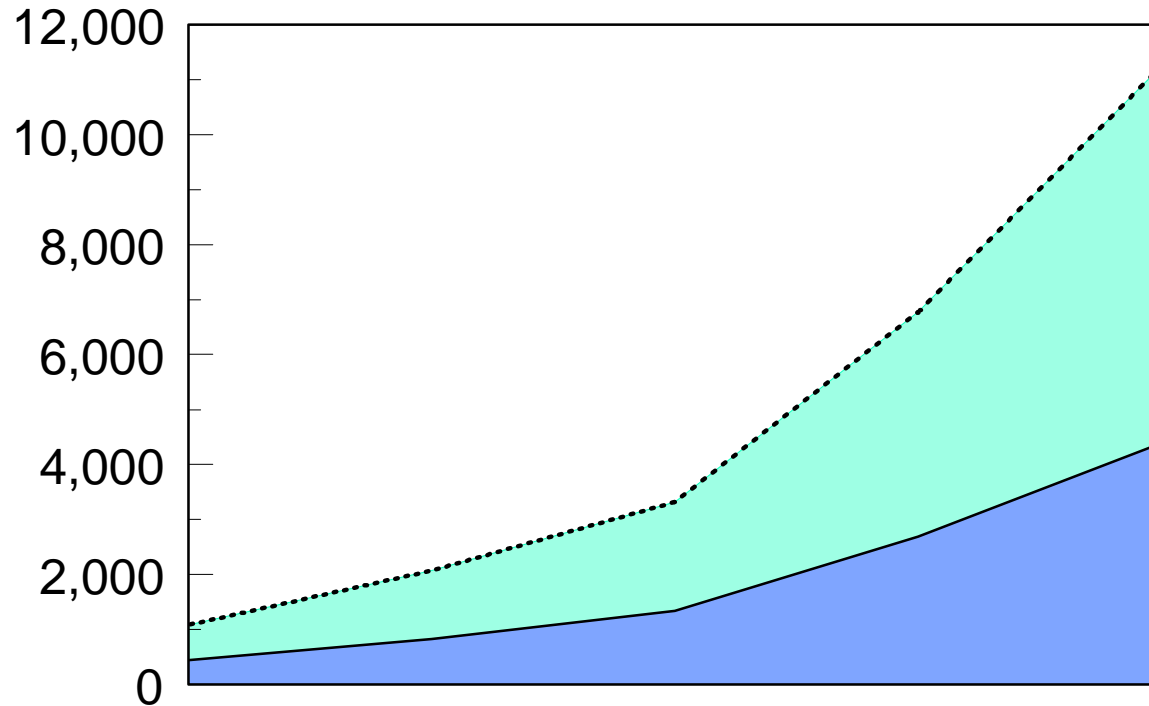
# Part 1





# Cisco Financials

## Cisco Revenue and Gross Profit

Millions of Dollars



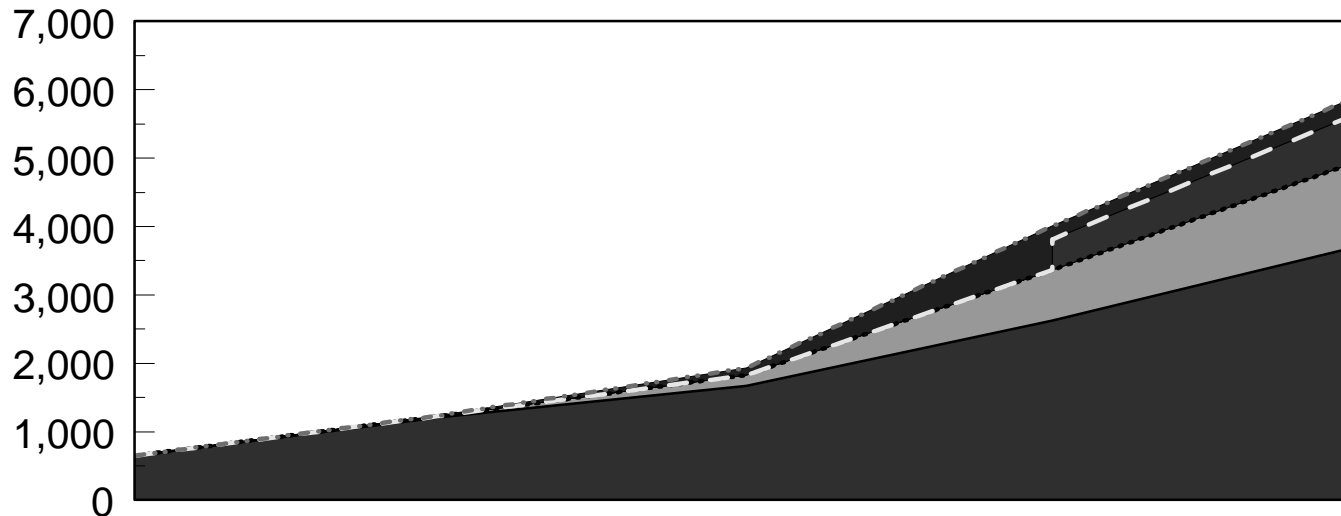
Years	1992/93	1993/94	1994/95	1995/96	1996/97(E)
G.Profit 	439	830	1,335	2,686	4,388
Revenue 	649	1,242	1,980	4,096	6,865

Cisco financial year ends on the last Sunday in July

# Cisco revenue by product groups

## Estimated Cisco Revenue by Products

Millions of Dollars



Fiscal Year	1992/93	1993/94	1994/95	1995/96	1996/97(E)
Routers	649	1,217	1,667	2,620	3,710
LAN Switch	0	20	160	743	1,246
WAN Sw				454	700
Misc.	0	5	108	194	260

Graph does not show the Stratacom 1995/96 revenue of \$454M

# Cisco Acquisitions

Company & Date of acquisition	Total Purchase Price	Technology Acquired
Crescendo Comm. Sep ,1993	\$ 89 M 3,400,000 shares	FDDI, LAN Switching
Newport Systems Aug, 1994	\$ 91 M 3,300,000 Shares	Low end software routers
Kalpana Inc.. Dec., 1994	\$204 M 7,480,000 Shares	Ethernet switching
LightStream from BBN Jan., 1995	\$120 M	ATM Switching
Combinet Inc. Aug ,1995	\$114 M 2,000,000 shares	ISDN remote access
Internet Junction Sep , 1995	\$5.5 M 81,000 Shares	Internet gateway software
Grand Junction Sep , 1995	\$348 M 5,000,000 shares	Fast Ethernet
Network Translation Inc. (Oct. 30, 1995	Not Available	Internet firewall software

Company & Date of acquisition	Total Purchase Price	Technology Acquired
TGV Software Inc. Jan,1996	\$ 115 M 1,470,000 Shares	Internet Software
StrataCom Inc. April, 1996	\$ 4,000 M 8,370,000 Shares	WAN Frame Relay/ATM HW & SW
Telebit's MICA Technologies. July, 1996	\$200 M	ISDN Modem
Nashoba Networks Aug., 1996	\$100 M	Token-Ring Switching
Granite Systems Sep.,1996	\$220 M	Gigabit Ethernet
Netsys Tech. Oct., 1996	\$79 M	Performance and modeling Software
Telesend March, 1997	Not available	xDSL Products

# Cisco Minority Investments

Company	Date	Products
Cascade Communications	December , 1993	WAN Switching
International Network Services (INS)	January, 1995	Network Management
Netsys	February, 1995	Network Management
CyberCash, Inc.	October, 1995	Internet
OSI	December, 1995	Internet
Terayon Corporation	January 1996	Internet
DataBeam Corporation	February 1996	Internet
Precept Software	April, 1996	Internet
Visigenic Software	May, 1996	Internet
Interlink Computer Sciences, Inc.	December, 1996	SNA (TCP/IP ????)
OpenConnect	December, 1996	SNA (TCP/IP ????)
VXtreme, Inc.	January, 1997	Multimedia
Software.com, Inc.	March, 1997	Internet



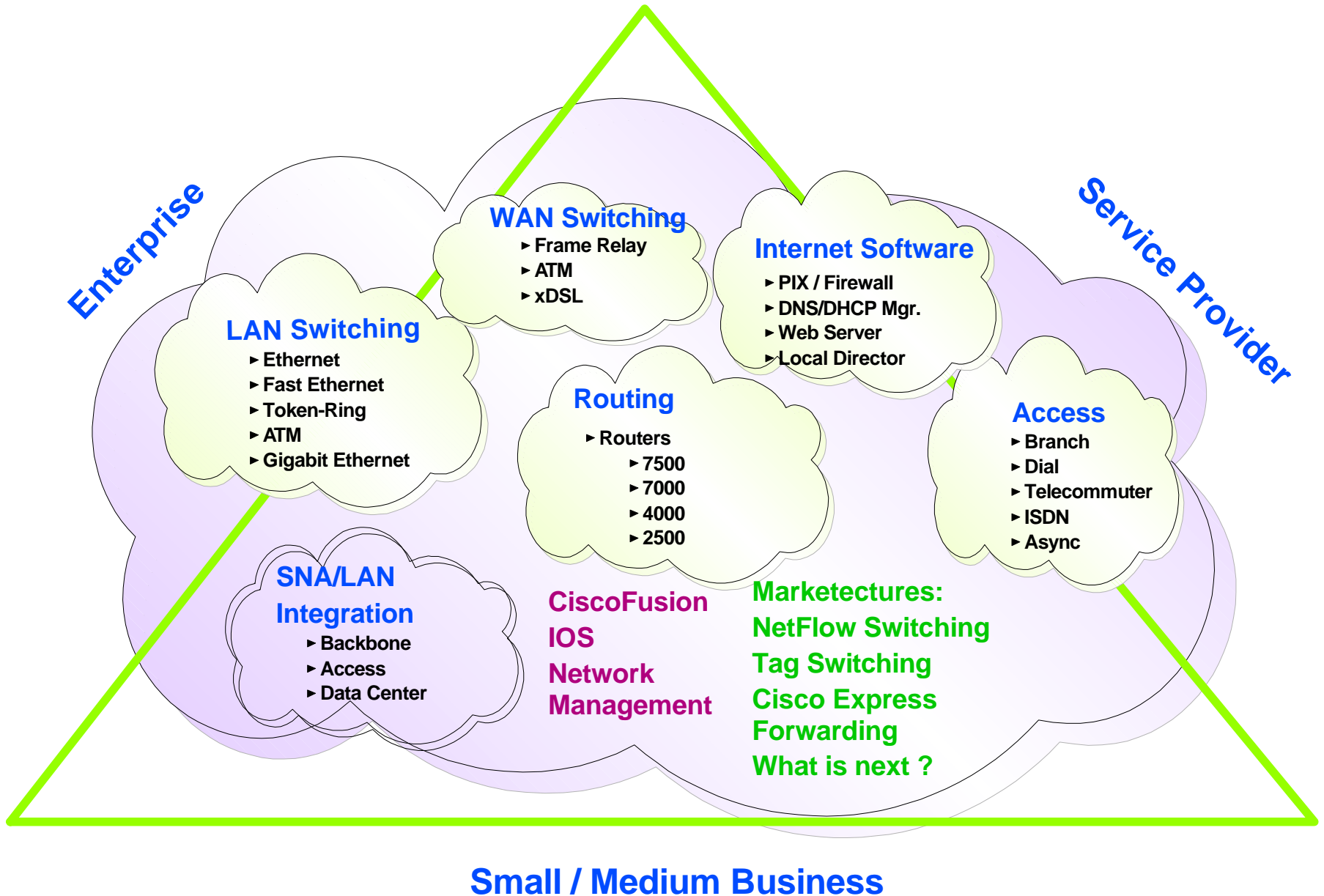
# Observations on Cisco Financials

- **Cisco is on an aggressive acquisition strategy**
  - 15 Companies have been acquired since 1993
  - They expect to acquire more companies in fiscal 1997
    - per John Chambers, CEO Cisco
- **Cisco has been paying for the acquisitions mostly with stock swap; very little cash!!**
- **Cisco sees Internet as the next big opportunity in networking**
  - Has made minority investment in a number of Internet companies
- **Investment in Interlink software is key to competing in IBM S/390 market**
- **Router revenue is still 60 to 70% of their portfolio; but gaining ground in the switching market**
- **Cisco has been able to maintain router market share at above 50% in spite of heavy competition**
- **Cisco has been able to sustain over 60% gross margin over this high growth period**
  - Cisco has doubled their revenue from 1991 thru 1994
  - In fiscal 1995/96, their revenue grew by 80%

# Cisco Business Strategy

- ▶ **Position Cisco to be #1 or 2 in each market sector**
  
- ▶ **Establish entrepreneurial product development business units to respond swiftly to changing market conditions**
  - LAN Switching, Routing, Access, WAN Switching, SAN/LAN Integration, Internet
  - Centralize CiscoFusion, IOS, CiscoWorks
  
- ▶ **Sustain growth through :**
  - International expansion
  - Aggressive development of resellers including Telcos and Service Providers
  - Participation in high-growth market sectors like LAN Switching, Internet/Intranet
  - Acquisitions and Minority investments
  
- ▶ **Leverage stock value to acquire synergistic companies**
  - Buy small companies that can generate 5X to 10X revenue in one to three years
  - Buy market share and/or mindshare

# Cisco Structure



# Key Marketing Alliances

- **Comprehensive agreement with HP to penetrate Enterprise Markets**
  - Joint marketing
  - Professional Services
  - Customer Service and Support
  - Technology research and development
  - Product Integration
- **Strategic alliance with Interlink**
  - Equity Investment
  - Joint Marketing
  - Collaboration in the development of IOS/390
- **Joint marketing alliance with MCI**
  - Frame Relay, SMDS and private lines
- **Reselling arrangements with AT &T , Bell Atlantic, Bell Canada, British Telecom, Siemens, Alcatel, Pac Bell, US West .....**

# Cisco Marketing Strategy

- ▶ **Support 4 Major Marketing Channels**
  - Direct, Resellers, Telcos & Internet
  - Marketing collateral targeted to specific channels
- ▶ **Focused marketing to Internet Service Providers (ISP)**
- ▶ **Target- Marketing in SNA accounts**
- ▶ **Engage in partnership with major industry players**

# Cisco Selling Strategy

- ▶ **Lead with technology, feeds and speeds**
  - Retain technically competent sales force
  - Premium Price - Discount as necessary
- ▶ **Claim special relationship with IBM**
  - as a Cisco partner ( IGN )
  - Exploit standard IBM agreement to service Cisco products
- ▶ **Use branding to give appearance of well integrated products**
  - Example IOS , CiscoPro, NetBeyond
- ▶ **Exploit media press, consultants .... to paint exaggerated competitive success stories in key IBM accounts**
  - MCI , USAA ...
- ▶ **Release marketectures like NetFlow switching, Tag switching.... to sustain router revenues**
- ▶ **Establish IOS as a 'de facto' standard**

# Cisco Weakness

- **Primarily a router vendor ; trying to dominate the switching markets via acquisitions**
- **Facing the challenge of integrating multiple acquired technologies and products**
  - LightStream vs. StrataCom products...
- **New / tough competition in high speed LAN /WAN switches**
  - Ipsilon, Cascade....
- **Growth of Internet has exposed the router network limitations**
  - Development delays not keeping pace with Internet requirements
- **Numerous marketectures : CiscoFusion, NetFlow switching, Tag switching, Cisco Express Forwarding .....**
  - Mostly "proprietary" implementations
- **Still struggling with support for SNA networking**
  - In most cases, require additional hardware
- **Considered to be weak in network management**

---

# Part 2

# Section 1





# CiscoFusion

- CiscoFusion maintains routers in the network path

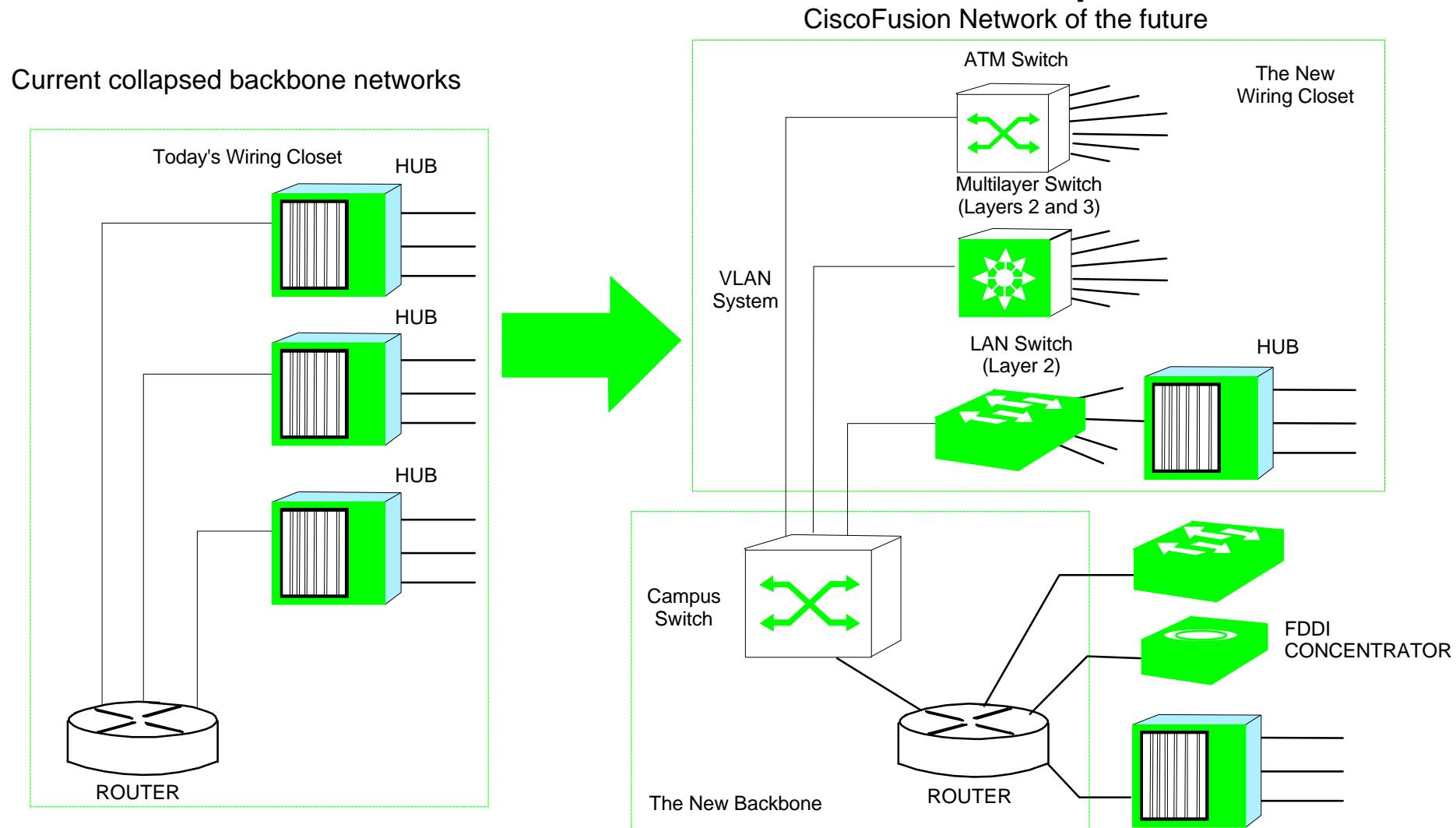
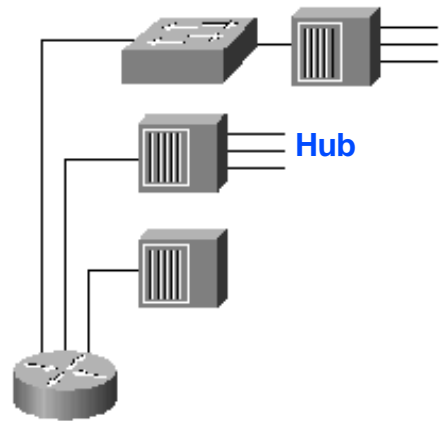


Figure 1 - "CiscoFusion: an architecture for switched internetworks" June 1995

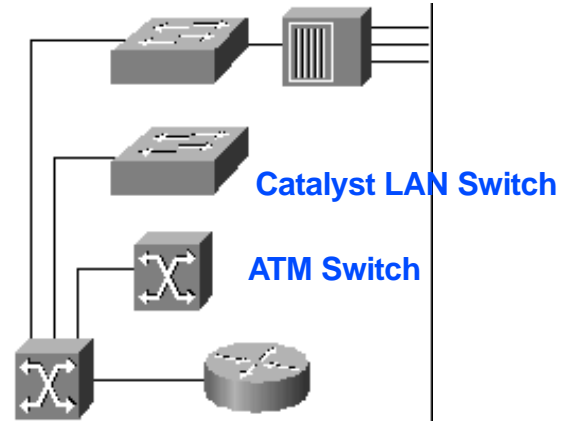
# CiscoFusion - Suggested migration



Router

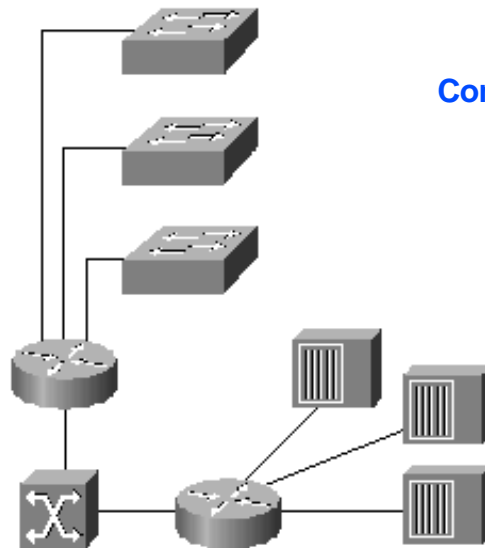
Traditional Collapsed backbone networks

## Phase 1



Add ATM and LAN Switches

## Phase 2

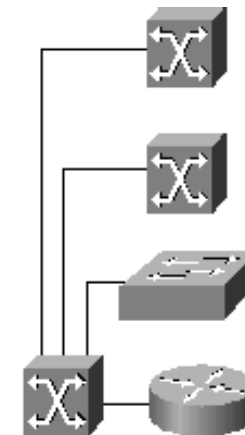


Add another router to connect the LAN switches

## Phase 3

### Comments:

- Maintains traditional router in the network in all phases ( forever !!! )
- Cisco is yet to deliver Multi-Layer switching on the Catalyst LAN switches ( announced in 1994)



Remove the router and add multi-layer switching to Catalyst switches

## Phase 4

# Switching Framework Comparison

## IBM Switched Virtual Network

Roadmap for migration to switched networks

Switchcentric with integrated dispersed routing and LAN Emulation

Proven routing software integrated with switching

Route forwarding function at the periphery of the network including the end stations

End to End switching enables high network quality of service

Cost effective 25 Mbps ATM desktop solutions

Addresses SNA and router based network migration

Comprehensive, superior Network & Systems management

Extensive network design and support services

## CiscoFusion

(TM)  
Marketecture for migration to switched networks

Routercentric with accommodation to switched network evolution

IOS is router software modified to work with switching networks

Route forwarding function in the intermediate internetworking devices

Maintains router in the network path

No 25 Mbps offering yet

Does not address IBM/SNA network migration questions

Poor track record meeting network management challenges

Limited network support and service capabilities

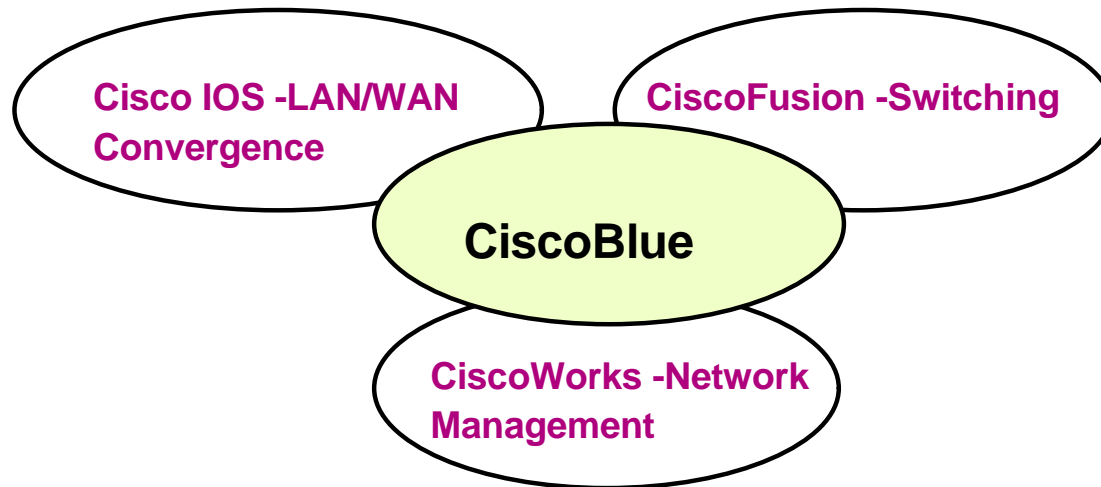
---

# Part 2

# Section 2



# CiscoBlue



What is CiscoBlue ?

**According to Cisco :** A roadmap for enterprises that need to capitalize on cost and productivity advantages of multiprotocol networking while maintaining their critical SNA applications

**Reality:** A Cisco **proprietary** framework to establish routers as the core of the network and extend the influence of Cisco technologies like IGRP to lock-in the Customer into costly, single vendor solution using Cisco products

# CiscoBlue contd.

Target : IBM SNA Networks

Components:

LAN/WAN Connectivity,  
Switching migration,  
Network Management enhancements

Delivery Schedule : 1995 Thru 1998

Phase	CiscoFusion Blue Switching	Cisco IOS LAN/WAN Convergence	CiscoWorks Blue Network Management	Delivery
6	Ethernet Switch Family Catalyst 1600 TR Switch, LightStream 2020ATM Switch	LAN FRADs DLSw Lite	Native Service Point	1995-1996
7	LightStream 1010 ATM Switch; Scaleable Token-Ring Switch	TN3270 Switched SNA Enhancements SNA Dial-on-Demand	SNA Maps SNAView	1996
8	Multiservice WAN, Token-Ring LAN Emulation; Catalyst 5000 Token-Ring module	NCIA Enhancements Channel Attached HPR	TR VLAN Management; Connectivity Toolkit; Response Time Reporter	1996-1997
9	Service Interworking TR Switch Access Unit	SNA Session Switching Protocol Servers	Performance Solver	1997
10	Multi-Protocol Over ATM (MPOA); Standard-based VLANs	COS/TOS/QOS Mapping HPR Native ATM Transport	Distributed Management	1997- 1998

# Comments on CiscoBlue

- ▶ CiscoBlue is Cisco's plan for delivering products that will allow customers to transport SNA data across the network today and the future using Cisco products.
- ▶ Cisco has floated this plan to gain credibility with the SNA customer base.
- ▶ In the past, Cisco has released such plans; but never delivered on some.
  - Example: PU4 Functionality in the router announced in 1991 was never delivered
- ▶ Cisco track record in transporting SNA is spotty at best;
  - Example: Cisco is yet to deliver HPR support on their routers
- ▶ Cisco chose not to participate in the multi-vendor APPN interoperability test conducted in 3Q96 in Raleigh
- ▶ Cisco strategy is to transport SNA across the network using TCP/IP encapsulation
  - This strategy is inherently flawed for the following reasons:
    - Inefficient use of network bandwidth due to encapsulation overhead
    - Loss of SNA QOS
    - Compromising SNA session Integrity
    - Adding complexity to network management

# Cisco SNA Selling Strategy

## ▶ Lead with Cisco DLSw+

- Cisco's premier SNA Internetworking product
- Go easy with APPN marketing
  - Cisco is the leader - Over 50K routers using DLSw+
  - Several SNA reference accounts
  - Received "Tester's Choice" award from Tolly group
  - Cisco has the only solution that scales
  - Cisco custom queuing is the " best of breed"
  - Supports SDLC to LAN and Tunneling.

## ▶ Sell BAN support for Frame Relay & X.25 networks

- Claim leadership in these technologies
  - Local acknowledgment at remote reduces time-outs
  - Reduction in unnecessary WAN traffic

## ▶ Sell APPN only , if you must , to

- AS/400 & OS2 networks,
- SNA networks where DLSw+/RSRB has failed,
- LU 6.2 application development shops and
- Customers with VTAM 4.1 & 4.2
  - Cisco supports APPN, DLUR, HPR and APPN over the channel
  - Uses IBM code
  - Investing in Staff & Skill to be in "the business"
  - Supports bandwidth reservation for other protocols, in addition to



# IBM SNA Leadership

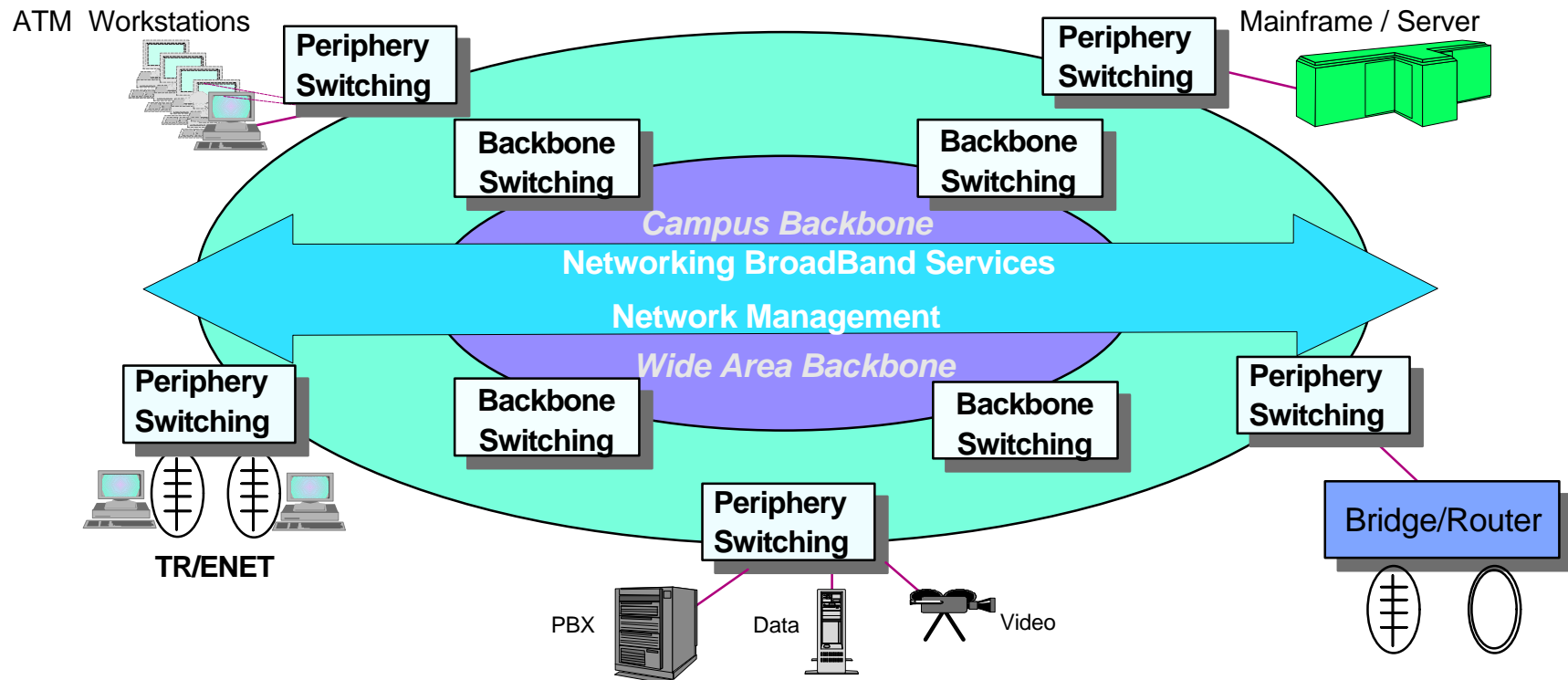
- ▶ **IBM is the leader in delivering SNA applications, Hardware and Software**
  - Over 70% of mission critical business data is SNA
  
- ▶ **IBM is enhancing SNA to changing Customer networking requirements**
  - Examples: Leadership in standardizing DLSw, APPN, HPR, DLUS/DLUR
  
- ▶ **IBM believes that network infrastructures must support native protocol transport to support new and emerging applications most efficiently.**
  - APPN/HPR over ATM
  
- ▶ **IBM switching and routing products support leading edge SNA solutions across a variety of LAN/WAN infrastructure products**
  - BAN, APPN/HPR support on IBM products
  
- ▶ **IBM strategy is to promote Open architectures like SVN and deliver products that will interoperate with other vendors' products .**
  - **Customer Benefits:**
    - Investment protection
    - Smooth and orderly migration
    - Lower cost of ownership
    - High network performance
    - Effective network management and operation
    - Easy adoption of new technologies like ATM....

# What will Cisco say about APPN

- ▶ APPN provides effective COS ;
  - But ... few customers consider them of value
    - COS applies to traffic between FEPs & in the host only
    - COS is SNA specific, no multi-protocol support
  
- ▶ HPR provides high performance & non-disruptive path switching
  - But.... to exploit these, most of the network must support HPRs
    - Requires alternate paths available for rerouting
  
- ▶ APPN is a single protocol solution
  - No design for encapsulation of other protocols
    - Use of AnyNet is limited by the availability of function in the network
  
- ▶ APPN uses lots of memory
  
- ▶ APPN does not scale without border node
  - IBM claimed a maximum of 300 NNs
  
- ▶ APPN is a IBM proprietary protocol

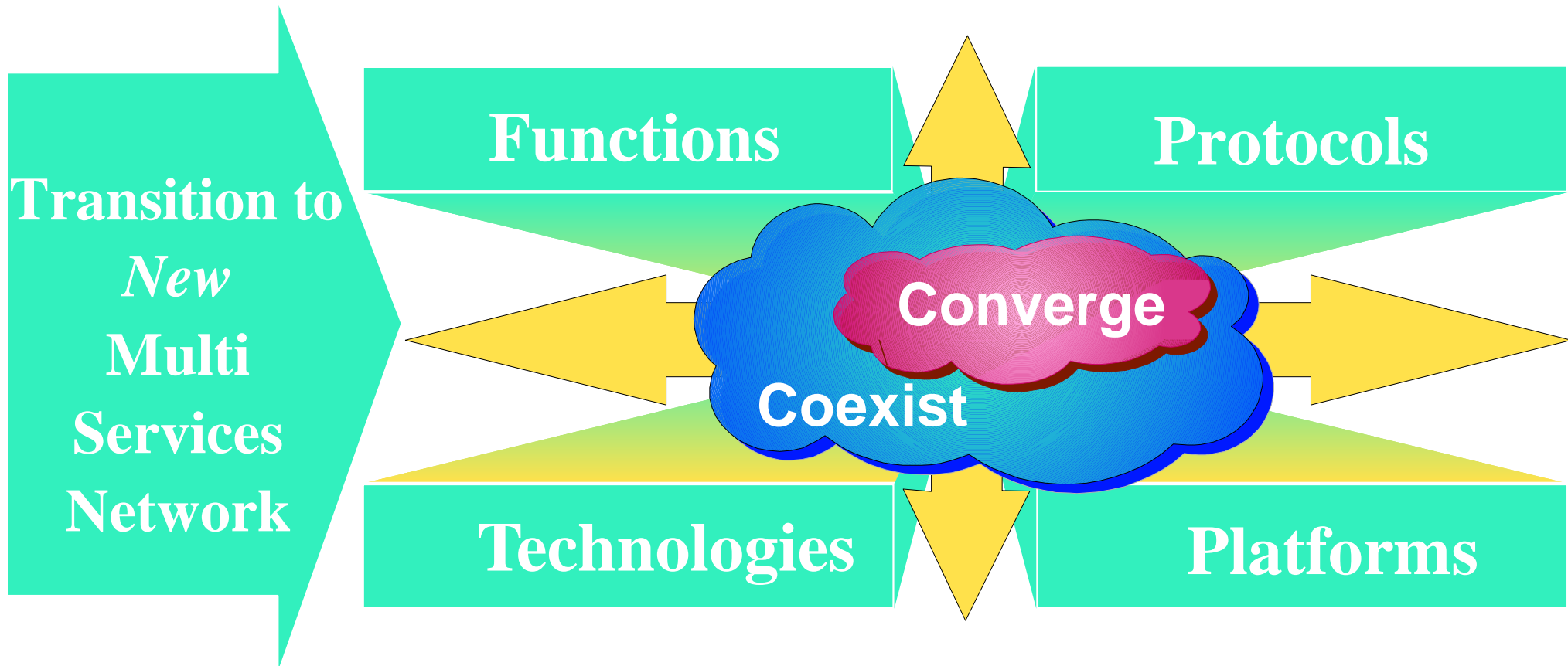
# NHD Framework

## Switched Virtual Networking (SVN)



- ✓ **Switched Infrastructure with advanced Traffic Management and QoS support**
- ✓ **Distribute adaptation and layer-3 functions to the periphery of the network**
- ✓ **Select and optimize data paths thru switched network**
- ✓ **SVN Components:**
  - Frame/ATM Switches (workgroup, campus, WAN)
  - ATM adapters (10/100 Ethernet, FDX Token-Ring, 25mb ATM, 155mb ATM)
  - Multiprotocol Switched Services (MSS) and Networking Broadband Services
  - Network Management

# NHD Framework implementation

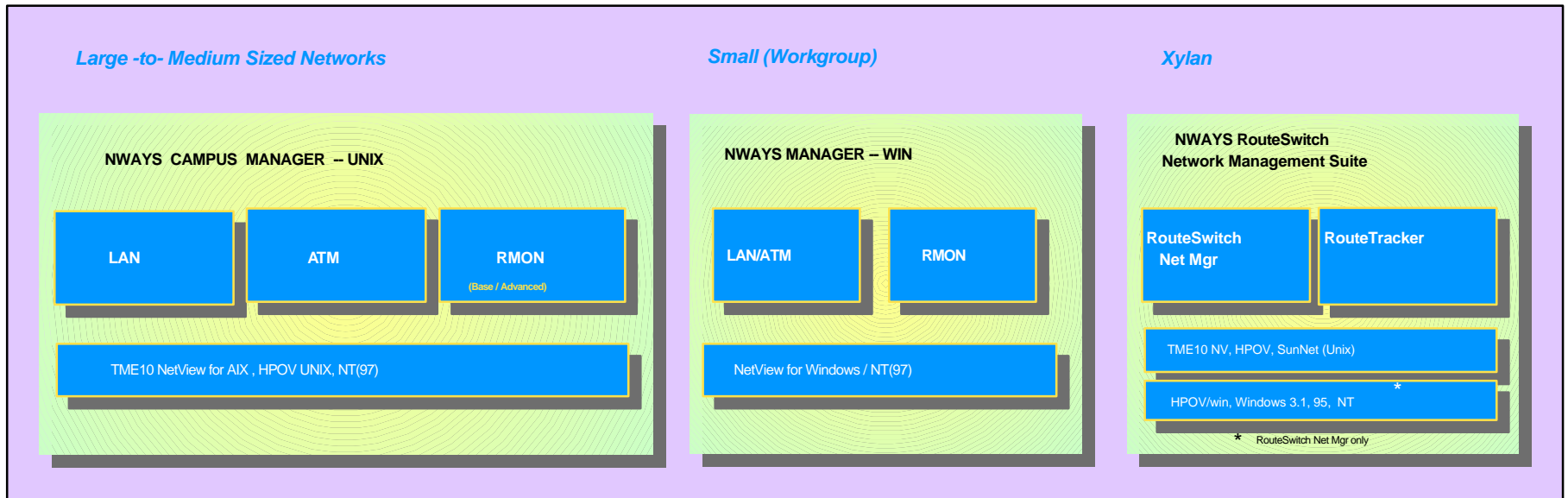


**IBM's framework for multi-services networks**  
**Enabling both network coexistence and convergence**  
**Architected solutions based on open standards**  
**Transition to advanced switched networks**

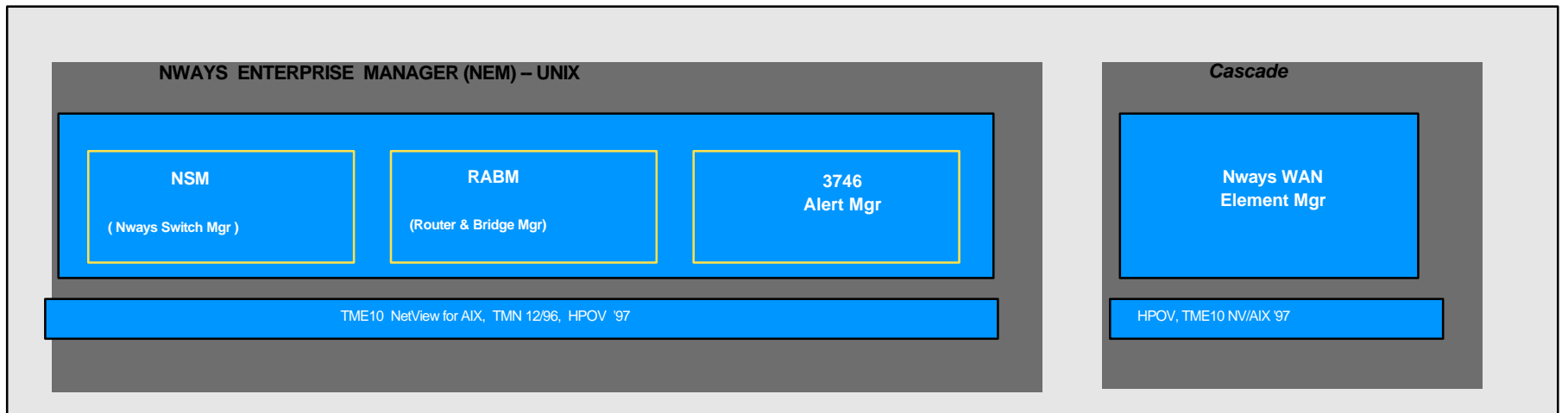
# Network Management

## Nways Management Products

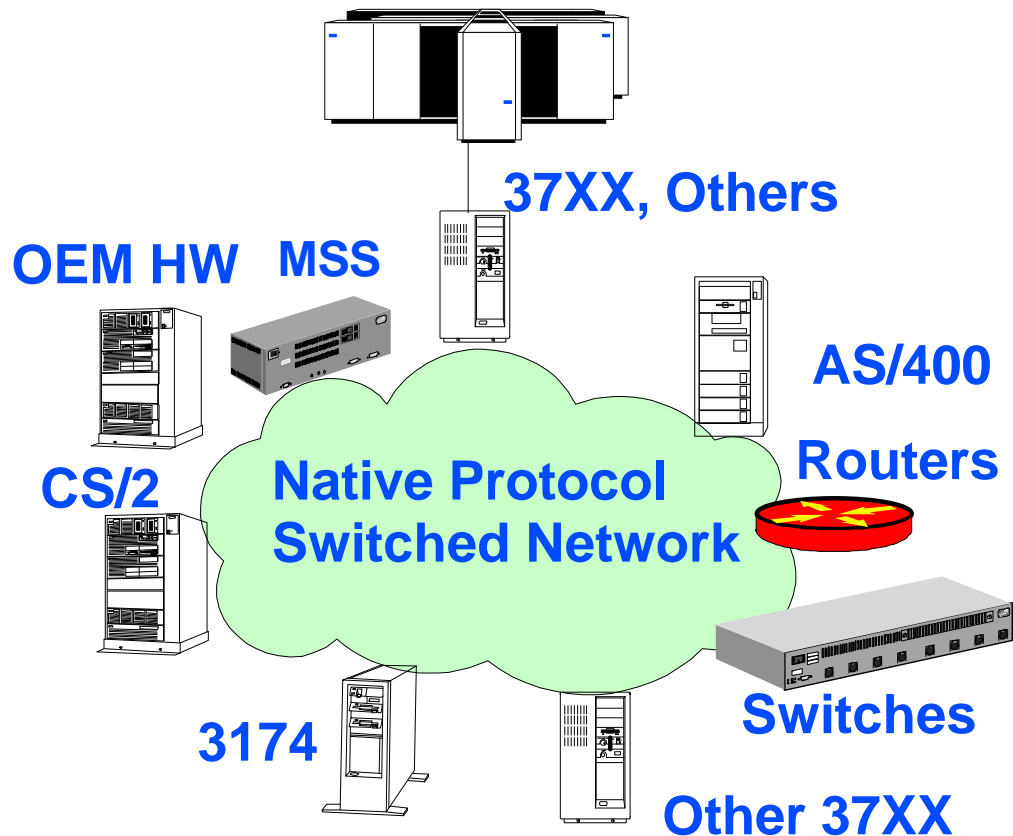
CAMPUS



ENTERPRISE



# Network infrastructure vision



- ✓ Support native protocol transport to reduce complexity and increase bandwidth efficiency
- ✓ Built-in network intelligence to sustain stable and self-healing networks
- ✓ Conform to emerging Internet/Intranet model
- ✓ Support most business critical protocols and applications
  - TCP/IP, SNA/APPN/HPR & Others ...
  - Voice, video and data
- ✓ Open standard interoperability for multi-vendor product support
- ✓ Smooth migration to reduce risks and cost
- ✓ Optimal use of network resources
- ✓ Enable cost effective network management and operation