NORTEL
NORTHERN TELECOM

Multimedia Networks: Strategic Outlook

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Multimedia Networks

INFORM '96

Agenda

- **The changing environment**

- **The Magellan mission**

- **Our challenges and solutions**

- **Looking forward**

The Changing Environment

Technology evolution. . .   . . . Business revolution

Our Response

- **Changing the way we do business**
- **Partnering with leading industry vendors**
- **Offering solutions that enable growth**
- **Maintaining our technical strategy**
- **Focusing on our mission**

The Magellan Mission

We will focus on our expertise in networks—designing, building and integrating mission-critical, multimedia communication networks for business enterprises and service providers around the world.

Challenges and Opportunities

- **Enterprise**
  - reduce network operational costs
  - expand reach of the network
  - evolve the network

- **Service provider**
  - be poised for competition
  - deliver new services fast
  - deliver leading edge services

Increase revenue opportunities and reduce costs

# Challenge: Reduce Networking Costs

CIBC

Dresdner Bank

- **Critical success factors:**
  - streamline branch operations
  - high network availability
  - network evolution

- **Magellan's approach:**
  - consolidation of data traffic
  - access devices in branches

- **Impact:**
  - CIBC - over $1M per month savings
  - Dresdner - common global services

Cost-effective Data Services

- **Leadership in '96**
  - **expanding service offering and extending reach**
  - **enhancing networking capabilities to reduce costs**
  - **platform enhancements to increase performance**
  - **platform enhancements to reduce costs**
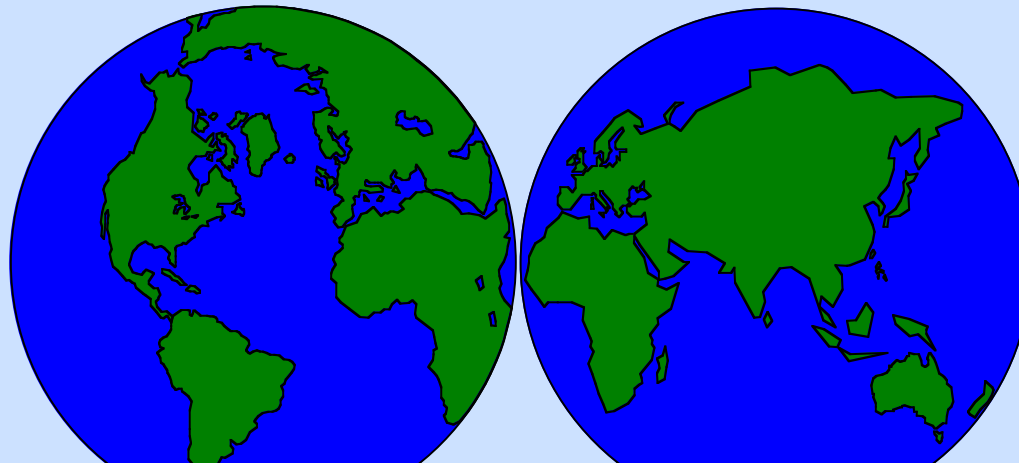
Offering world-class data networking

Challenge: Expand Network Reach

- **Critical success factors:**
  - leverage technology to grow business

- **Magellan's approach:**
  - 1500 DPN-100/1s deployed in branches
  - broadband consultancy project
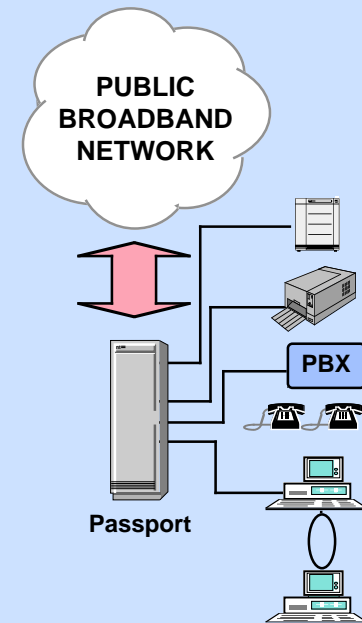 - "la Caixa"/Telefónica hybrid network

- **Impact:**

  - expanded market opportunity - full services
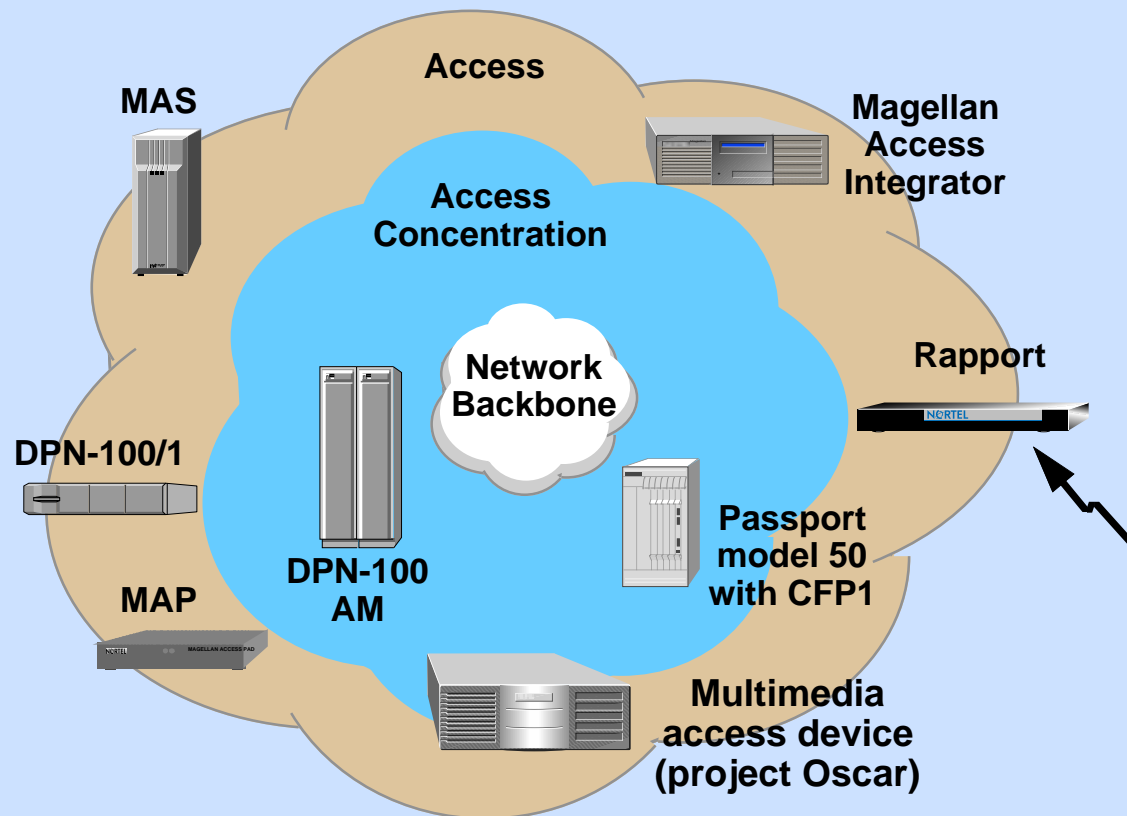 - consolidated traffic and reduced costs

  - competitive hybrid service offering

"la Caixa"
CAIXA D'ESTALVIS I PENSIONS
DE BARCELONA

Telefónica Transmisión de Datos

PUBLIC BROADBAND NETWORK

PBX

Passport

Expand Network Reach: Multimedia

- **Leadership in '96**
  - focusing access business
  - developing a range of multimedia access products
  - partnering with industry leaders

Access

MAS

Magellan
Access
Integrator

Access
Concentration

Network
Backbone

Rapport

DPN-100/1

Passport
model 50
with CFP1

DPN-100
AM

MAP

Multimedia
access device
(project Oscar)

# Challenge: Evolving Your Network


SBB CFF FFS

YPF

FUJI BANK

- **Critical success factors:**
  - efficient use of bandwidth
  - multimedia service offerings
  - smooth network evolution

- **Magellan's approach:**
  - network traffic consolidation
  - application independence
  - accessible technical expertise

- **Impact:**
  - competitively positioned
  - reduced networking costs
  - network evolution plan

Evolving your Network

Voice **Key system**

Fax

Local server

PC

SNA, X.25 or Async Data

Remote dial
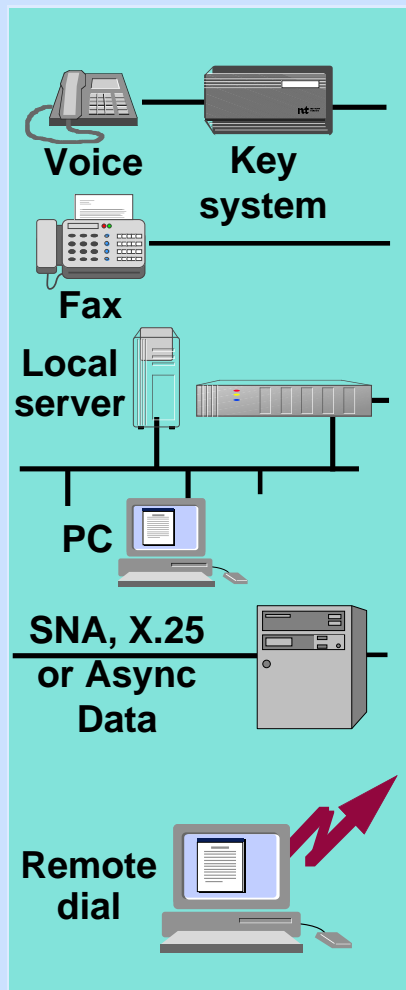
Leadership in '96

- ATM enterprise network switch
- Flexible connectivity
- Complete network management
- Application-ready ATM

Multimedia Access Integrator

ENS

Frame relay / ATM

Small Office Home Office
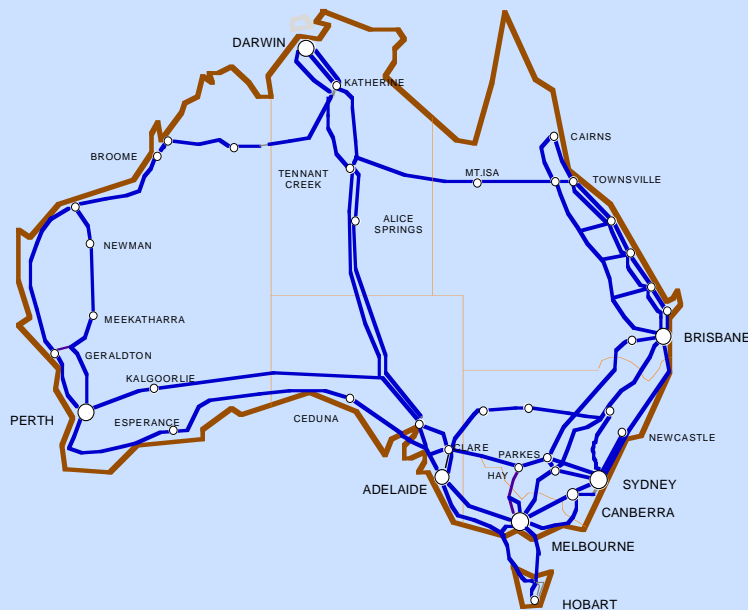
DPN-100

Data only
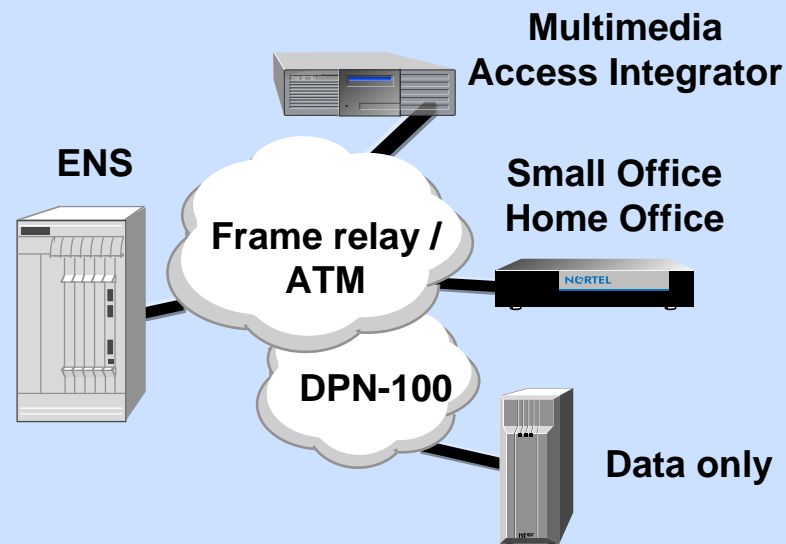
Best-in-class enterprise networking

Challenges and Opportunities

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Increase revenue opportunities and reduce costs

Challenge: Poised for Competition

Telstra

- **Critical success factors:**
  - infrastructure for multiple services
  - reduce cost and risk
  - offer new services
  - extend the reach of service offerings
  - increase speed and capacity

- **Magellan approach:**
  - 4500 DPN-100 modules
  - Passport frame relay and ATM
  - single data-platform strategy

- **Impact:**
  - 100% customer satisfaction
  - fast delivery of new services
  - ready to face greater competition

Poised for Competition

- **Leadership in '96 - Magellan frame relay**
  - new revenue and application opportunities
  - addressing cost of ownership
  - smooth transition to new technology
  - operational and availability improvements
  - market introduction and development assistance

Q.933 signaling

Q.933 signaling

Frame Relay Network
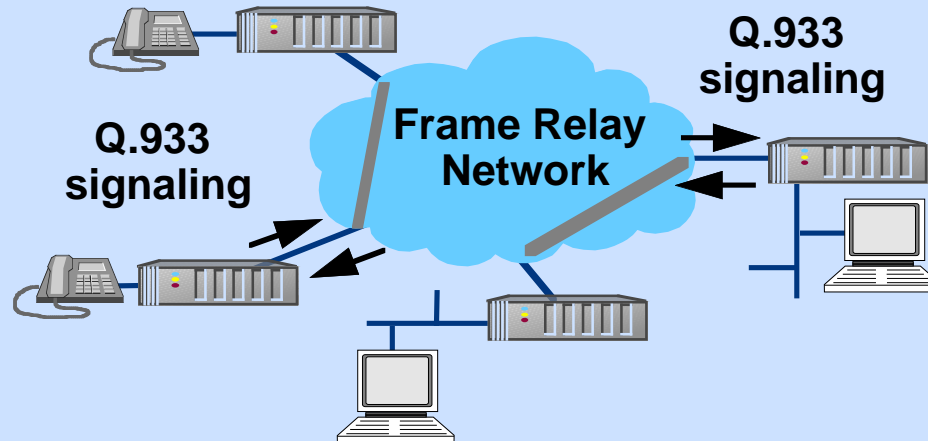
Evolving to meet next generation requirements

Challenge: Fast Delivery of New Service

MFS Communications Company

- **Critical success factors:**
  - expand wide area services
  - optimize use of existing network

- **Magellan's approach:**
  - VBR voice over Magellan Passport
  - introduction of concept trials

- **Impact:**
  - higher utilization of MFS backbone
  - differentiated voice service (WAVE)
  - cost-effective use of network resources

WINNER
Data Communications
LAN Times
BEST
OF SHOW
1995
The McGraw-Hill Companies
NETWORLD+INTEROP '95
ATLANTA

Challenge: Expanding Markets

- **Critical success factors:**
  - delivery of seamless VPN services
  - cost optimization
  - facilitate introduction of new services

- **Magellan's approach:**
  - Passport - scalable multimedia platform
  - ability to differentiate services
  - Unisource/Nortel partnership

- **Impact:**
  - '95 customer satisfaction 92%
  - over 40,000 VPN ports and 2,500 POPs in Europe
 - increased competitiveness and enhanced service portfolio

ptt telecom — The Netherlands

telia — Sweden

Telefónica — Spain

TELECOM — Switzerland

Delivery of New Services

Leadership in '96

- **Involvement in design and development**

- **Standards-based solutions**

- **Rapid deployment capability**

- **Consulting expertise**
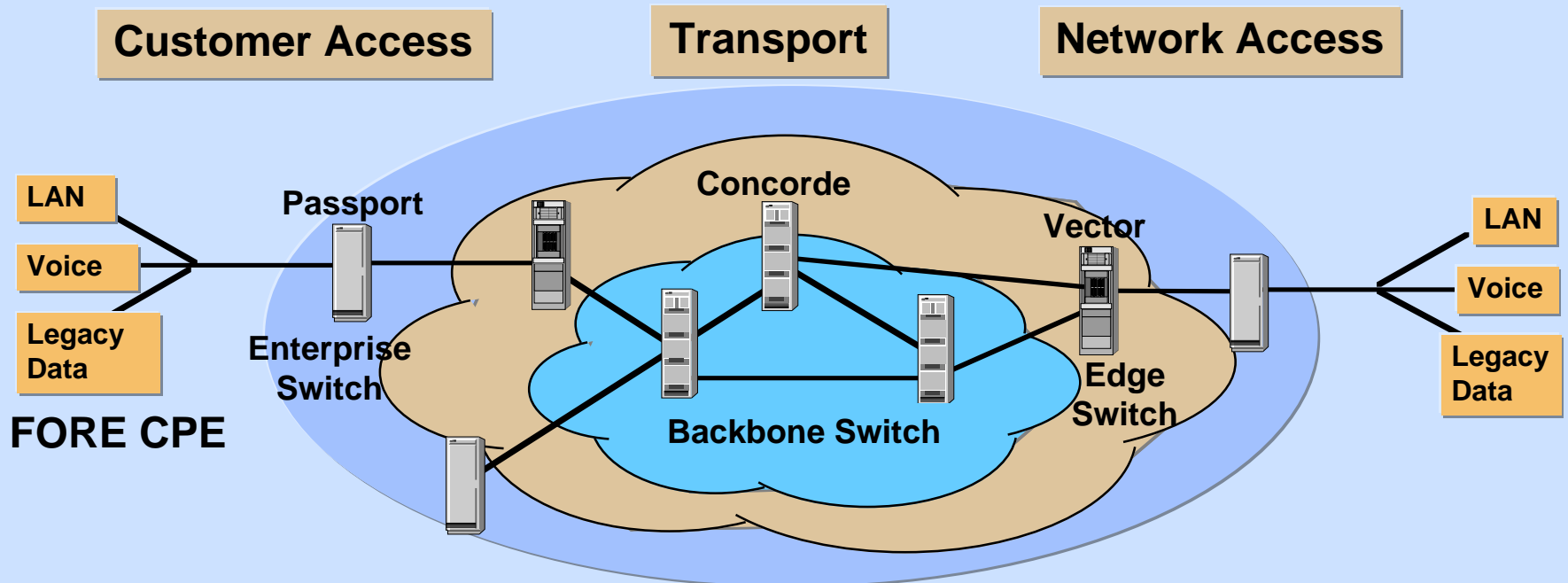
Challenge:
Delivering Leading Edge Services

- **Technology firsts - the competitive edge**
- **Expanding ATM service portfolio**
- **Application-ready architecture**
- **Scalability and robustness**
- **Sophisticated end-to-end management**

Services

Voice **Packet** **Frame Relay** **Multi-media** **ATM**

ATM Transport Network
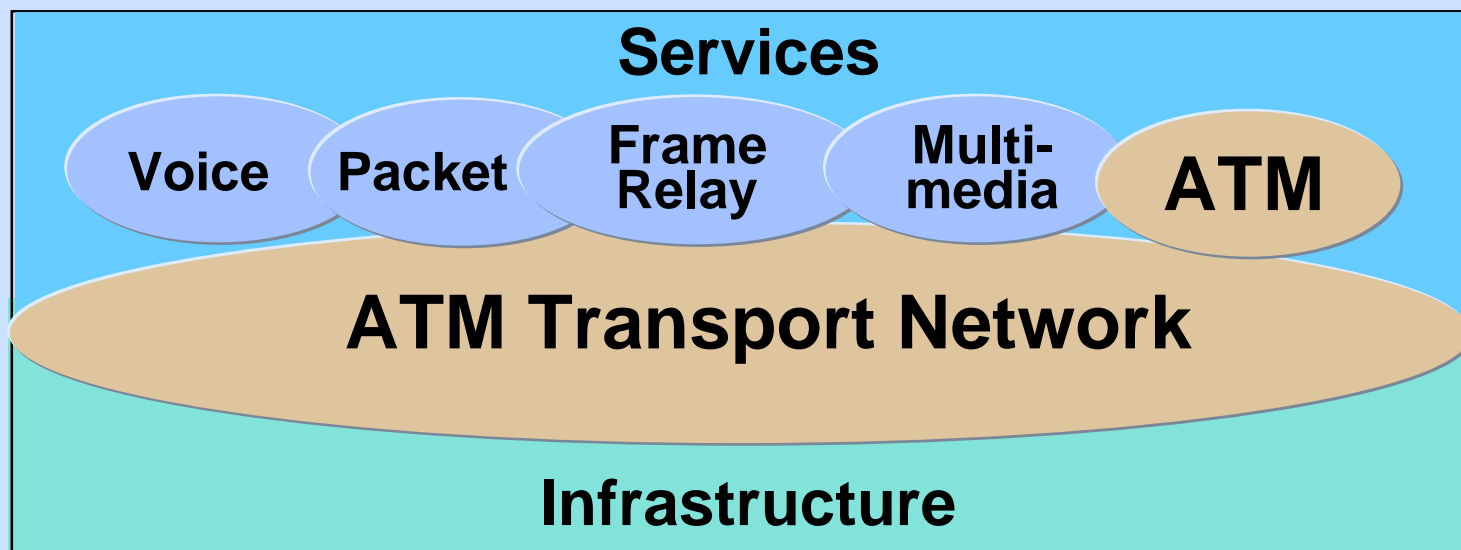
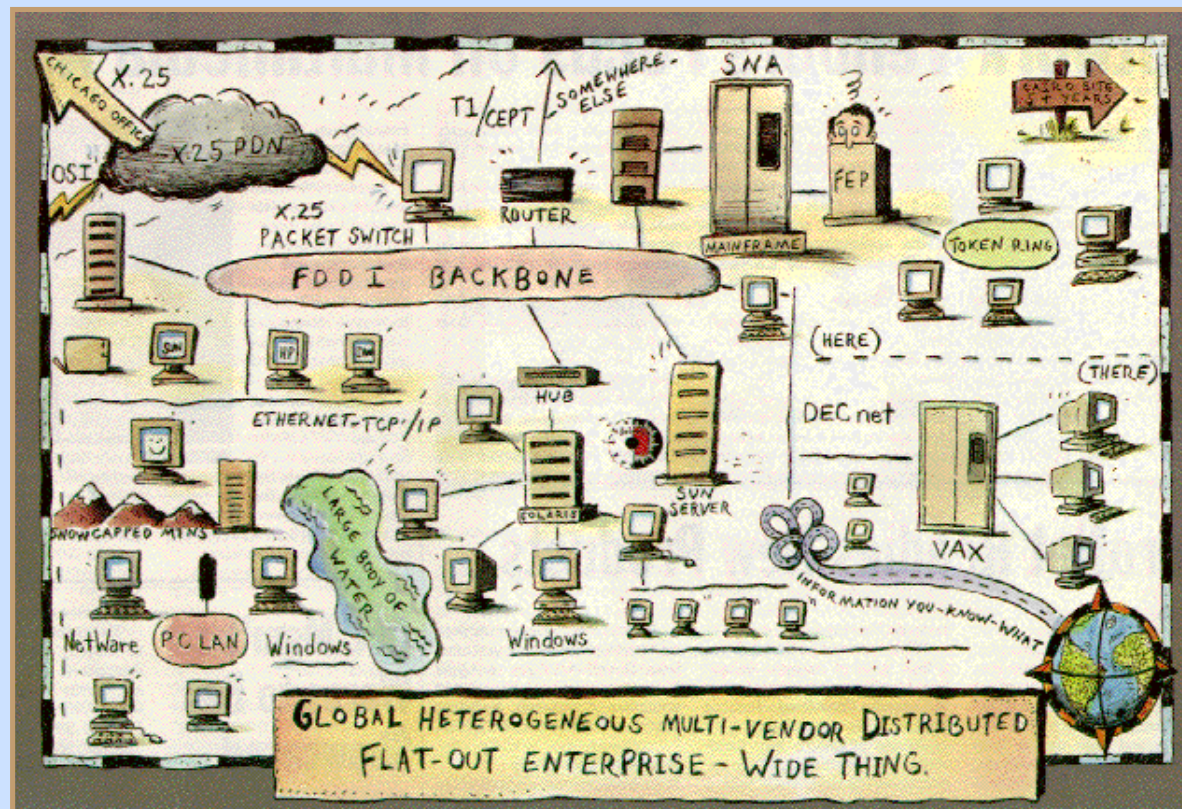**Infrastructure**

A service-independent infrastructure

Delivering Leading Edge Services

- ## Leadership in '96 - ATM
  - leading market with new functionality and services
  - sophisticated network/service/traffic management
  - high service availability via full redundancy
  - extensive accounting, billing & reporting capability

Customer Access

Transport

Network Access

LAN

Voice

Legacy Data

FORE CPE

Passport

Enterprise Switch

Concorde

Vector

Backbone Switch

Edge Switch
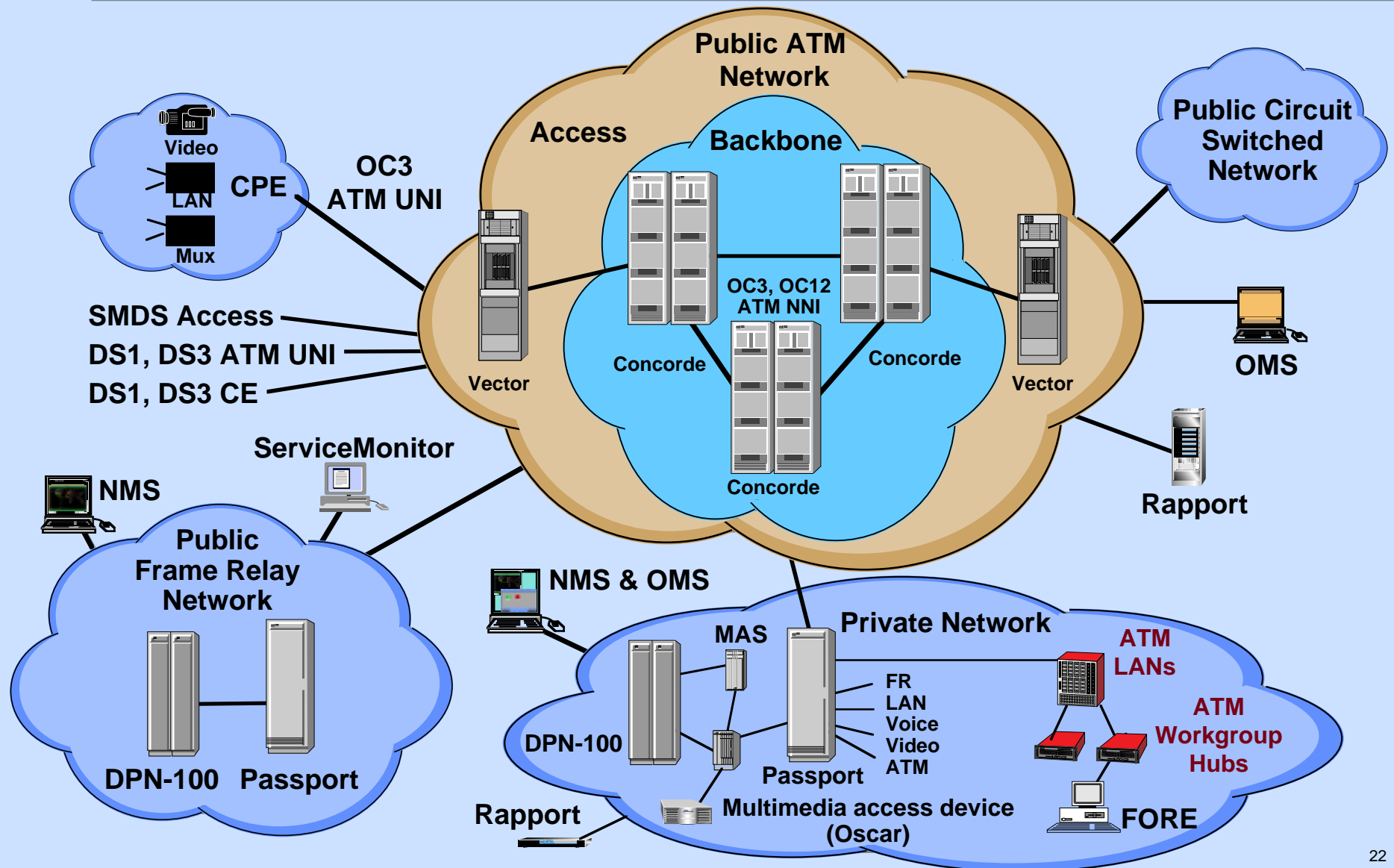
LAN

Voice

Legacy Data

The Future Network

- **An Enterprise Network is....**

   "The sum of applications, services and equipment required to meet an organization's communication needs (voice, data, video and image)."

   Or....

The Future Network

Public ATM Network

Access

Backbone

Public Circuit Switched Network

Video

LAN

CPE

Mux

OC3 ATM UNI

OC3, OC12 ATM NNI

Vector

Concorde

Concorde

Concorde

Vector

OMS

Rapport

SMDS Access
DS1, DS3 ATM UNI
DS1, DS3 CE

ServiceMonitor

NMS

Public Frame Relay Network

DPN-100 Passport

NMS & OMS

Rapport

MAS

DPN-100

Passport

Private Network

FR
LAN
Voice
Video
ATM

Multimedia access device (Oscar)

ATM LANs

ATM Workgroup Hubs

FORE

22

Your Success is our Success

Benxi PTA	Source River Telecommunications	PCS PrimeCo
Banco di Napoli	Sociede InterBancia Servicios	YKKap
Ashland Oil	ACER Peripheral Inc.	INTEL, Panama
Taiwan National Stock Exchange Institute	Anshan City	TELECOM de Colombia
	Jiangxi PTA	Unicom
Ministry of the Interior	Ningxia PTA	ENICOM (Nippon Steel)
TELESP	Teleceara	Okazaki City
Chung-Lien	MFS Datanet Inc.	Sanyo Electric
First Commercial Bank	ACC	Teleway Japan
Argonne	Blue Cross Blue Shield	Weifang City
Chengdu City PTA	Changcun City PTA	Telefonica del Peru
Jinzhou PTA	Qinghai PTA	Telesur
Nanchang City PTA	Tianjin PTA	Bell Canada - Highway 407 / MOT
Caja Postal	RICIB (Gouvernement du Québec)	Cabletron Systems
Ibercaja Spain	Telekomunikacja Polska S.A.	Bear Stearns
Dow Jones	Boston Business Network	Tri Touch America
Stolichny Bank	Bellcore Technology	EMTELCO
Unisource (SIRUS)	Ministry of Defence - Spain	CTC
Sprint	SRT Communications	Banco de Sardegna
INES	Telekom Malaysia	1st Bancario S. Paulo di Torino
Hoechst Japan	NewTel	Infostrada
Kayaba Kogyo	Akzo Nobel	CNI Opus
TR Labs	Westinghouse Communications	Mercury one-2-one PCS
GST	Vyvx	Promon
Advanced Internet Communications	Spectranet - City of Lakeland	Bassett Health Care
	CSIS	Georgia Pacific
Williams Company	TYSSA	AECL
Hart Communications	Dalian City	Bell Canada - Residential Broadband

Market Leadership
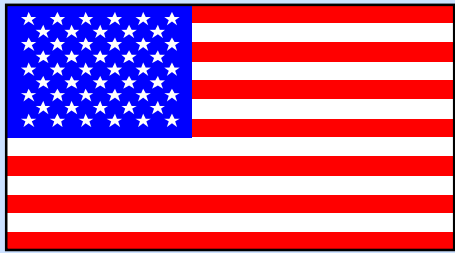
+ 69%
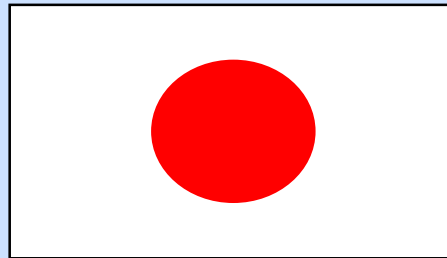
+ 148%

+ 96%

+ 38%

+ 79%

+ 76%

1995 global revenue growth + 46%

Strategic Outlook