# Magellan Concorde Infrastructure Solutions

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NORTEL
NORTHERN TELECOM

INFORM '96

# Agenda

- **The role of ATM in public networks**

- **ATM network architecture**

- **Role of Magellan Concorde in backbone infrastructure solutions**

# The Role of ATM in Public Networks

## ATM integrates :

- Different applications, technologies, and networks

- LAN-to-WAN networking

- Discrete protocols, services and equipment

- Voice, video, and data traffic at a variety of speeds

## Critical success factors for WAN technology:

**Flexible bandwidth**

**Flexible connectivity**
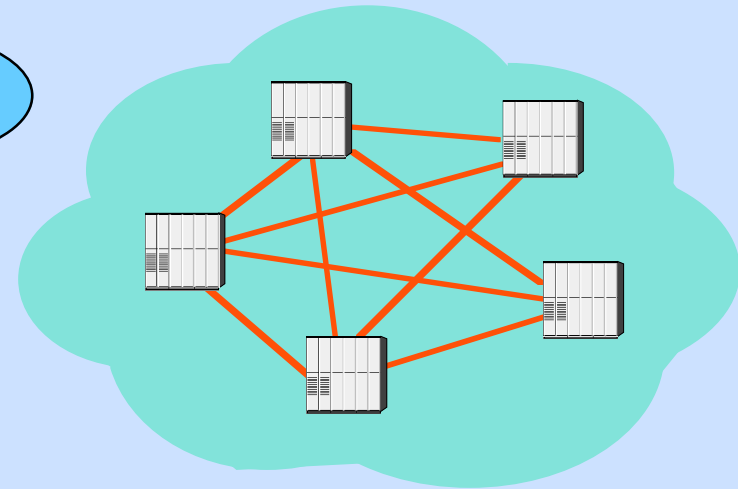
**Multimedia transparency**

# ATM Has Been Accepted
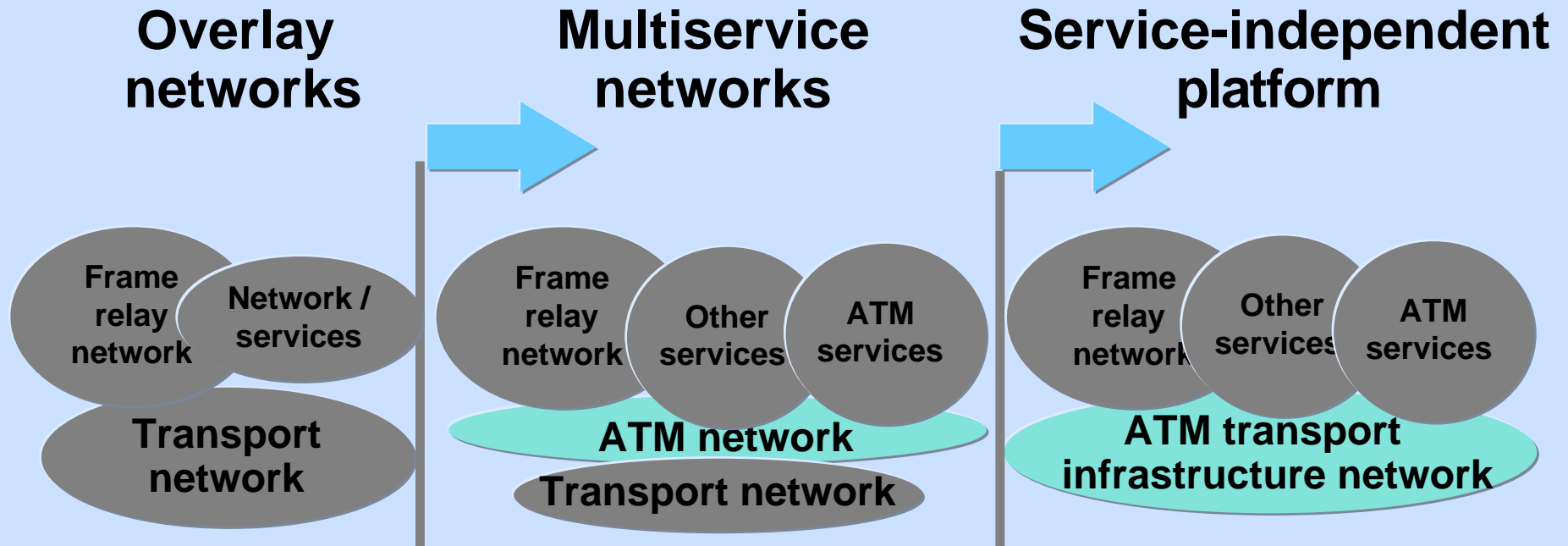
**Residential broadband network trials**

**Data network trials**

**Emerging multimedia network trials**

**Today's meshed-networks**

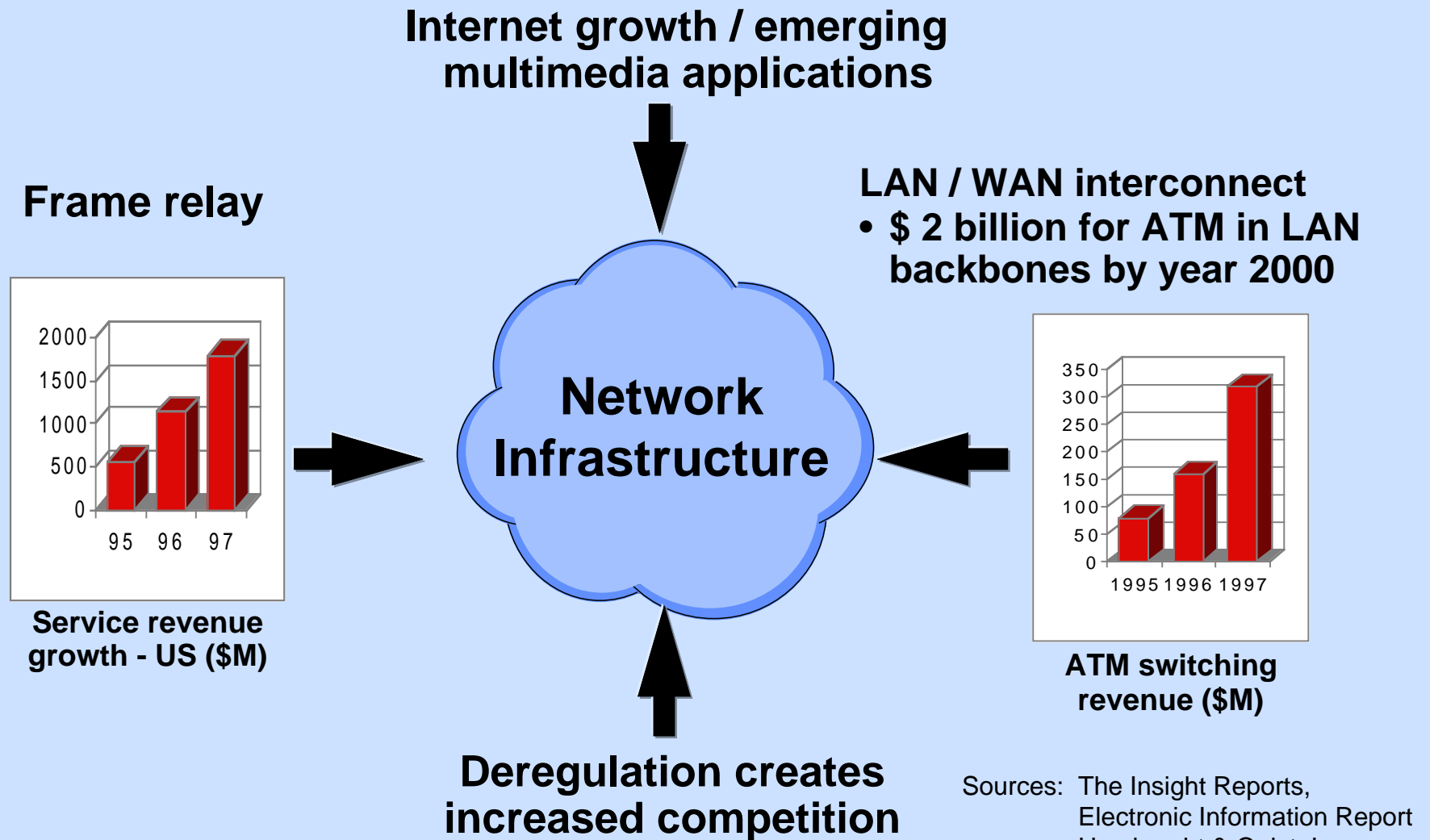**ATM has received industry-wide acceptance!**

# ATM Infrastructure Evolution

**Overlay networks**

**Multiservice networks**

**Service-independent platform**

Frame relay network

Network / services

Transport network

Frame relay network

Other services

ATM services

ATM network

Transport network

Frame relay network

Other services

ATM services

ATM transport infrastructure network

**1994-1996**

**1996-1997**

**1998+**

**New service introduction**

**Volume deployment**

## Over time, the core infrastructure will evolve
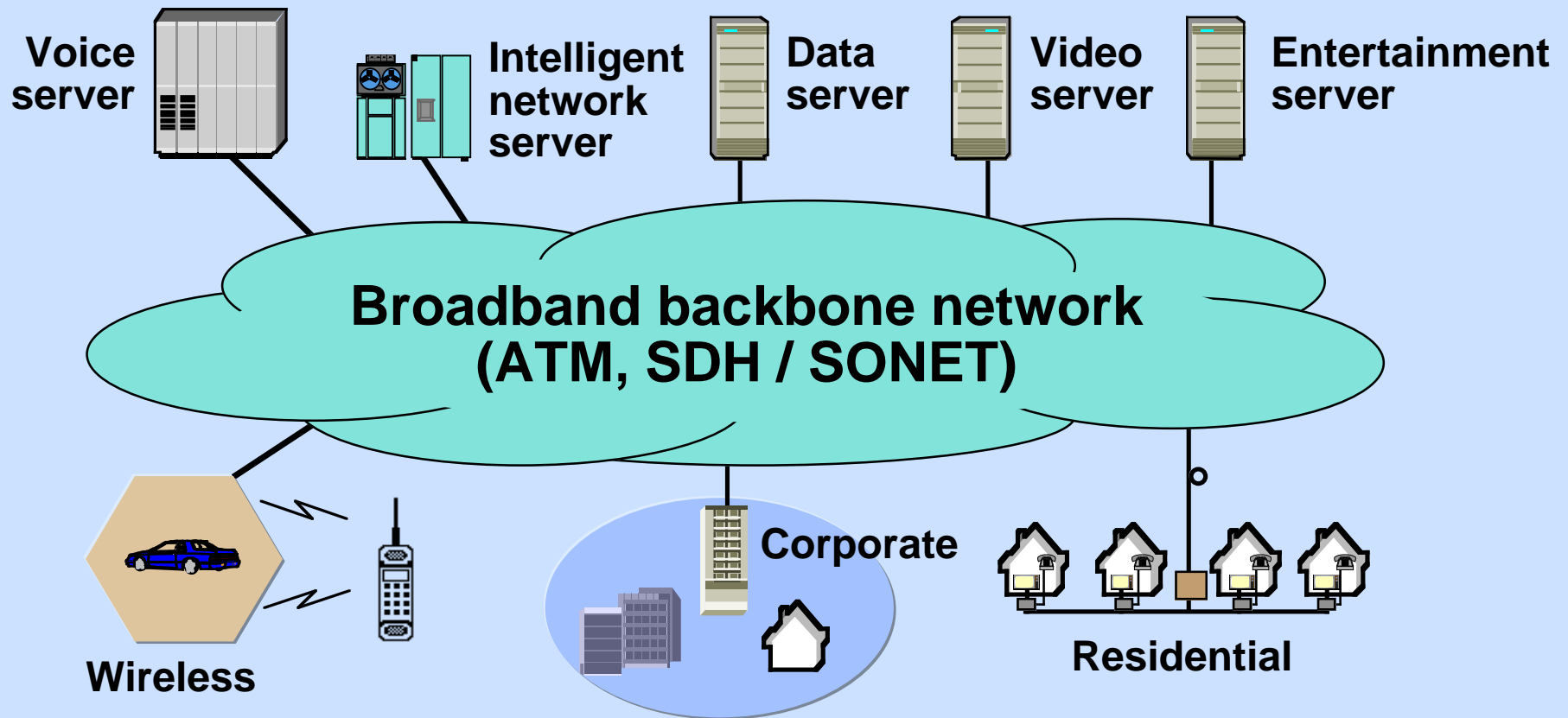
# Key Infrastructure Drivers

**Internet growth / emerging multimedia applications**

**Frame relay**

**LAN / WAN interconnect**
- **$ 2 billion for ATM in LAN backbones by year 2000**

**Network Infrastructure**

**Service revenue growth - US ($M)**

2000
1500
1000
500
0

95 96 97

**ATM switching revenue ($M)**

350
300
250
200
150
100
50
0

1995 1996 1997

**Deregulation creates increased competition**

Sources: The Insight Reports,
Electronic Information Report
Hambrecht & Quist, Inc.

# Changing Corporate Realities

- **Global competition**
- **Decentralized decision-making**
- **Virtual work groups**
- **Mobile workforce**

**Head office**

**Satellite office**

**Network infrastructure**

**Work-at-home**
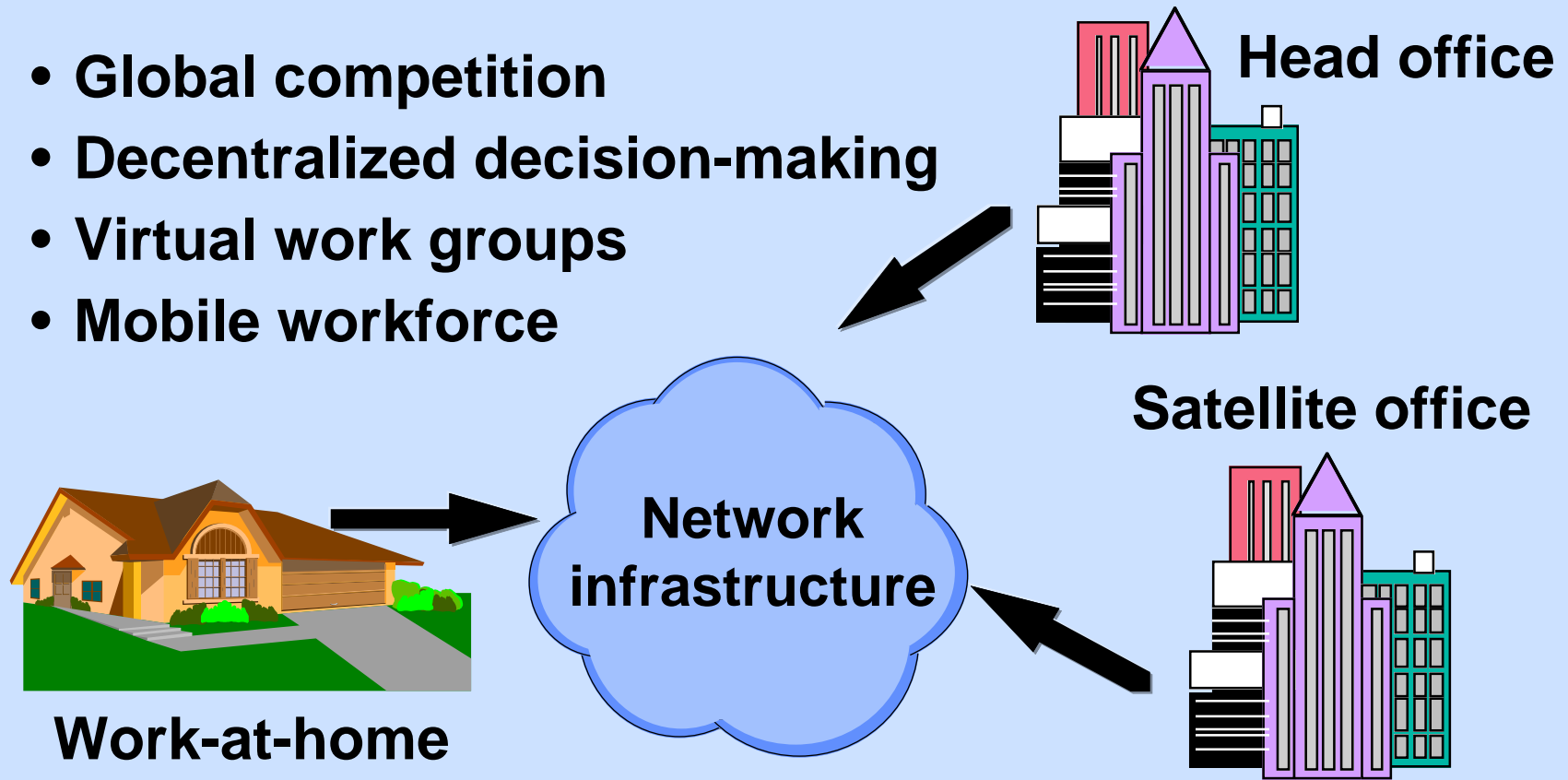
**Information technology is a key to the success of your global organization**

# Future Backbone Networks will Support Multiple Services

**Voice server**

**Intelligent network server**

**Data server**

**Video server**

**Entertainment server**

**Broadband backbone network (ATM, SDH / SONET)**

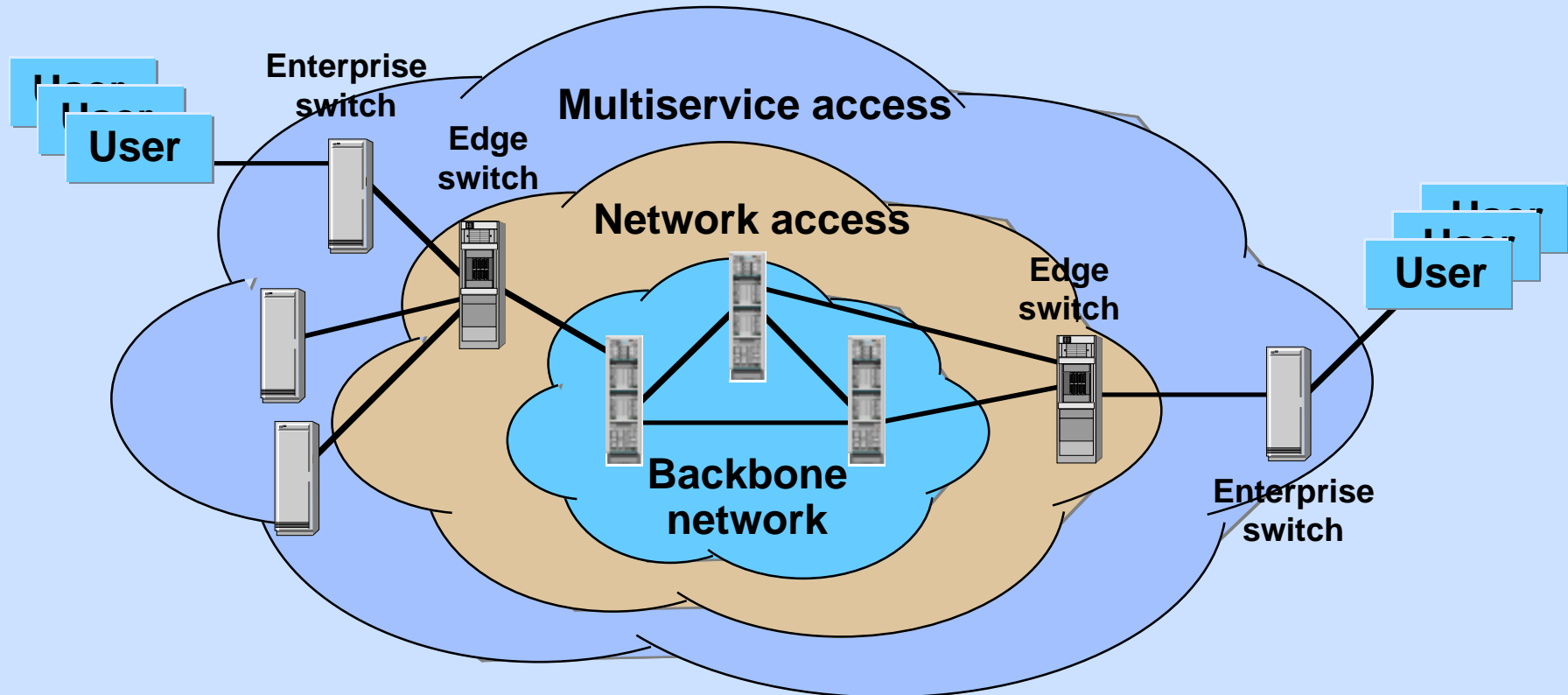**Wireless**

**Corporate**

**Residential**

**The public ATM backbone network is crucial to all services**

# Agenda

- The role of ATM in public networks

- **ATM network architecture**

- Role of Magellan Concorde in backbone infrastructure solutions

# Network Architecture to Support Multiservice Networking



Multiservice access

Enterprise switch

User
User
User

Edge switch

Network access

Edge switch

User
User
User

Backbone network

Enterprise switch

**Multilayered network architecture provides deployment flexibility and economical network growth**

# Multimedia Services: ATM Backbone Switch Requirements

## Success factors for infrastructure solutions

- Ability to provide new services
- Accommodate network growth
- Time-to-market for new services
- Seamless / transparent multimedia service offering
- Global exchange of mission-critical information

**leads to**

## Backbone technology requirements

- Flexible, and scalable in network deployment
- Service evolvable platform
- End-to-end network control and service management capabilities
- Sophisticated traffic management
- Highly reliable core elements
- Fully standards compliant

**Backbone technology must be flexible to support evolving network services and network requirements**
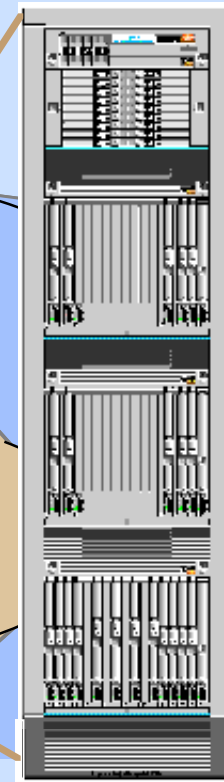
# Agenda

- **The role of ATM in public networks**

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- **Role of Magellan Concorde in backbone infrastructure solutions**

# Backbone Technology: Magellan Concorde

- **Key attributes:**
  - flexibility
  - scalability
  - service creation environment
  - reliability
  - high performance
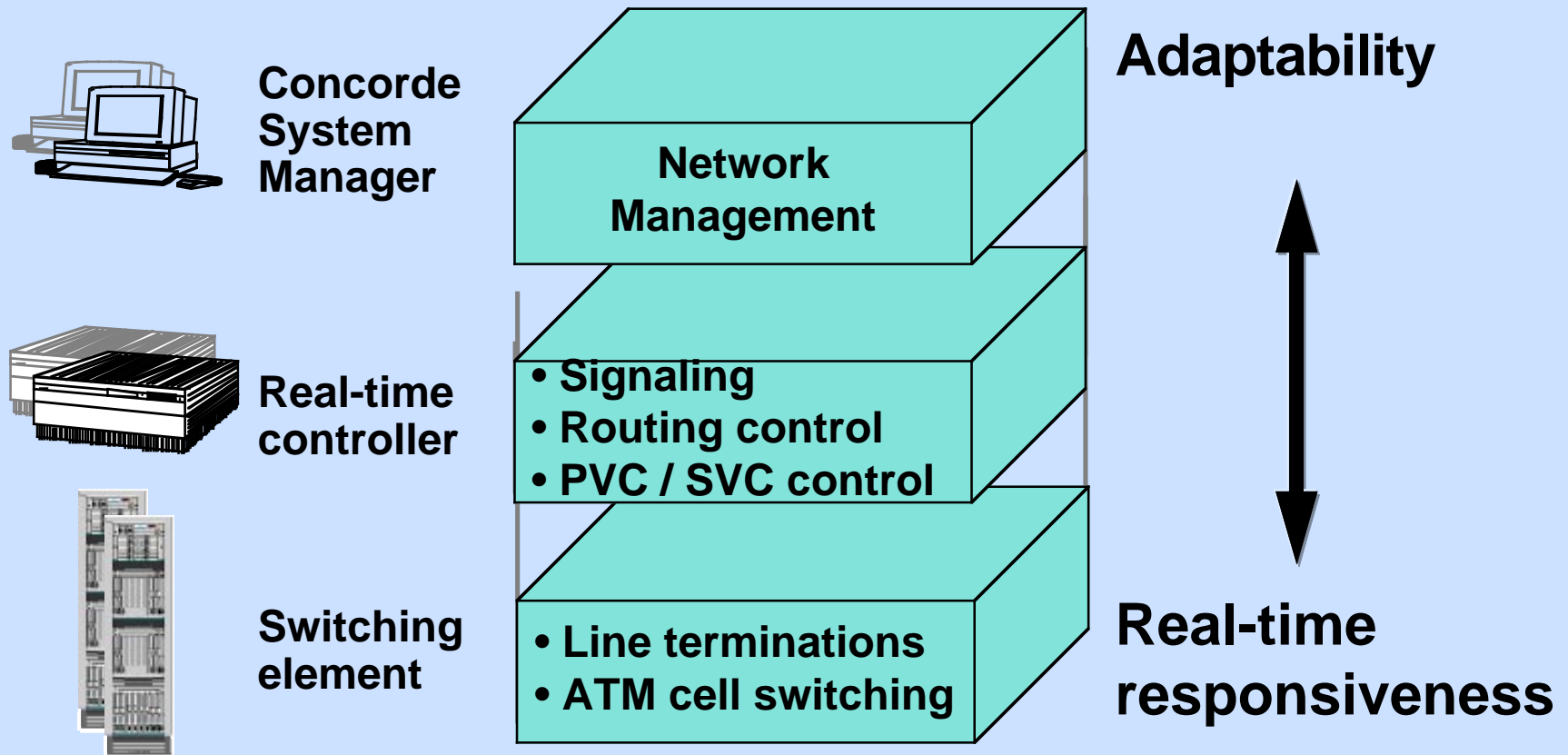  - multivendor interoperability

**Magellan Concorde**



**Magellan is a complete family of products**
**Seamless end-to-end service capabilities**

**Magellan Concorde is a high-capacity, ATM backbone switch**

# Flexibility: Distributed Architecture

**Concorde System Manager**

**Real-time controller**

**Switching element**

**Network Management**

- Signaling
- Routing control
- PVC / SVC control

- Line terminations
- ATM cell switching

**Adaptability**

**Real-time responsiveness**

**Modular design offers optimized functionality, and the flexibility to adapt to meet new service evolution**

# Flexibility: Network Deployment

**Geographically separated**

RTC

RTC

RTC

SEs
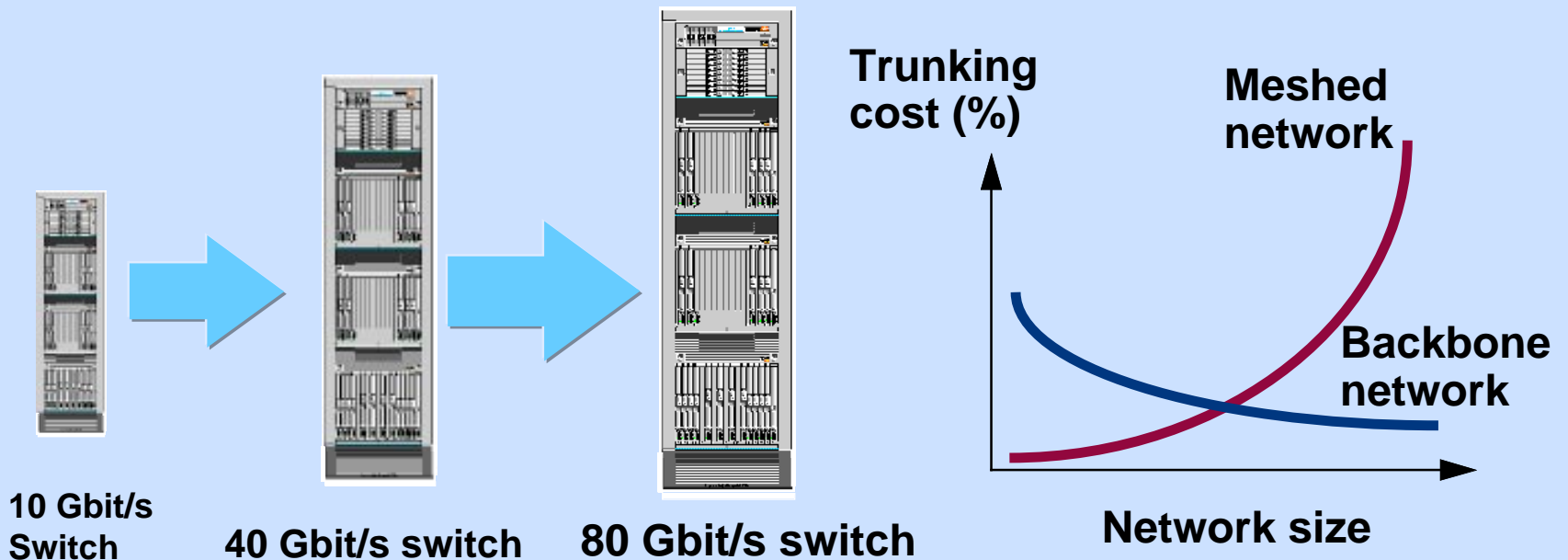
SE

SE's
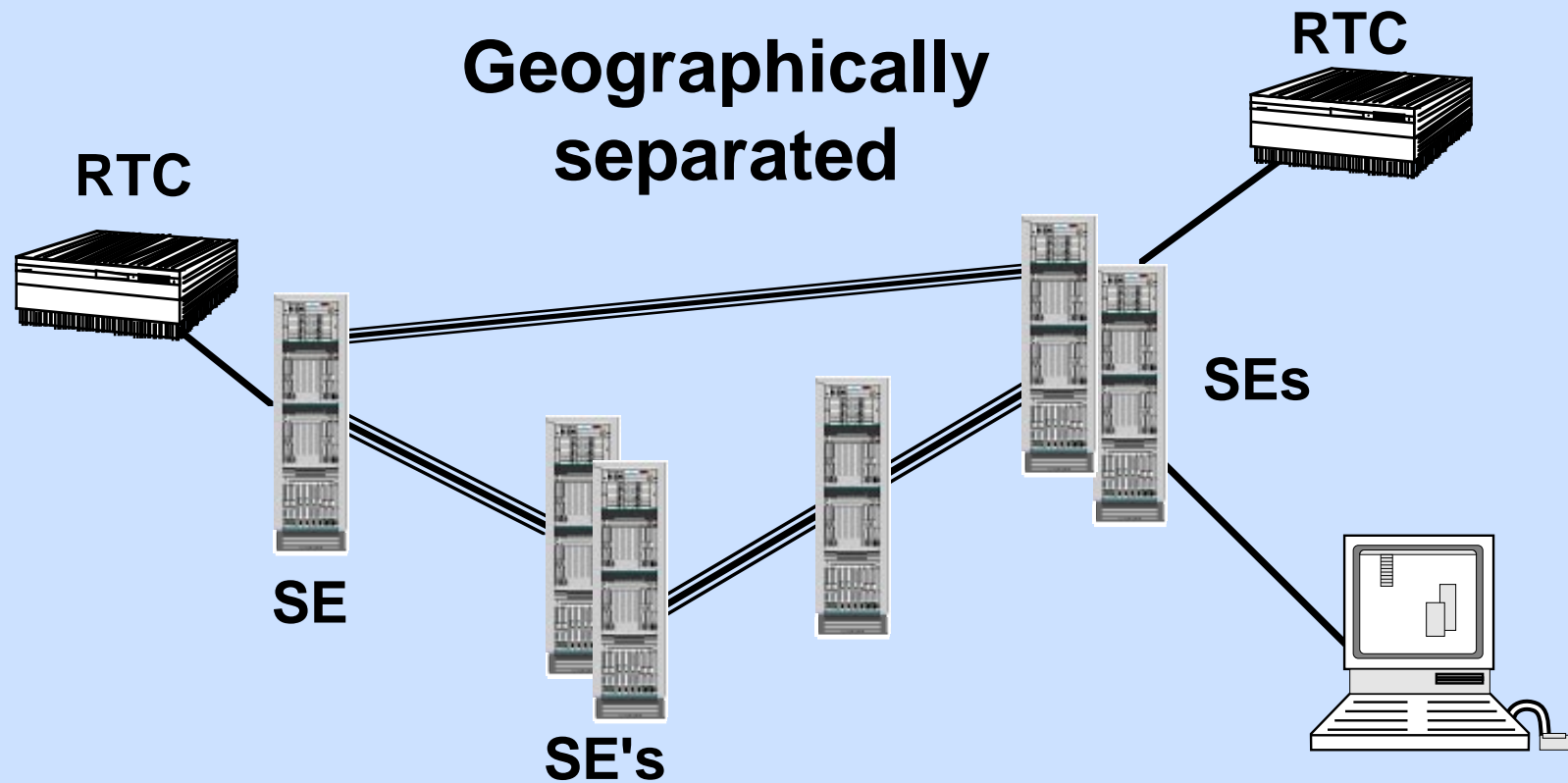
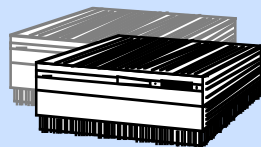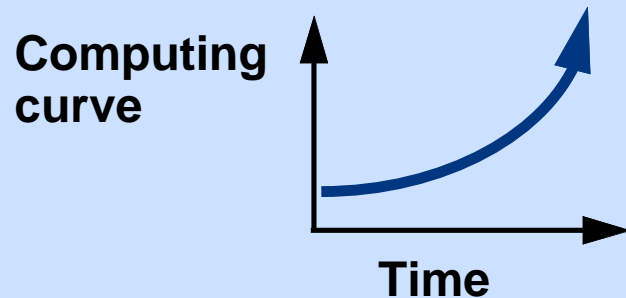**In-service scalability to meet network growth, network performance and new service offerings**

# Scalability: Switch Capacity Evolution

**Increased network <u>access ports</u> and <u>capacity</u> through the use of larger backbone switches**
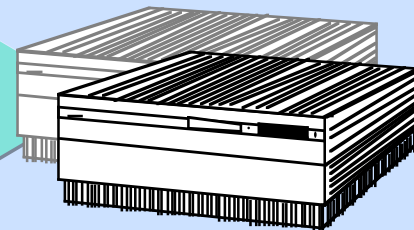
10 Gbit/s Switch

40 Gbit/s switch

80 Gbit/s switch

Trunking cost (%)

Meshed network

Backbone network

Network size

**Protects your short-term investment, and your long term network growth objectives**
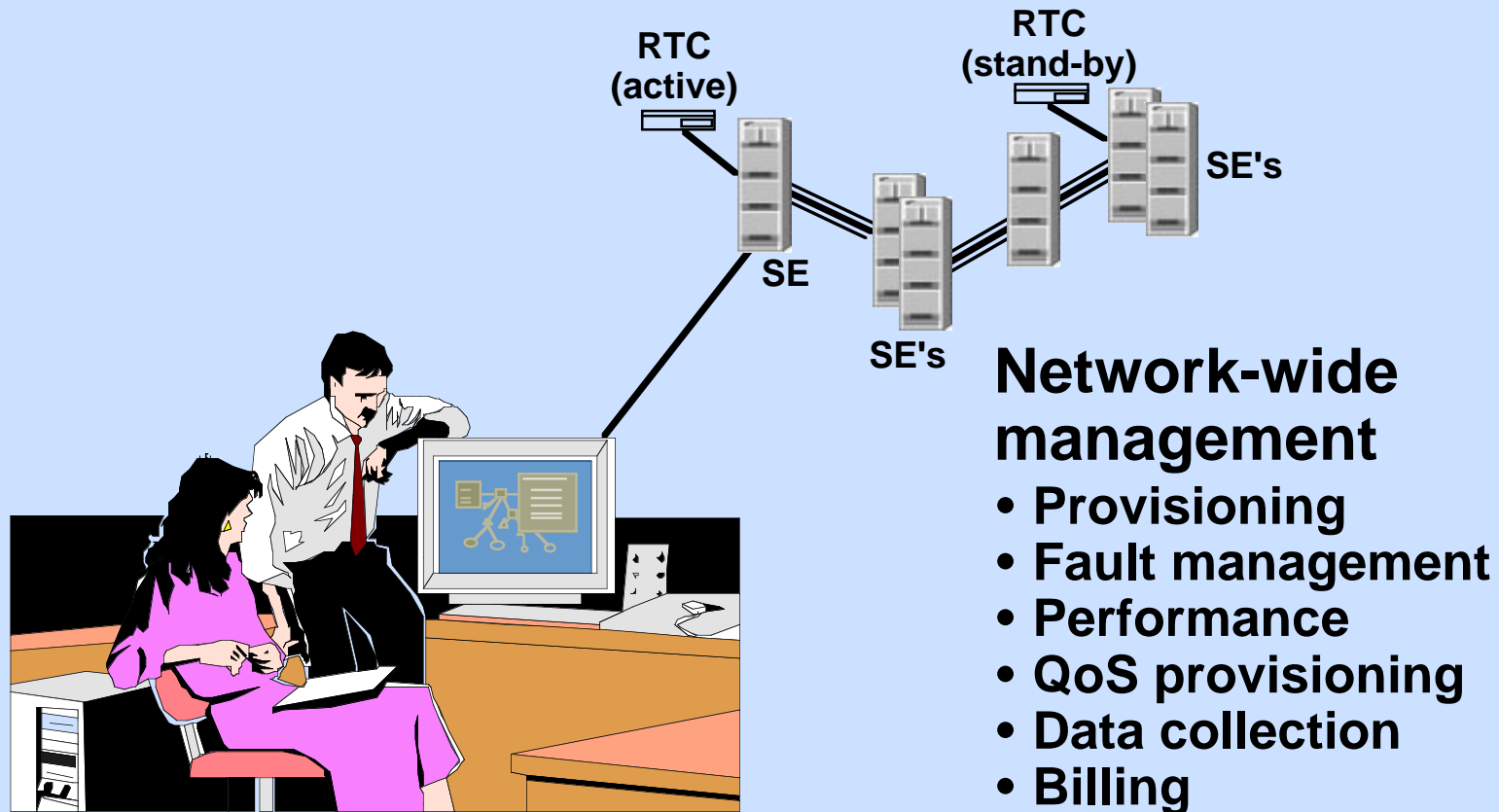
# Scalability: Switched Services Evolution

**Computing curve**

**Time**

**Distributed processing**
**Computing platform**
**scalability**

**Real-time controller**

**Real-time controller**

**Ability to meet network growth, and evolve switched service requirements**

# Service Creation Environment:
## Centralized Network Management

RTC
(active)

RTC
(stand-by)

SE's

SE

SE's

## Network-wide management
- Provisioning
- Fault management
- Performance
- QoS provisioning
- Data collection
- Billing

**Enhanced cluster and network management capabilities**

# Service Creation Environment: Rapid Service Creation
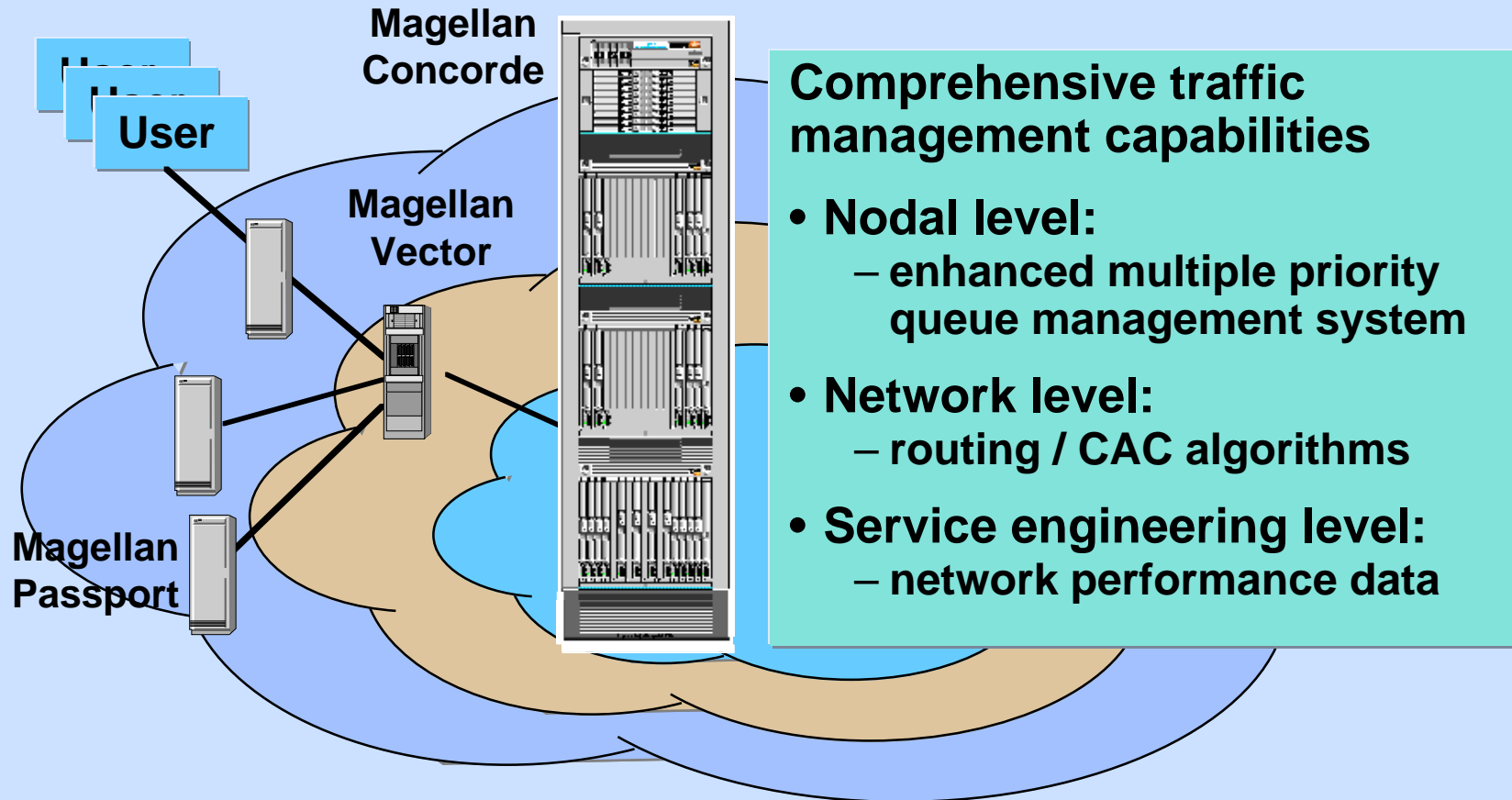
- **Nodal level auto discovery**

- **Simplified service engineering with pre-engineered service descriptors**
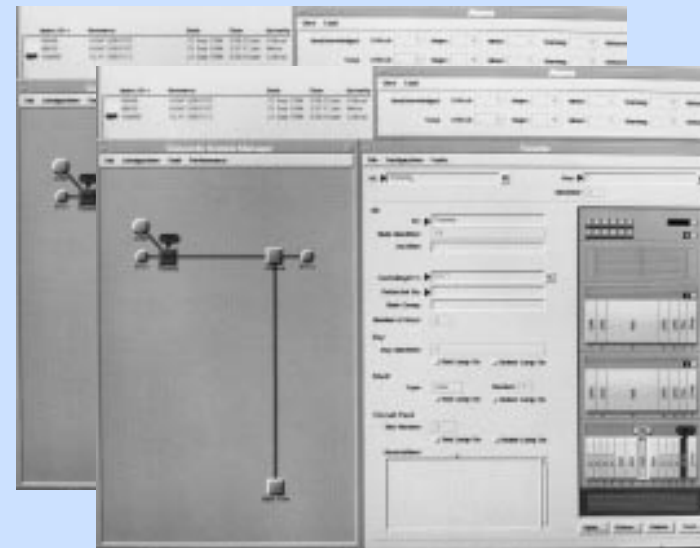


**Service Creation Environment**

**Ability to quickly create new service sets**

# Service Creation Environment: End-to-end Traffic Management

**Magellan Concorde**

**User**

**User**

**User**

**Magellan Vector**

**Magellan Passport**

**Comprehensive traffic management capabilities**

- **Nodal level:**
  - enhanced multiple priority queue management system

- **Network level:**
  - routing / CAC algorithms

- **Service engineering level:**
  - network performance data

**Common set of networking functionalities to ensure seamless deployment of end-to-end broadband networks**

# Reliability:
# Fully Redundant Architecture

**Concorde delivers 1+1 sparing on all real-time components:**

- **Switching fabric**

- **Line modules**

- **Intra-switch connections**

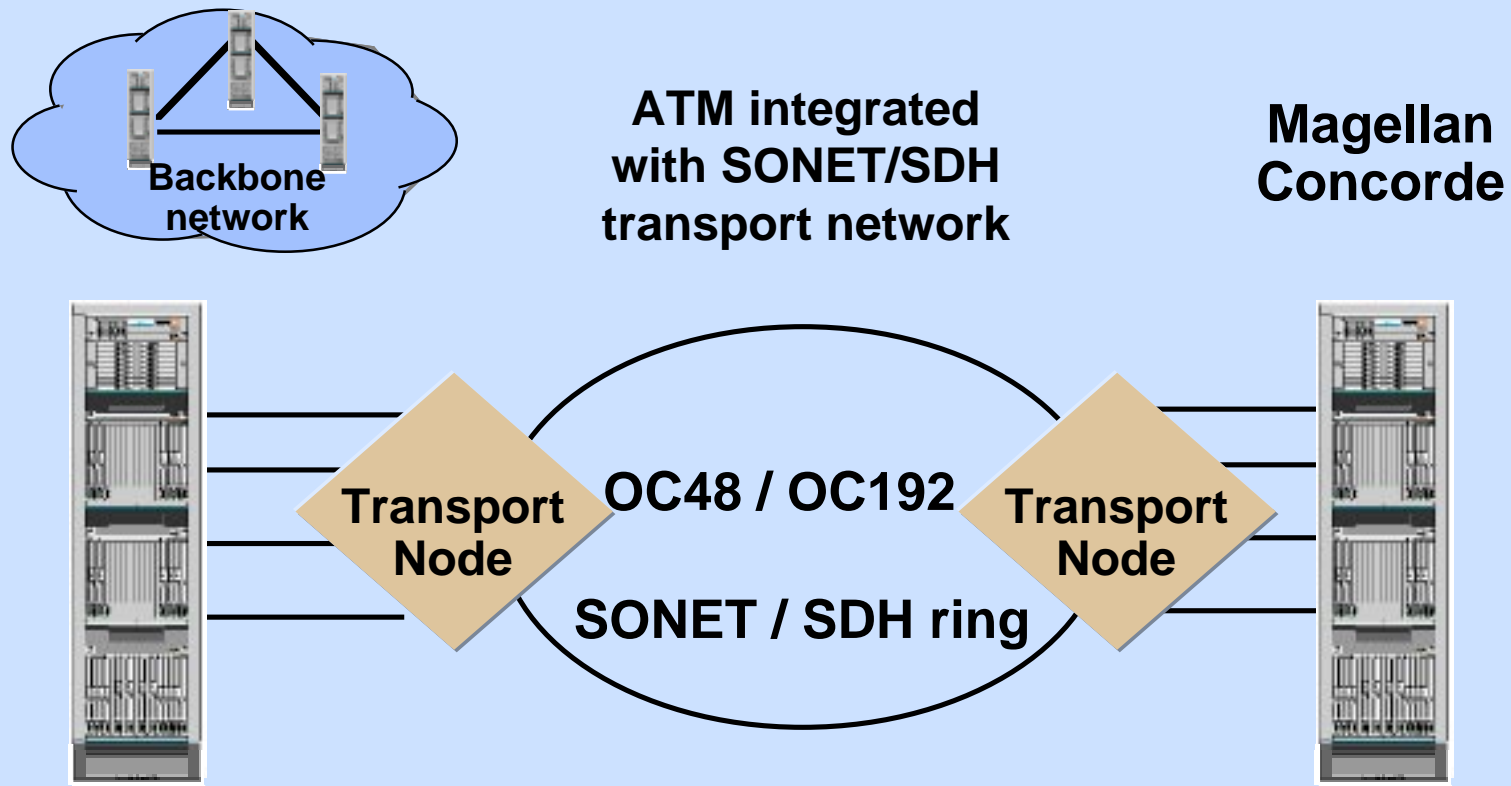- **Connection/call and control processing**
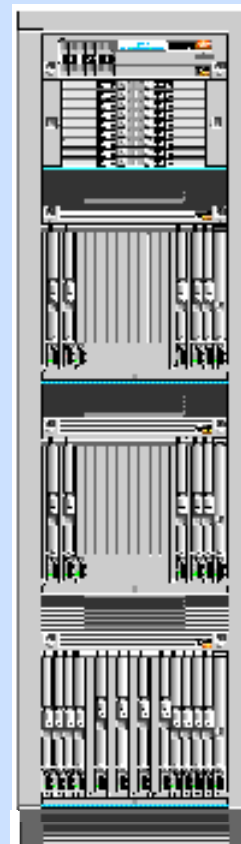


**Redundant fabric planes**

**Redundant line modules**

**Highly reliable backbone switch - overall 99.98% switch availability**

# High Performance:
# ATM and SONET/SDH Interworking

Backbone network

ATM integrated with SONET/SDH transport network

Magellan Concorde

Transport Node

OC48 / OC192

SONET / SDH ring

Transport Node

**Improved network reliability and survivability**

**Reduced long-haul transport cost**

# Multivendor Interoperability: Standards Compliant

**Concorde conformance to ATM Forum, ITU, ETSI, and Bellcore standards**

**Key attributes:**

- **ATM Forum UNI**
- **Q.2931, proxy signaling**
- **ATMF B-ICI**
- **SONET/SDH compliance**
- **NEBS**
- **CMIP**

**Benefits:**

**Service interoperability in a multivendor network environment**

**Nortel provides leadership in standards**

# ATM Infrastructure Checklist

## Infrastructure attributes

**Concorde features**

- Network deployment options:
  Flexible, scalable, and evolvable       √

- Sophisticated traffic management       √

- End-to-end network control and
  service management       √

- Highly reliable network elements       √

- SONET / SDH capabilities       √

- Fully standards compliant       √

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# Winning with Magellan Concorde

**Key Concorde attributes**
Advanced

- **System architecture**
- **Network management**
- **Service capabilities**

**Benefits**

- **Increased deployment flexibility**
- **Economical network growth**
- **Meeting time-to-market requirements for new service opportunities**
- **Increased system reliability**
- **Enhanced service capabilities**

**Service provider values**

- **Reduced operating costs**
- **Reduced capital expenditures**
- **Improved business objectives**

**Enterprise values**

- **New service offerings**
- **Flexibility of services**
- **Time-to-market (new services)**