

Nortel's Internal ATM Network: “A Customer Perspective”

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Project Management
Global Enterprise Services

- **GES Network Requirements**
- GES ATM Network
- GES ATM Experience

Global Enterprise Services

GLOBAL ENTERPRISE SERVICES

Multiple legacy networks:

- **NTelpac**
 - Private packet switched data
 - DPN-100 Support of frame relay, SNA and X.25
- **Corporate Wide Area Network (CORWAN)**
 - Global data network
 - Router based
- **Electronically Switched Network (ESN)**
 - Virtual private voice & data (circuit switched)
 - Meridian PBX, DMS250, DMS-100, Centrex
- **VideoMeet II**
 - Narrowband video conferencing
 - Switched digital network

Services offered:

- Switched voice and data
- TCP/IP, X.25, AppleTalk, SNA, frame relay, ATM
- Video and audio conferencing
- Remote/mobile access
- Desktop-to-desktop

Components:

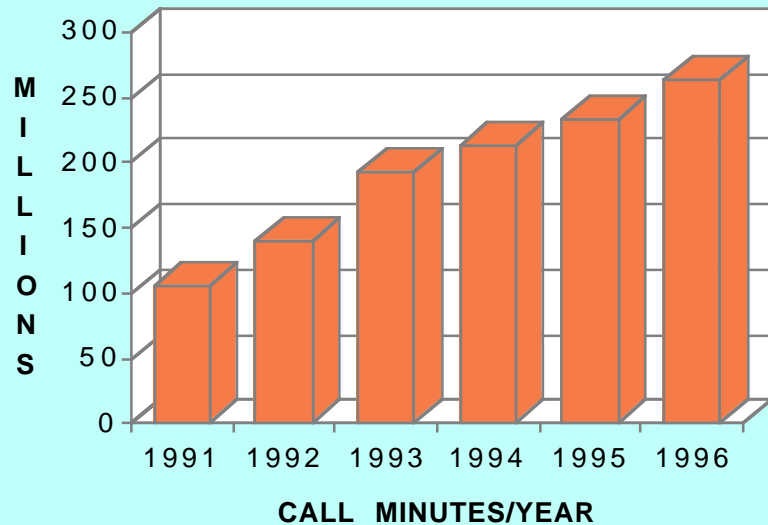
<u>Item</u>	<u>Qty</u>
• PBXs	200
• Tandem nodes	7
• OC-12/48 nodes	14
• Centrex sites	25
• DPN-100 switches	100
• Routers	400
• Video conference rms.	120
• Mainframes	13
• Non-UNIX minis	76
• UNIX minis	105
• UNIX workstations	12,000
• Personal computers	50,000
• Network locations	250

Business Environment

- **Cost pressures**
- **Fierce competition**
- **Business re-engineering**
- **New application demands**

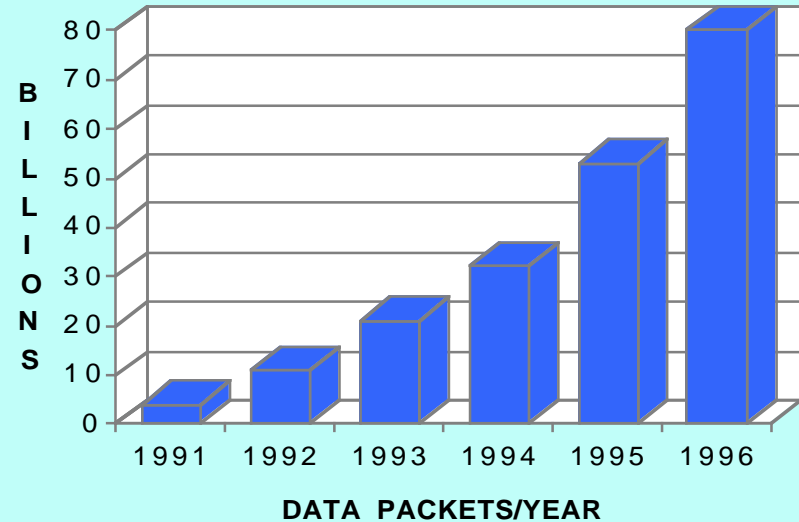
**Many unknowns but ...
one thing is certain ...
the future will consume
far more bandwidth!**

Bandwidth Growth



Voice growth driven by:

- Global expansion
- Audio conferencing
- Video conferencing

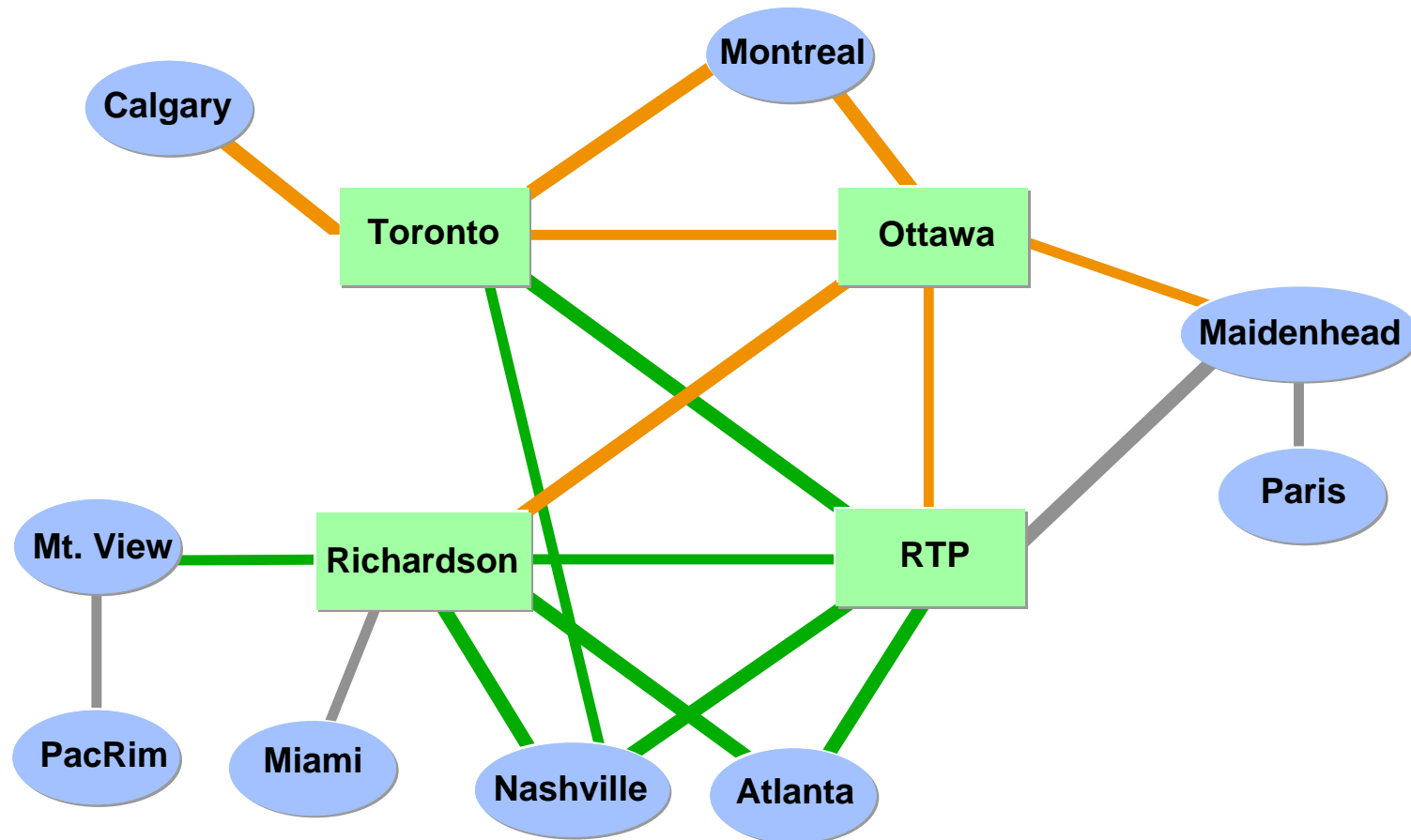


Data growth driven by:

- Global expansion
- Technology
- Applications

80's Technology TDM Network

GLOBAL ENTERPRISE SERVICES



TDM technology limitations:

- Physical, Point-to-Point connectivity
- Scalability and flexibility

Agenda

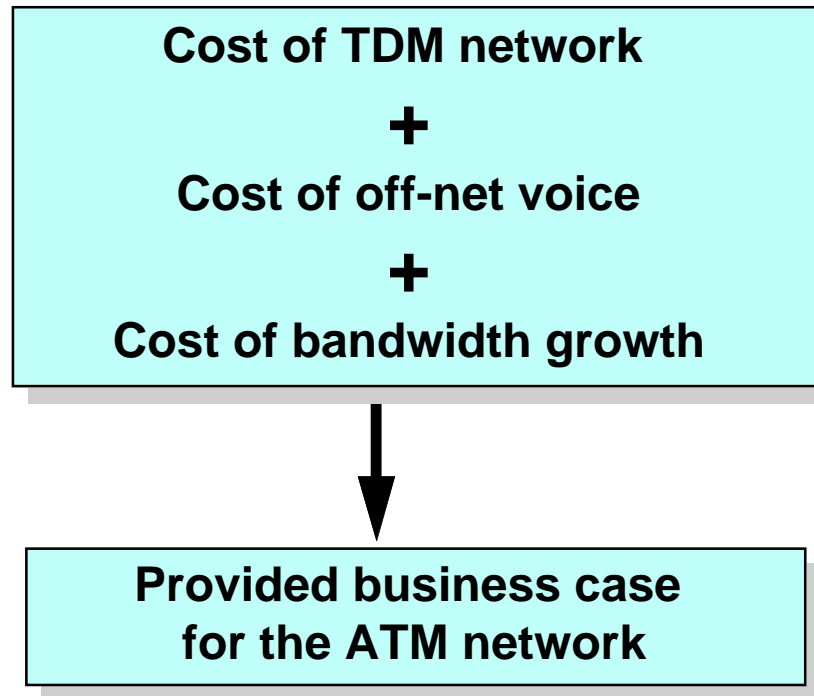
- GES Network Requirements
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Network Requirements

- **More bandwidth**
- **Scaleable from DS1, DS3, OC-3 and beyond**
- **Transport multiple traffic types**
- **Meet global standards**
- **Flexible**
- **Simplified network management**
- **Cost-effective**

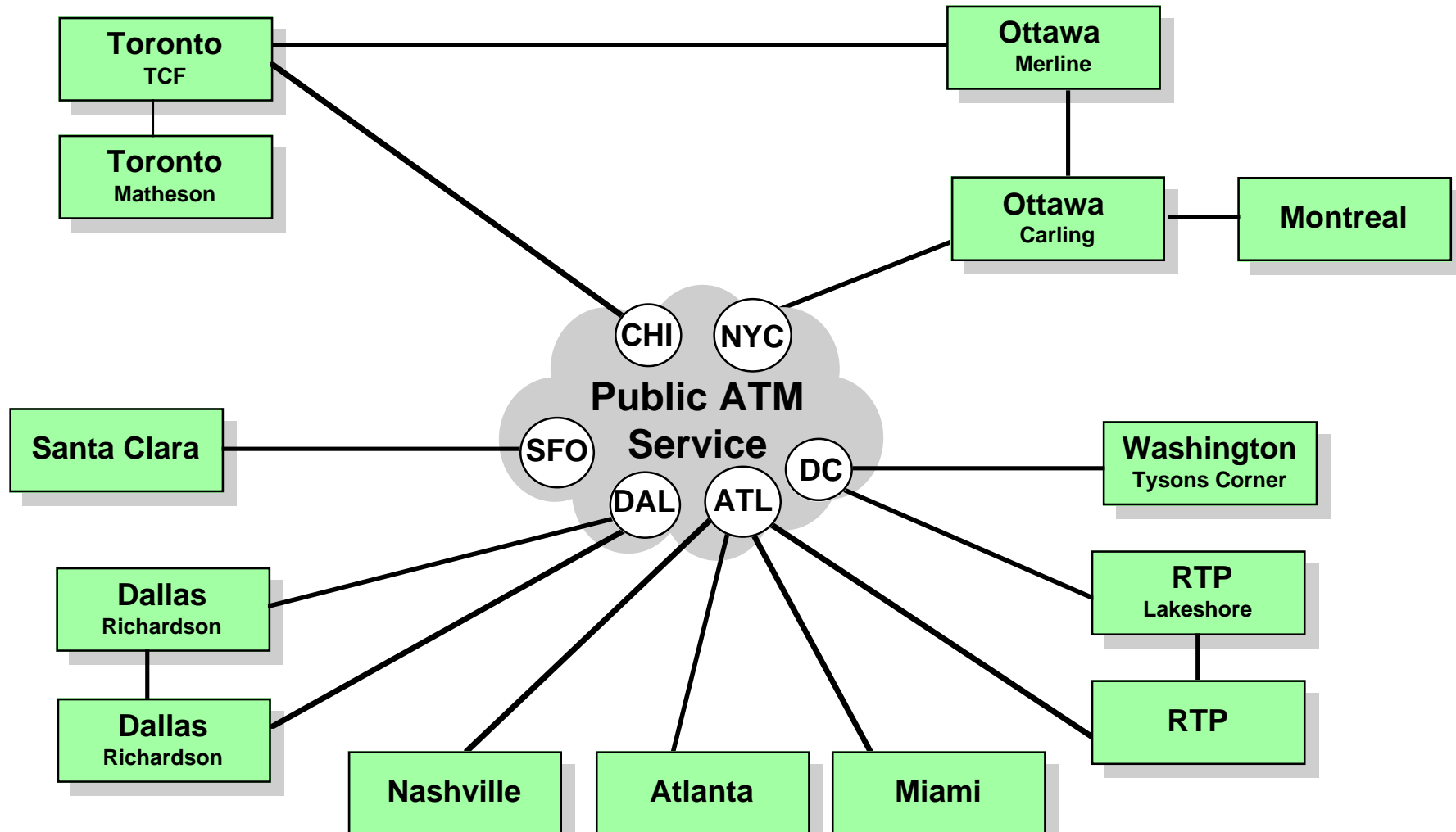
ATM technology meets these requirements

ATM Business Model



- **Business case developed for network consolidation**
- **Voice component was key in justifying ATM**
- **ATM provides the bandwidth for emerging applications**

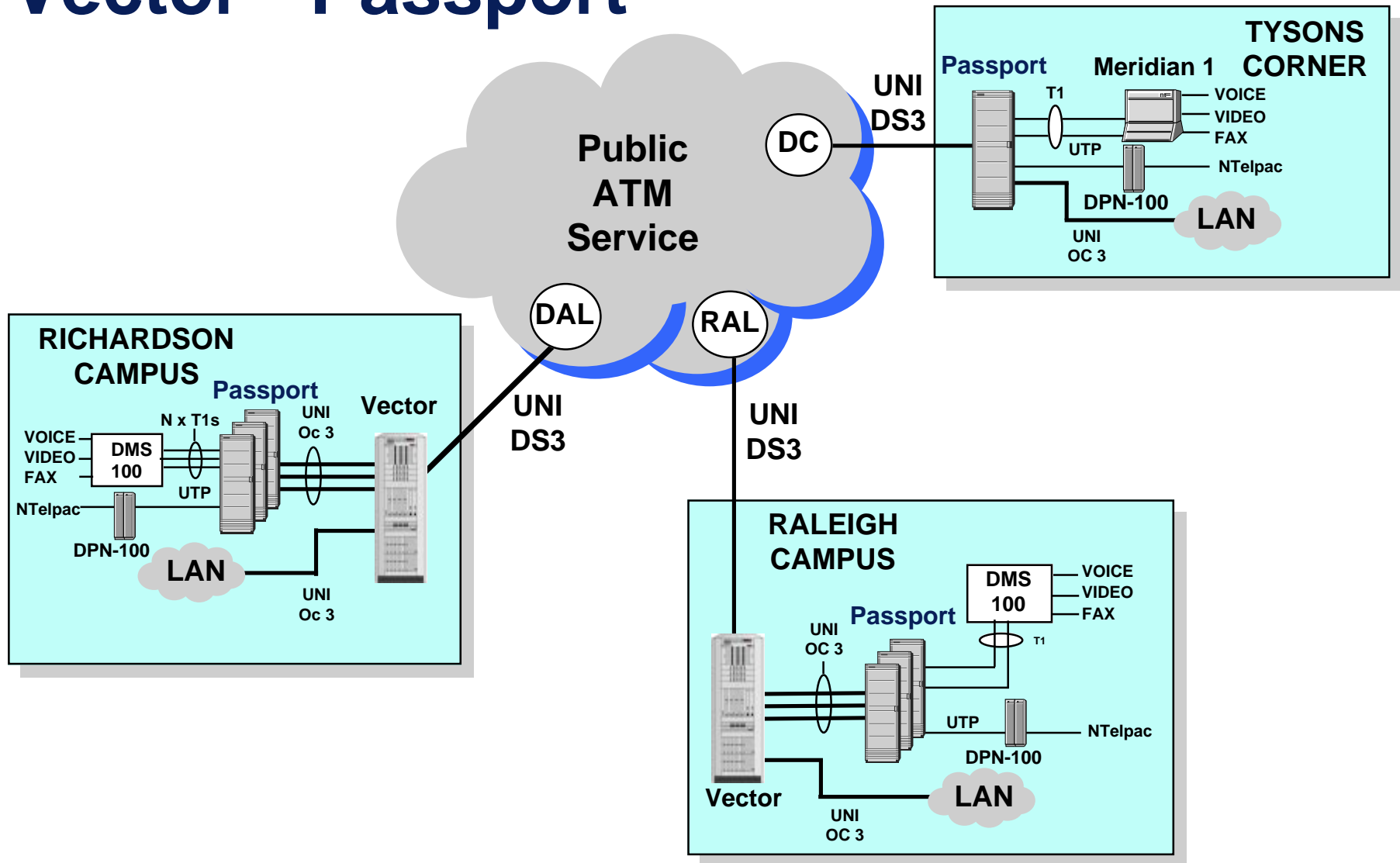
ATM Network Scope



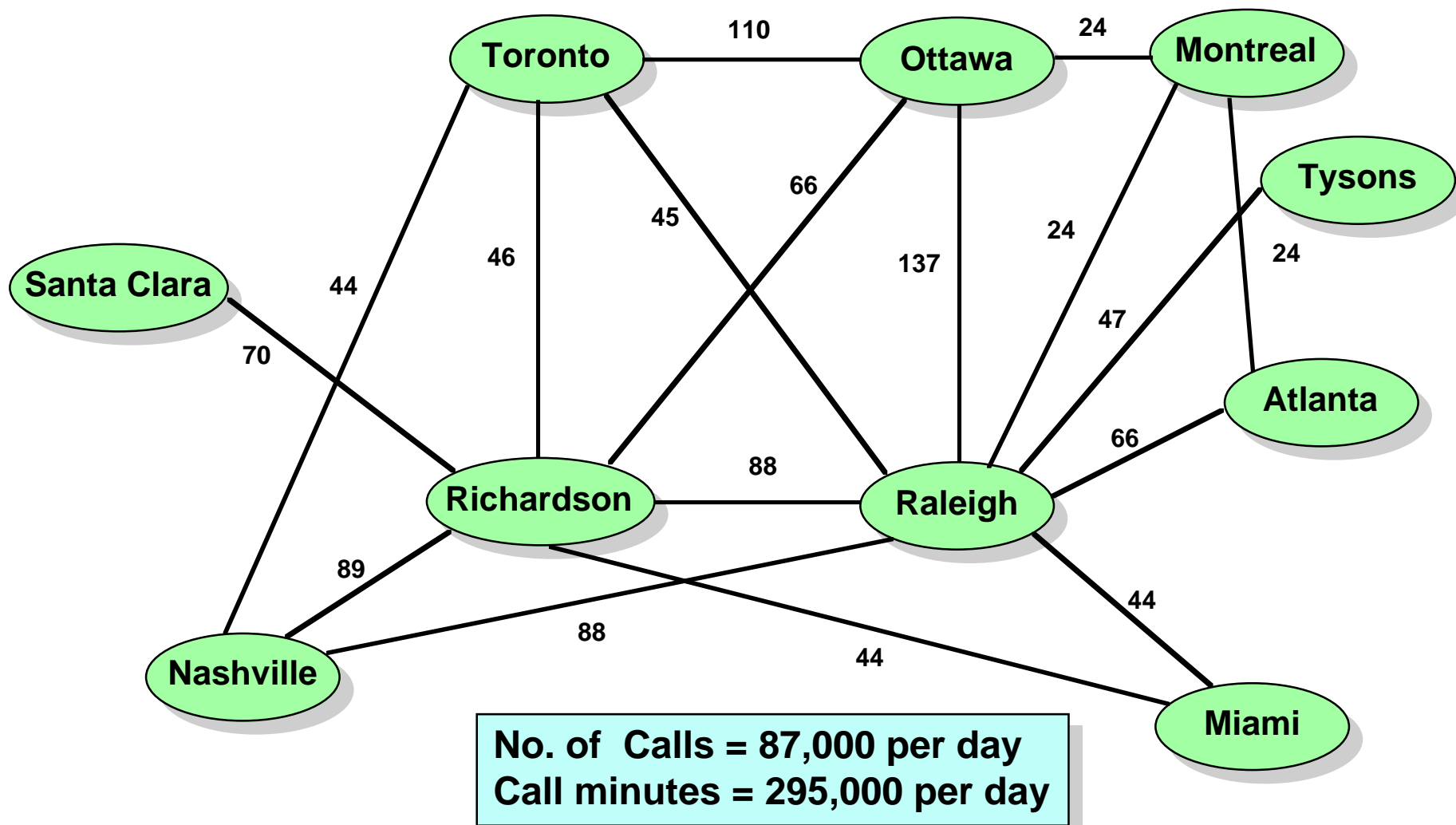
ATM network consists of 50 Magellan switches

Network Architecture

Vector - Passport

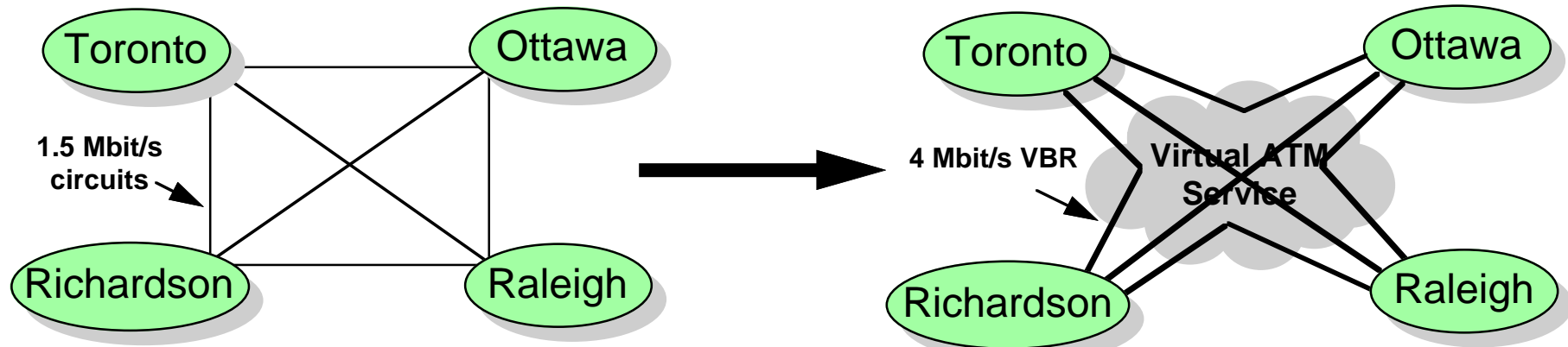


Voice-over-ATM



Note: No. of voice channels shown as XX

Data Over ATM



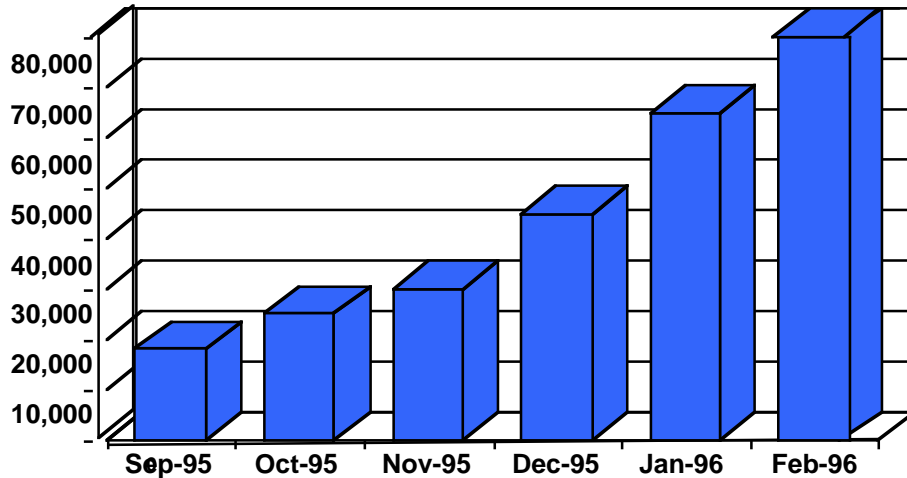
Before: TDM Technology

After: ATM VBR Technology

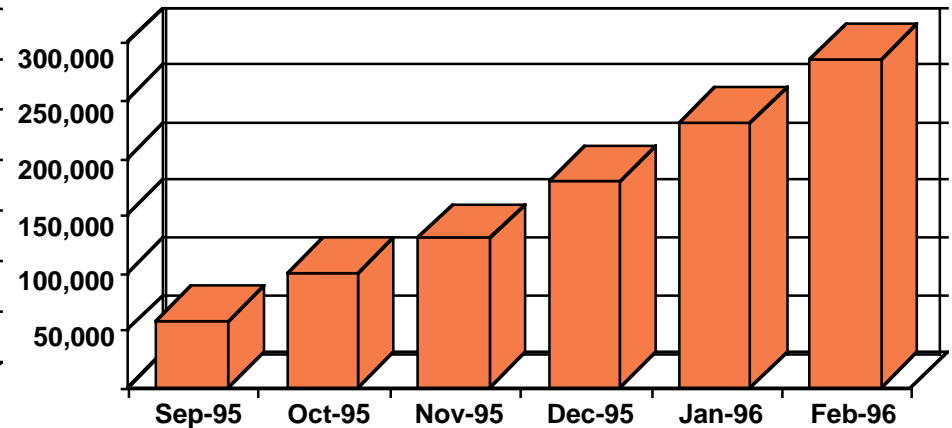
Data applications benefited from ATM

- Increased bandwidth
- Improved scalability
- Better performance
- Faster provisioning

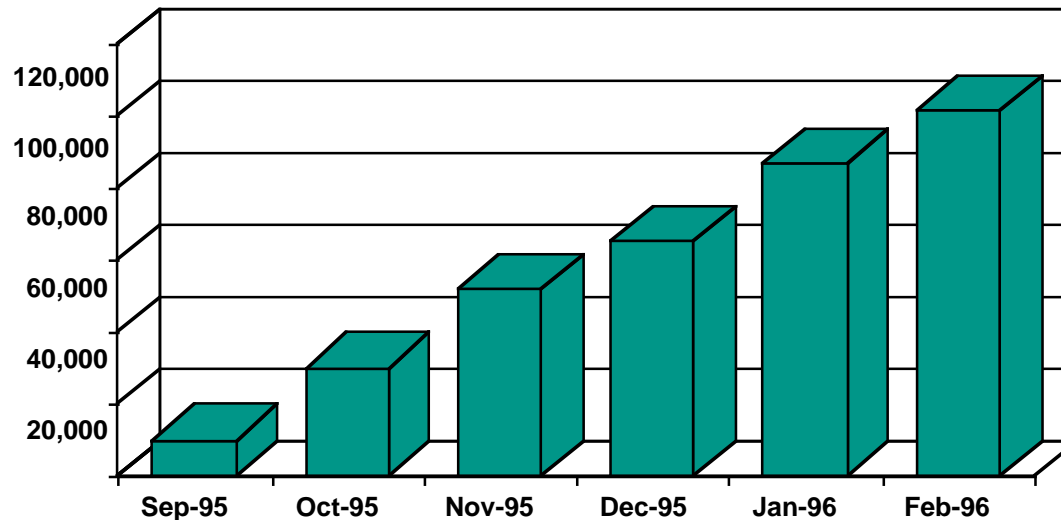
Migration to ATM



Voice calls per day



Call minutes per day



Data (kilopackets per day)

- GES Network Requirements
- GES ATM Network
- **GES ATM Experience**

- **Multifunctional team required**
 - Voice, data, network management, transport etc.
- **Culture change is necessary**
 - Better to start sooner than later
- **ATM technology works today**
 - Demonstratable in a production environment
 - Carries Nortel's mission critical traffic
- **ATM technology is evolving rapidly**
 - Standards are constantly evolving
 - New products and features are being released

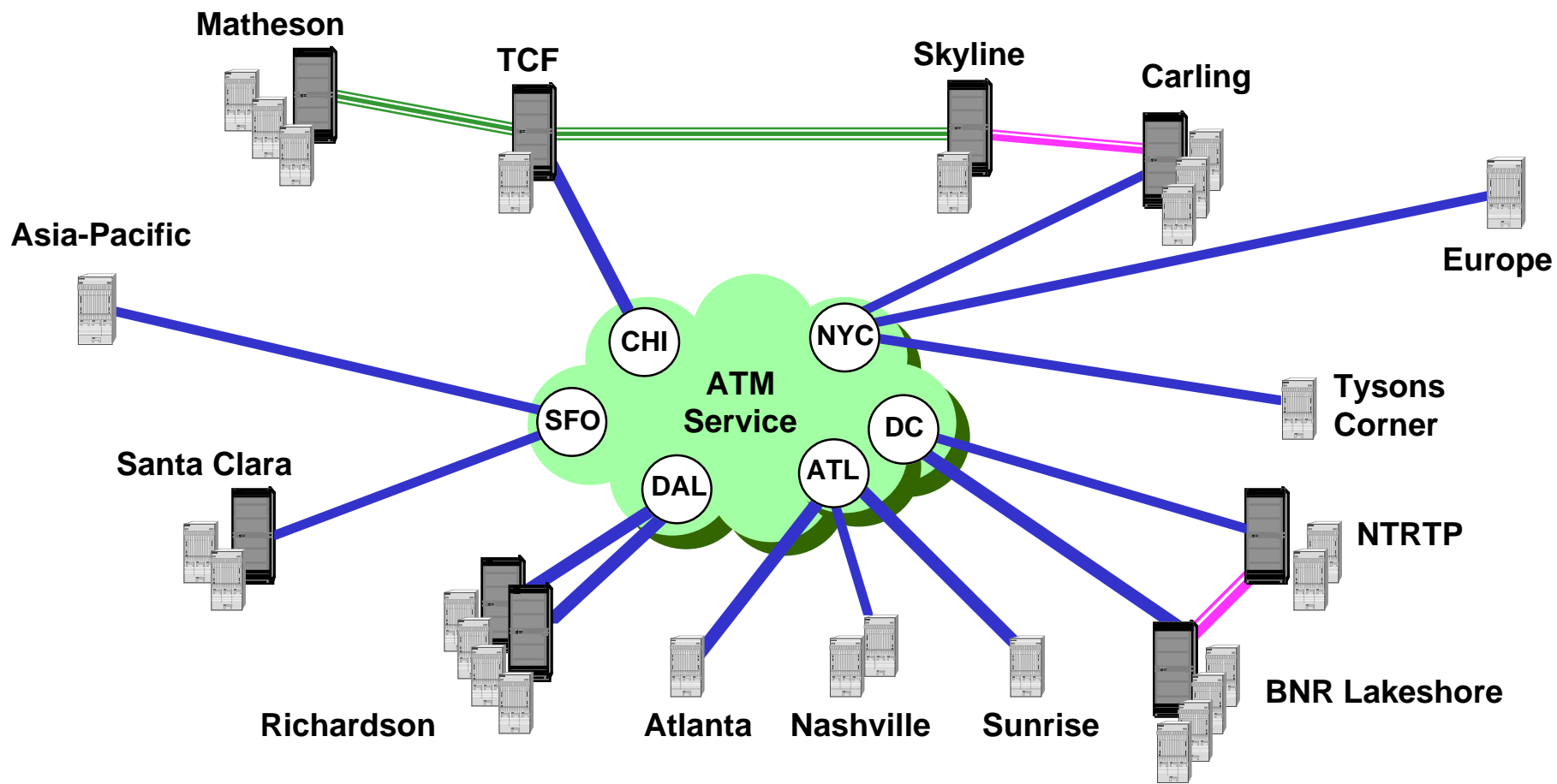
GES has proven ATM experience

Benefits of ATM

- **Increased bandwidth at reduced cost**
 - for traffic growth
 - for new applications
- **Increased performance**
- **Increased flexibility**
 - PVCs are software configurable
- **Improved scalability**
 - ease of upgrade from DS1, DS3, OC-3 and beyond
- **Positioned to capitalized on new applications**
 - video and data

ATM works and it's time to get started

ATM Plans for '96



	Vector		Passport		Leased DS3 Connections
					Internal Nortel Connections
					Carrier DS3 ATM Connections

Nortel Firsts

- ***First*** international, private, wide area ATM network
- ***First*** to consolidate voice and data networks over ATM
 - 87,000 voice calls per day
 - 295,000 minutes per day
 - 112,000,000 data packets per day
- ***First*** to interconnect 70% of U.S. population with ATM
- ***First*** enterprise network to use ATM as the first route
- ***First*** to use voice compression over ATM

GES will continue to prove the value of ATM in 1996 through global expansion and ATM to the desktop