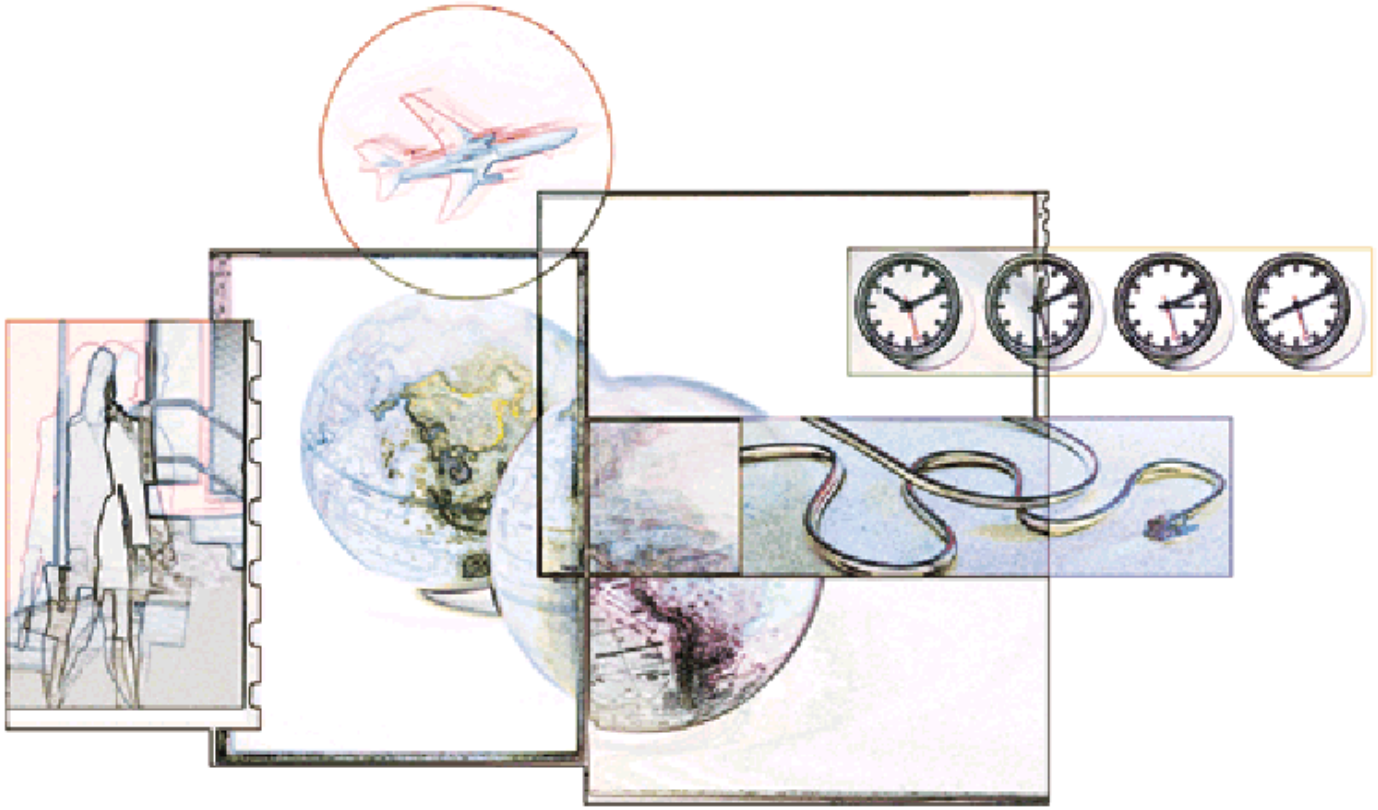
8274 8277 Enhancements and Overview

Gigabit Switching From IBM



Bill Kenney
kenneyb@us.ibm.com

From: Networking Communications/Raleigh/IBM @ IBMUS on 03/02/99 05:50 PM
To: Announcement Summary Recipients, EXECS
Subject: Alcatel to Acquire Xylan

On Tuesday, March 2, Alcatel announced that it has entered into a definitive agreement to acquire Xylan Corp. Xylan is both a supplier to and customer of IBM's Networking Hardware Division.

"After discussions with Xylan today, we expect the same, strong relationship between IBM and Xylan to continue," said Bob Greenberg, vice president of enterprise and service provider business lines, NHD. "Xylan's organizational structure and existing corporate officers will remain in place. IBM will continue to sell the 8274, 8274-GRS and 8277, and Xylan will continue to sell the IBM 8210-MSS (as OmniMSS). In addition, the business relationship between IBM NHD and Alcatel under which Alcatel OEMs our Prizma switch will continue."

IBM Business Partners and Marketing Reps should view this positively and continue to propose 8274s and 8277s to address customer requirements.

Xylan Blue Team

Bruce Demers
Xylan Sales Operations Manager
Phone: 800-995-2612 ext.6186
Fax: 603-740-6002

bruce.demers@xylan.com

Xylan Blue Team

WW dedicated sales team

Compensated on IBM Sales

Available for joint calls

Working closely with NHD in

Education and Training

Xylan Blue Team

Providing product information

Competitive information

Request for proposals

Engage them to help you

close business

8274 Modules From April 23 Available Today

Description	M/T -model	F/C	P/N
ESM-100C-32W-2C	8274-WXX	7025	30L7025
TSM-CD-16W-4C	8274-WXX	0867	02L0867
GSM-FM-4W	8274-GRS	7015	30L7015

8274/77 Rel3.4 Phase 2

GA date of 6/16

Description	M/T -models	F/C	P/N
MPM-UPGR-56MD-12FM	8274-WXX	3985	31L3985
OSTK-32MDRAM-UPGR	8277-524	3883	31L3883
OSTK-8MFLASH-UPGR	8277-524	3884	31L3884

8274/77 Rel3.4 Phase 2 cont.

GA date of 7/30

Description	M/T -models	F/C	P/N
HRE-X	8274-GRS	3879	31L3879
ASM2-622RFM-1W-4C	8274-WXX	3095	86H3095
ASM-2-622RFS-1W-4C	8274-WXX	3099	86H3099

8277 Hardware

GA date of 7/30

Description	M/T -models	F/C	P/N
OSASM2-622RFM-1	8277-524	3135	86H3135
OSASM2-622RFS-1	8277-524	3137	86H3137
OSGSM-FM-2	8277-524	0870	02L0870
OSGSM-FS-2	8277-524	3882	31L3882

8277 Base Software Rel3.4.x

Base 8277 3.4.x (preloaded) P/N 39L8690

Base 8277 3.4.x (upgrade) P/N41L1300

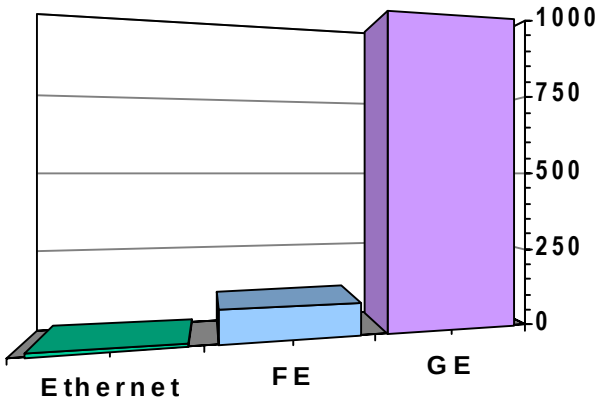
8277 ADV. RTG. Rel.3.4.x

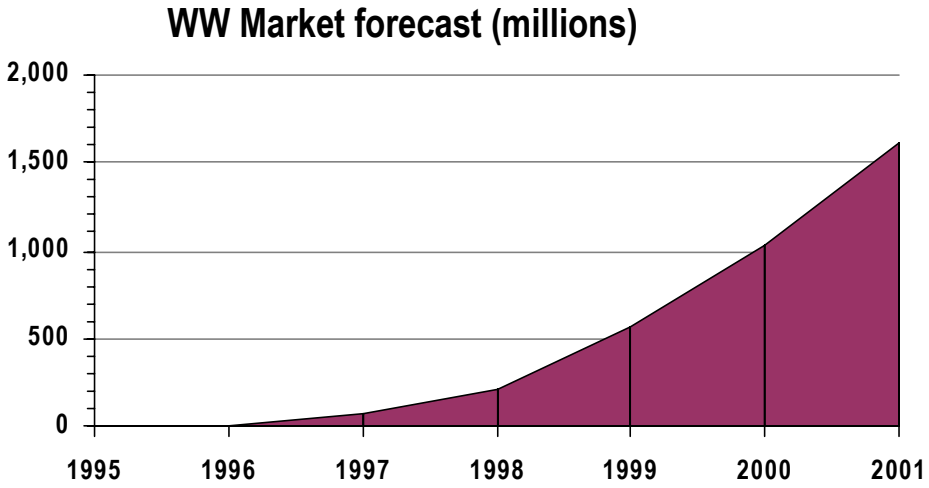
8277 ADV. RTG. 39L8691

8277 ADV. RTG. (upgrade) 41L1301

Understanding gigabit networking

It's a big jump in capacity...

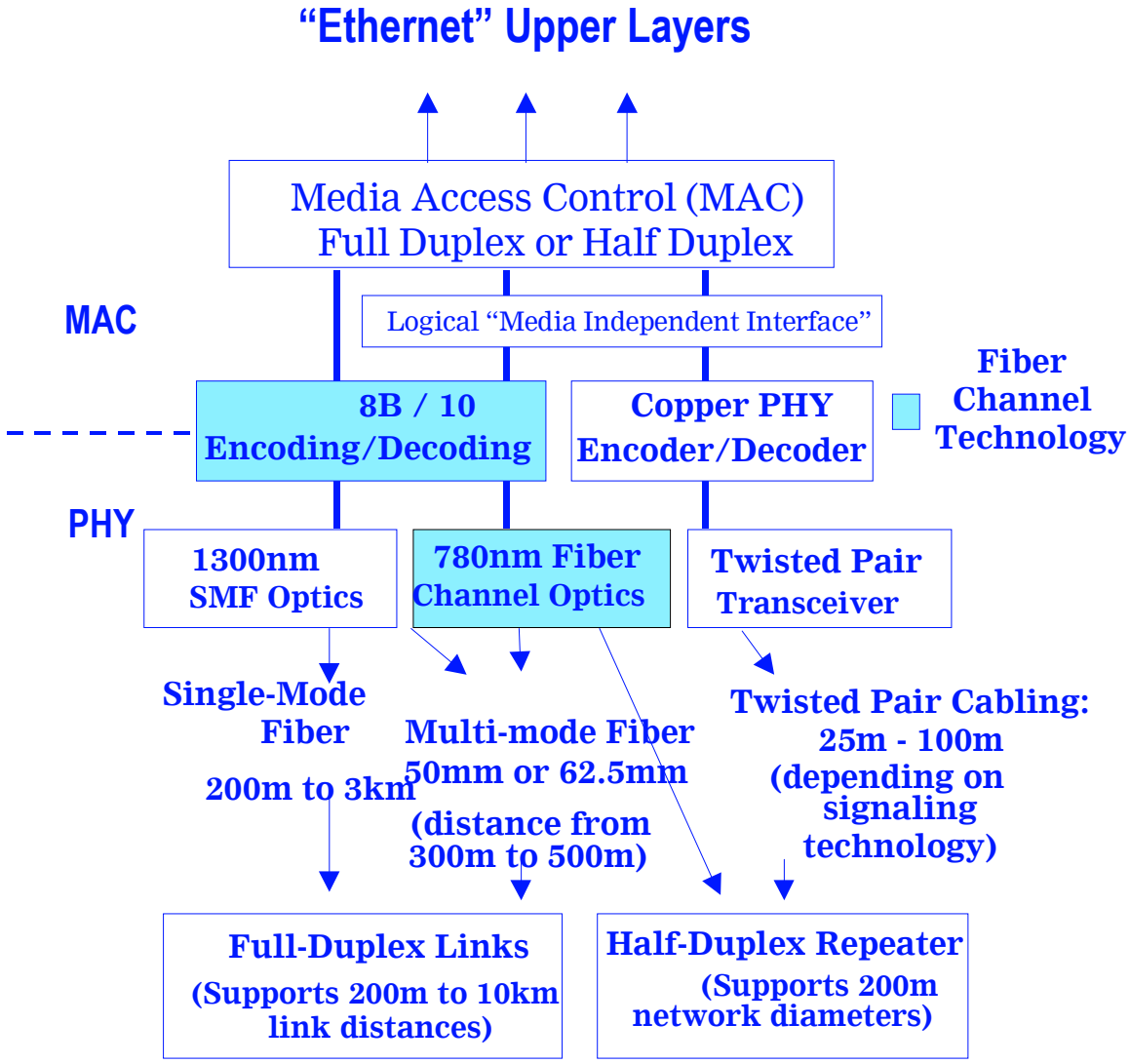




...it's expected to be deployed rapidly...

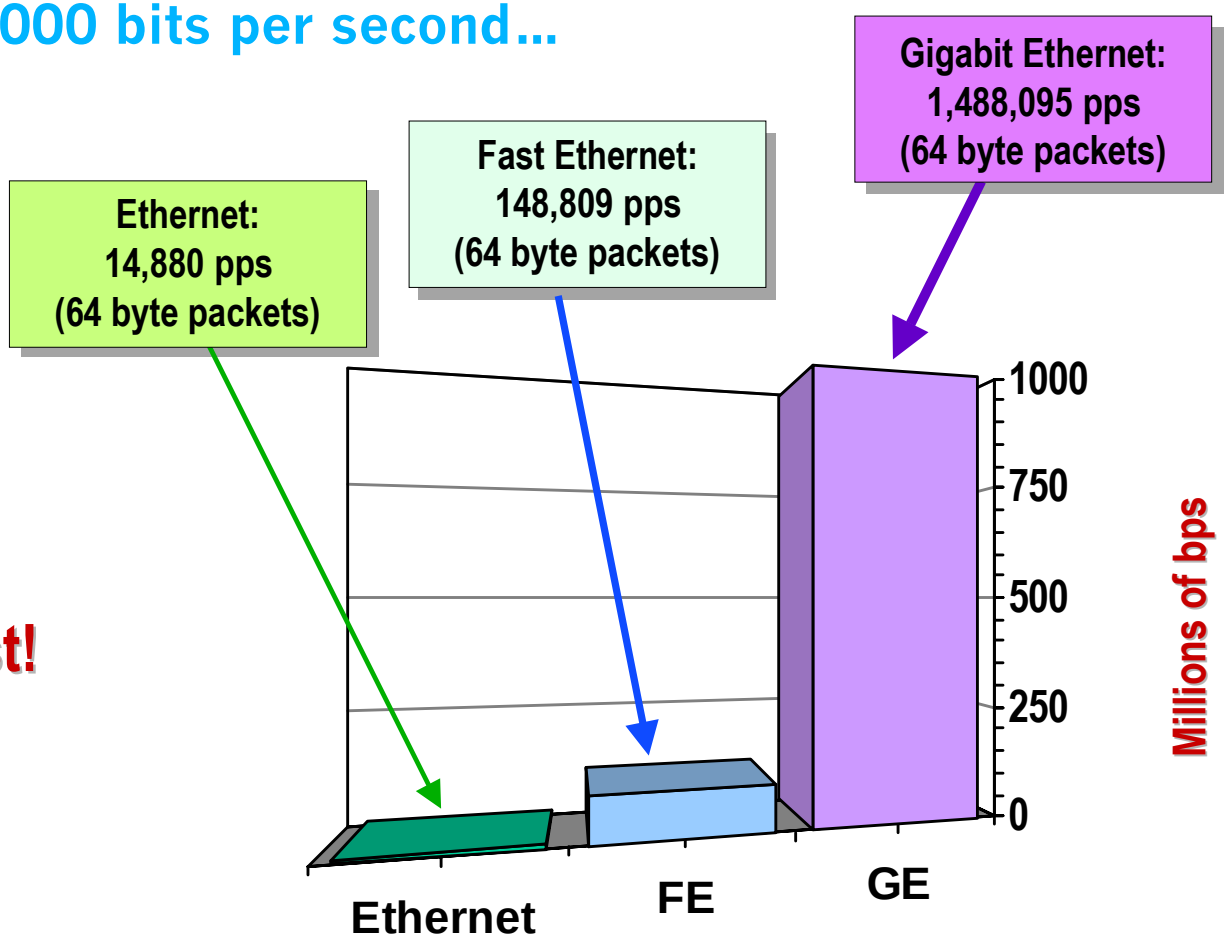
What is Gigabit Ethernet?

- Standard for Ethernet at 1 gigabit per second
- Main standard is 802.3z
- Same IEEE 802.3 frame format
  - Variable length packets 64-1512 bytes



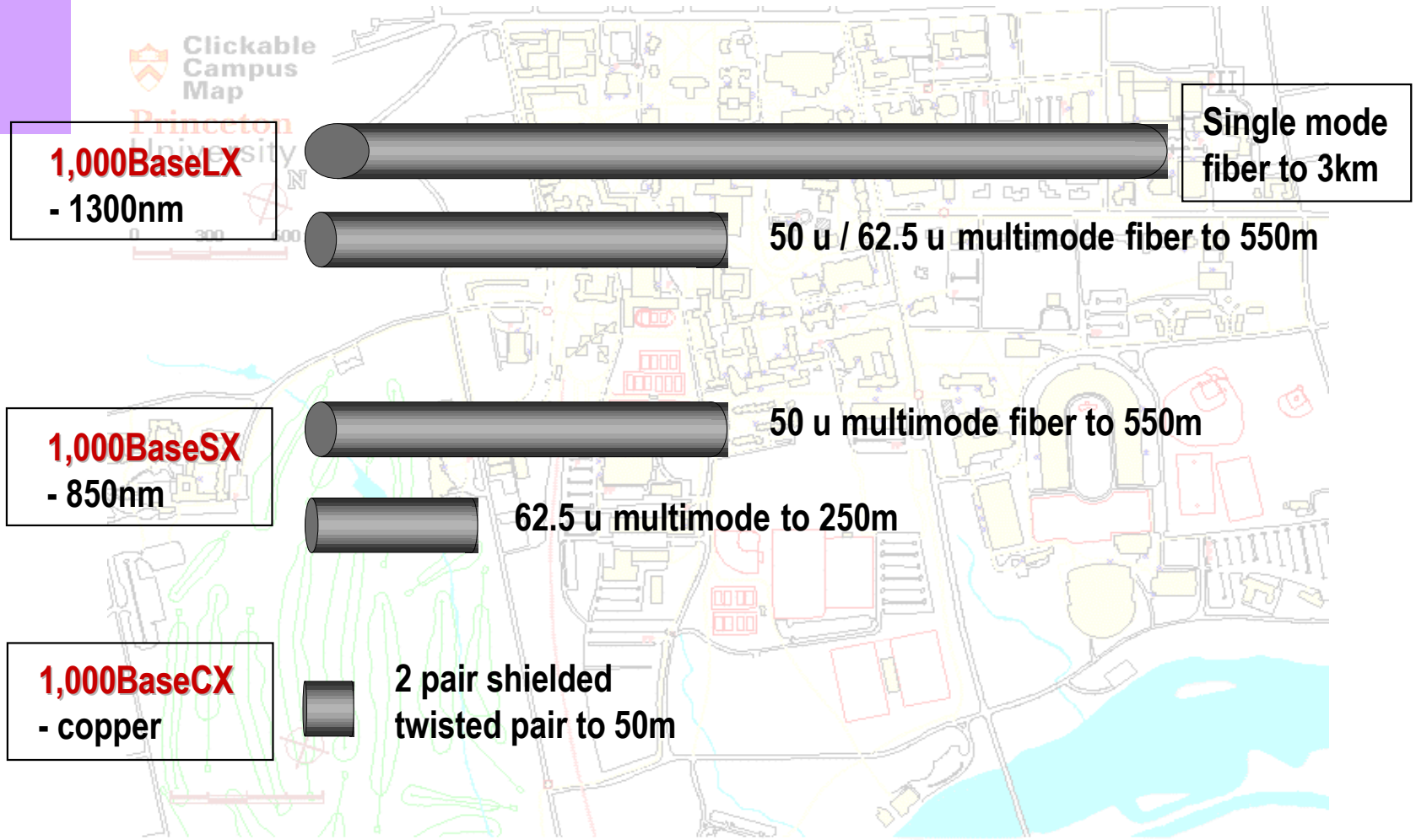
How fast is a gigabit?

1,000,000,000 bits per second...

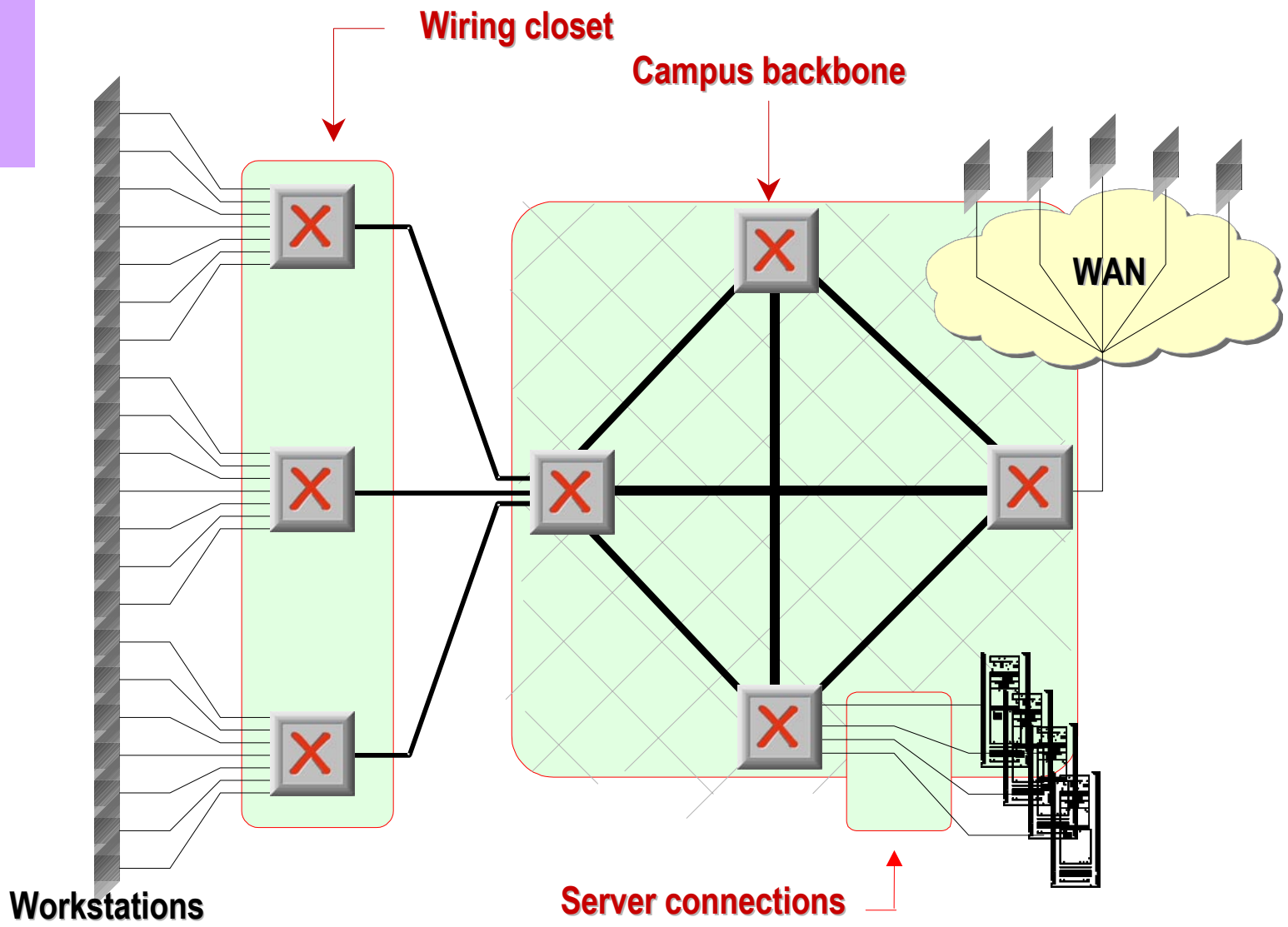


...it's fast!

Gigabit distances & cabling



Where does gigabit go?



Gigabit Ethernet vs. ATM: the real story

Comparisons often made on price per port

Gigabit Ethernet is 1000 Mbps.

A fat pipe solves a lot of problems.....but not all!

ATM, while more complex, offers additional traffic management, guaranteed QOS rather than best effort delivery, more resilience and redundancy, and better scalability.

...the real story (cont'd)

Some rules of thumb:

- Desktops are pretty much 10/100 Ethernet
- Server connections tend to follow backbone choice
- For the backbone:
  - ➡ If all you need is capacity, Gigabit Ethernet is simplest
  - ➡ Guaranteed QoS for real-time video and voice is stronger with ATM today

Some things to consider:

- Reliability
- Routing Support
- Price/Performance
- Big bandwidth and managed bandwidth are both important
- Complexity, Resilience
- Scalability
- WAN Integration

Gigabit versus ATM

	Gigabit	ATM
Cost	B	C
Familiarity	A	C
Standards maturity	B	B+
QoS support	?	A
Ethernet desks	A	B
Token Ring desks	D	B
WAN Integration	?	A

How much is gigabit going to cost me?

Technology	1996	1998	% change
Shared Fast Ethernet	$137	$102	-25%
Switched Fast Ethernet	$785	$500	-36%
Shared FDDI	$835	$680	-19%
Switched FDDI	$4000	$3200	-20%
ATM 622	$6600	$4200	-36%
Switched Gig Ethernet (mm fiber)	N/A	$2800	

* Source: Dell'Oro Group

Gigabit Switch competition is out there...

3Com	Corebuilder 9000
Bay Networks/Nortel	Accelar 1200
Cabletron	Smartswitch Router 8600
Cisco	Catalyst 5500/6000/8500
Compaq	Digital GIGA Switch/Router
Extreme Networks	Black Diamond 6800
Foundry Networks	BigIron 8000
Lucent	Cajun Switch
ODS	LANblazer 7000
Packet Engines/Alcatel	PowerRail 5200 Enterprise Routing Switch
Plaintree Systems	Waveswitch 9200
XLNT	Milennium 4000+

IBM's Gigabit RouteSwitch

STOP…!

Let's not think just "Gigabit Ethernet"…

Wouldn't it be great if a switch supported excellent Gigabit Ethernet connectivity…

BUT, had equally strong support for Ethernet, Token Ring, ATM.....

AND supported Backbone class Layer 3 Switching

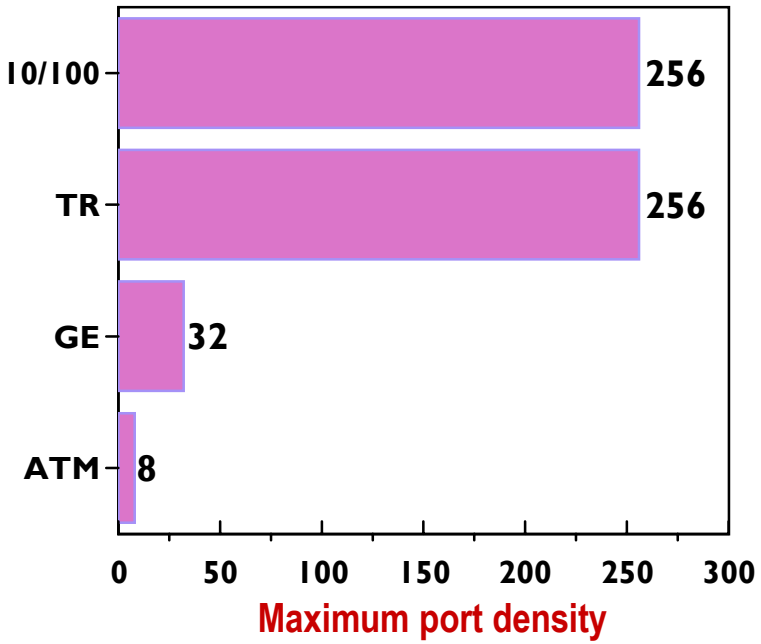
AND supported the integrated services intelligence of IBM's 8274...

Positioning the GRS

GRS is a high-capacity Gigabit switch

- ✓22Gbps switching fabric
- ✓1.5-12MPPS layer 3 switching
- ✓Up to 19 RISC processors
- ✓Up to 61 switching ASICs
- ✓Up to 32 Gigabit Ethernet Ports
- ✓Up to 256 10/100 Ethernet ports
- ✓Up to 256 4/16 Token Ring ports

GRS is a complete switching solution



8274 W93, W53, W33

- Flexible, modular platform supporting any-to-any networking
  - Supports TR, ENET, Fast ENET, ATM, FDDI, Frame Relay
  - Supports LECS/LEC/BUS, PVC/SVC, LANE, CIP, IP/IPX, Network Management
- Hardware routing at 220,000 packets per second
- Configurable for complete redundancy
- Frame bus (960 Mbps) + Cell bus (13.2 Gbps) + Management bus (120 Mbps)

8274
9-Slot

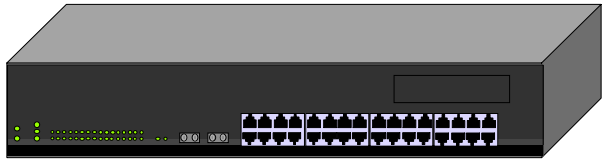
Token Ring
Ethernet
Fast Ethernet
ATM
FDDI

Frame Relay

8274
5-Slot

Current 8274 RouteSwitch

8277 Ethernet RouteSwitch



- 24 ports of 10/100BaseT auto-sensing Ethernet
- 1 slot for sub modules
  - 4 port copper Fast Ethernet
  - 2 port fiber Fast Ethernet
  - 2 port Gigabit Ethernet
  - 1 port 155Mbps ATM, optional redundant media
  - 1 port 622Mbps ATM with redundant media
- Layer-three switching (coming soon)
- Optional backup power supply
- Software functionality of 8274
  - IP/IPX routing, Advanced Routing
  - LANE services
  - RouteChannel bandwidth aggregation

8274 Gigabit RouteSwitch

- Flexible, modular platform supporting any-to-any networking
  - Supports TR, ENET, Fast ENET, Gigabit Ethernet, ATM
  - Supports LECS/LEC/BUS, PVC/SVC, LANE, CIP, IP/IPX, Network Management
- Hardware routing from 1,500,000 to 12,000,000 packets per second
- Configurable for complete redundancy
- Frame bus (22 Gbps) + Management bus (120 Mbps)
- Same Software as 8274 Wx3 models and 8277

8274-GRS
9-Slot

Token Ring
Ethernet
Fast Ethernet
Gigabit Ethernet
ATM

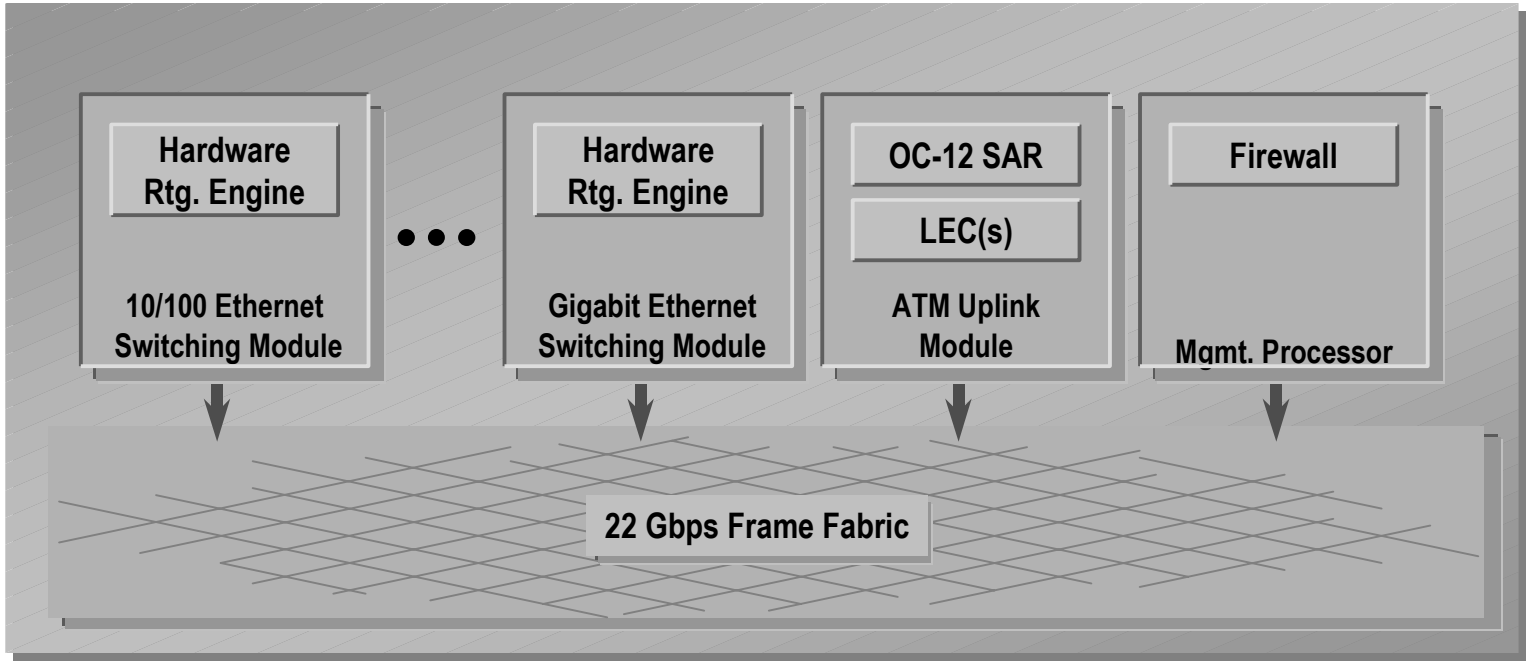
GRS architecture

GRS system capacity

- ✓ switching capacity 22Gbps

GRS distributed L3 switching

- ✓ 1.5M to 12 Million Packets Per Second



Positioning

Current 8274

- Full ATM flexibility
- 10 Ethernet connectivity
- FDDI connectivity
- WAN connectivity
- Use current technology

OR

8274-GRS

- Gigabit Ethernet connectivity
- 10/100 Ethernet connectivity
- Desktop Token Ring
- Faster routing requirements
- Use leading edge technology

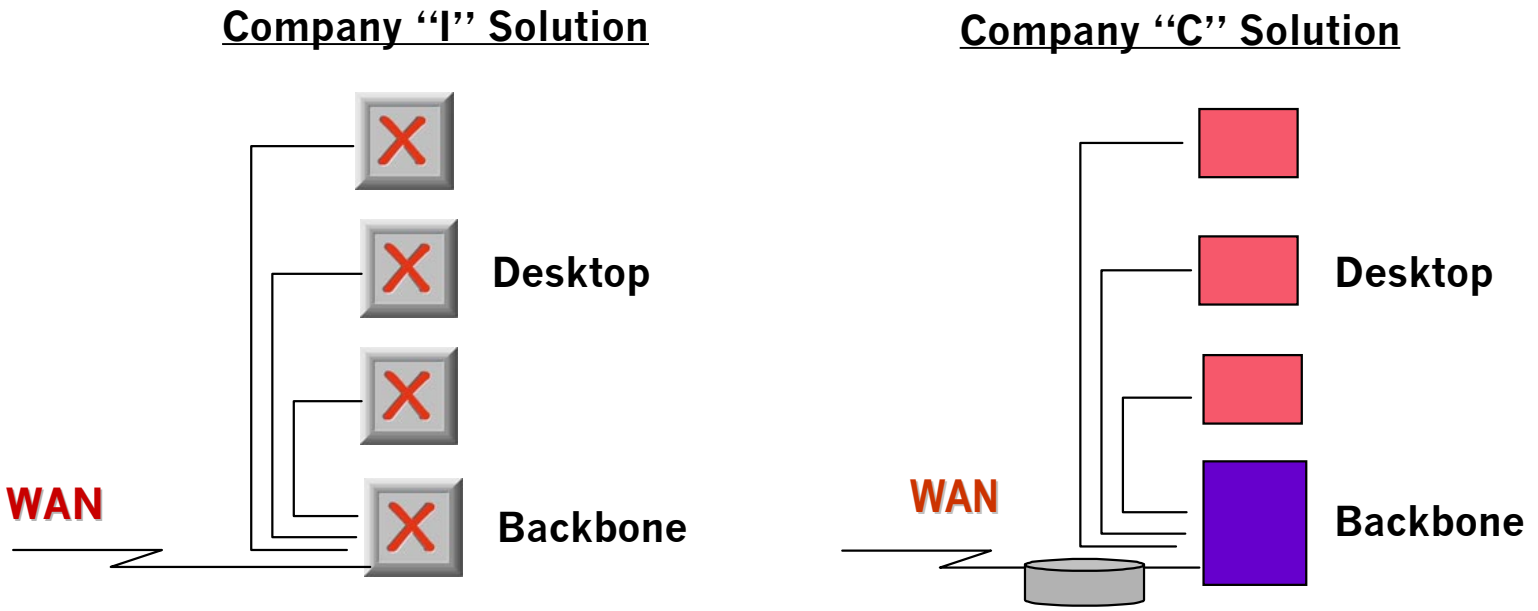
8274-GRS

- Chassis based LAN switch with a 22 Gbps backplane
- Positioned for high speed backbone or server connections
  - Up to 32 Gigabit Ethernet connections
- Positioned for high density edge or server connections
  - Up to 256 10/100 Ethernet connections
  - Up to 96 non-blocking 100BaseT Ethernet connections
  - Up to 256 Token Ring connections
  - ATM uplink connections
- IP and IPX routing today, with layer 3 switching at up to 12 million packets per second via the Hardware Routing Engine (HRE-X) feature (coming soon)

Positioning the GRS

One switch for complete solutions

- one family of software and features to learn (and it's common with the 8274/8277)
- one management platform to operate
- one box solution which can migrate with a customer's requirements



Positioning the GRS

Where to sell the GRS

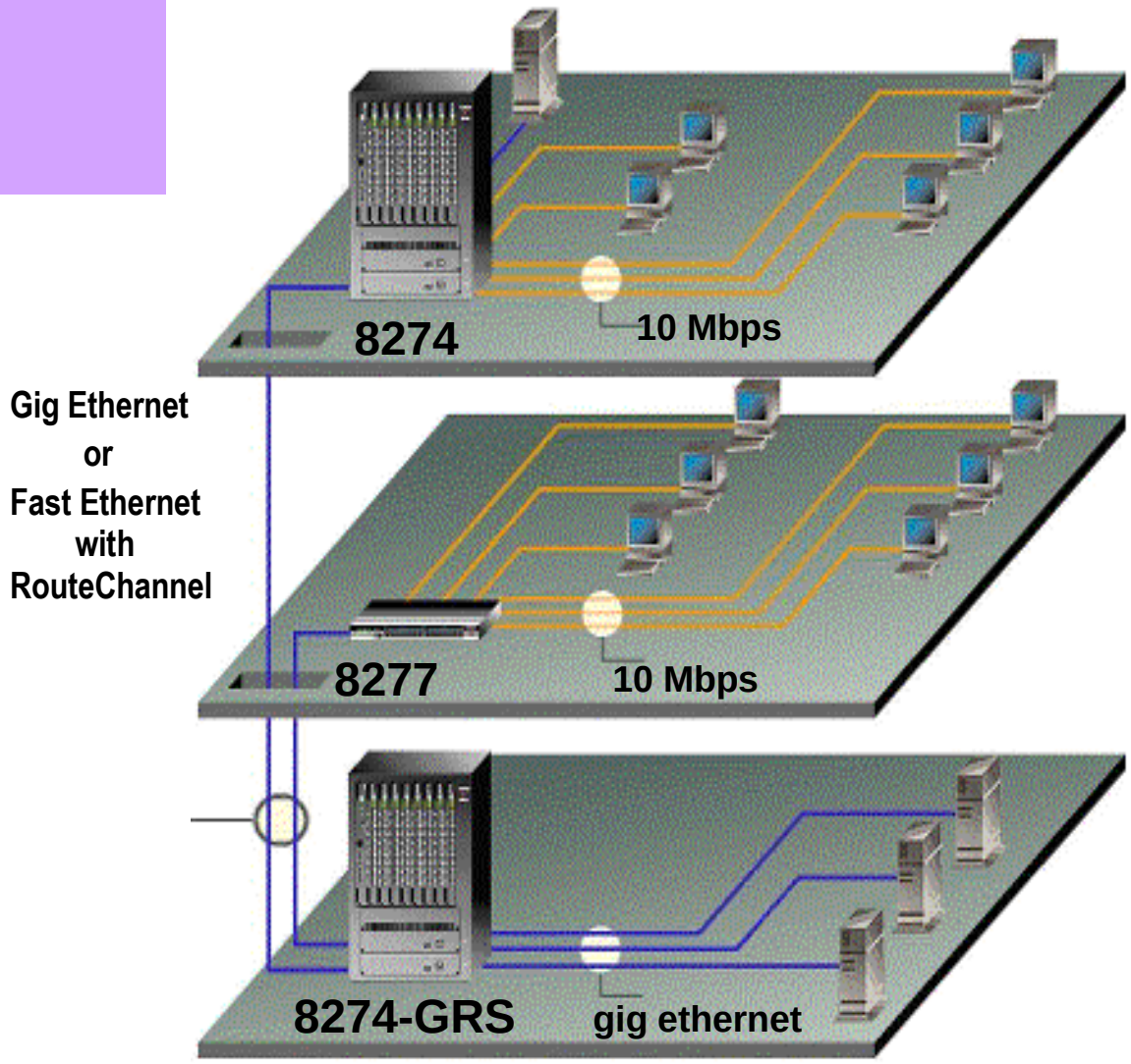
- for Gigabit Ethernet backbones
- in the wiring closet
  - ➡ high density 10/100
  - ➡ high density Token Ring
  - ➡ highly subnetted environment

Wherever you sell the 8274!

Where to **Not** to sell the GRS

- low cost 10/100 switching only: sell stackables: 8275/8271
- mixed ATM cell and frame switching solutions: sell 8265/8371

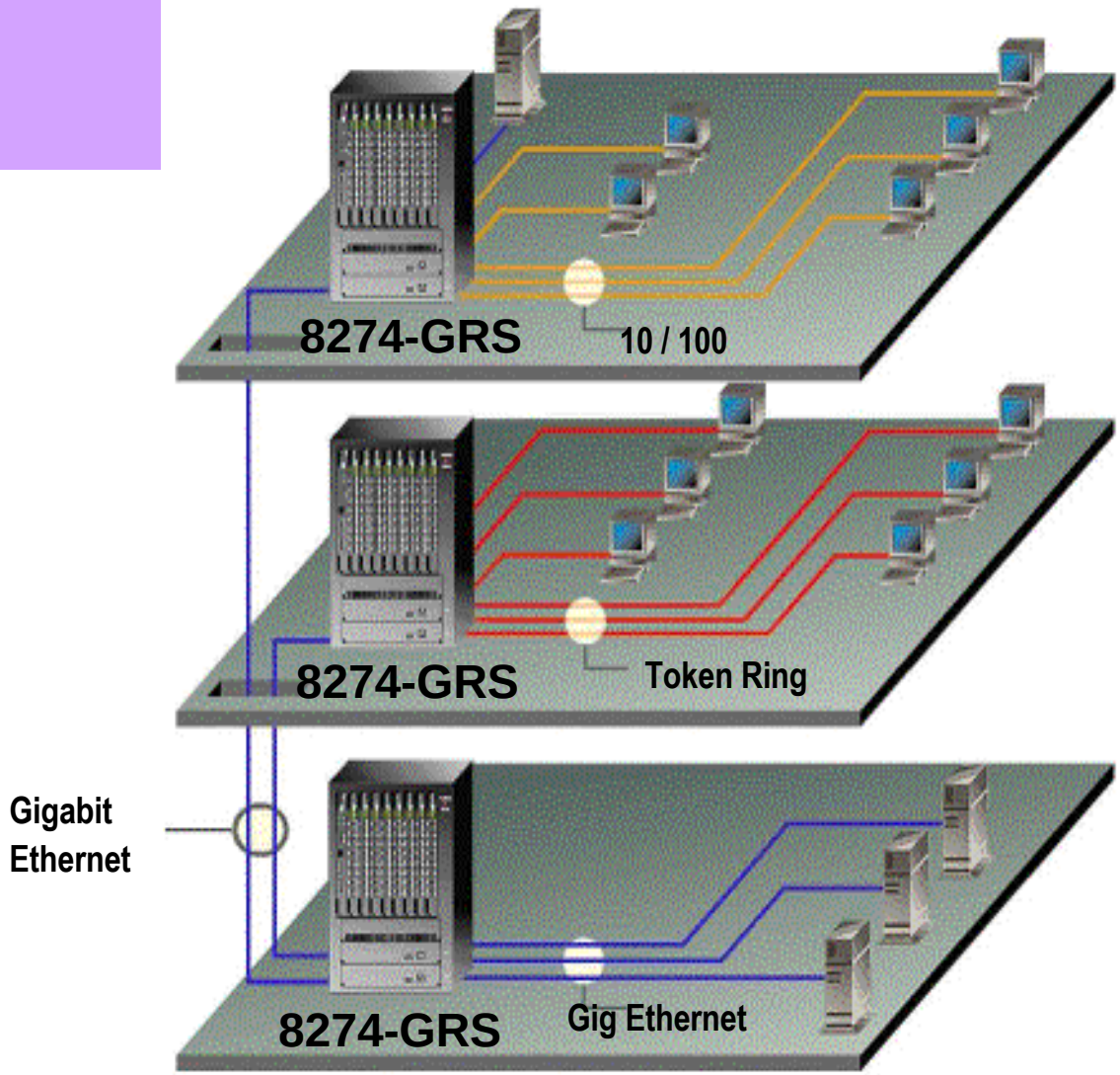
Positioning the GRS: The backbone



Features

- high switching capacity
- extensive routing capabilities
- Backbone Network Services
  - **DHCP, DNS, NAT, etc.**

Positioning the GRS: The wiring closet



Features

- low cost
- high density
- high-speed switching fabric
- flexibility
- Desktop Network Services
  - **QoS, Multicast, VLANs**

Positioning the GRS

Against the 'Big Four"

- speed
- price
- a complete one box solution

Against the Gigabit startups

- over 1 million switch ports installed
- breadth of interfaces
- mature software and features

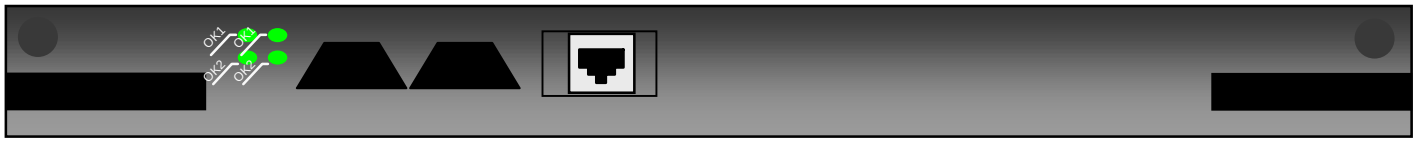
8274 GRS Product Family

Common equipment

- 9-slot chassis (similar to 8274), plans for 5-slot version
- 650W power supply
- management module - MPX
- Layer-3 routing engine - HRE-X
- high-speed backplane - 22Gbps
- Redundant power supply support
- hot-swap module support

MPX

Management Processor Module for GRS



Features:

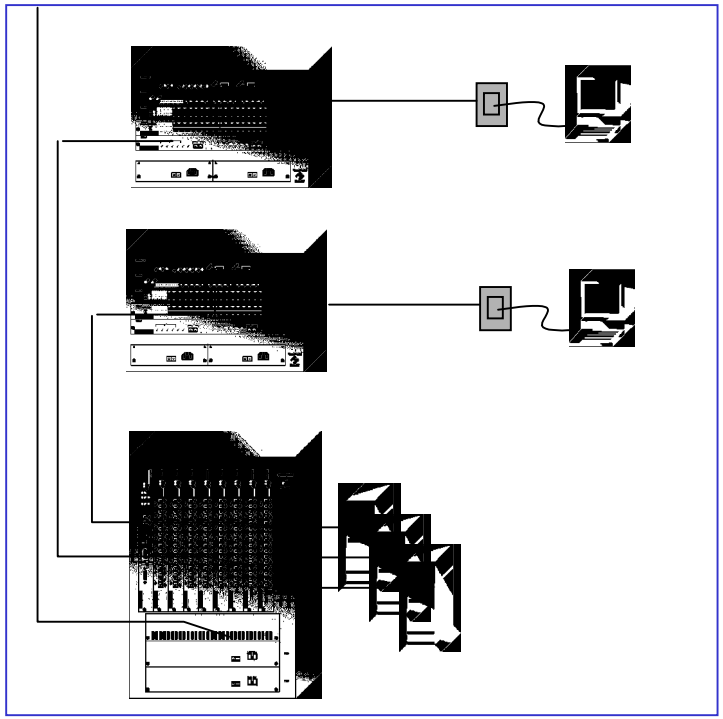
- standard 32M DRAM & option for up to 128M
- standard 8M flash & option for up to 32M
- supports redundancy mode
- layer-3 switching capable through optional HRE-X daughter card (future)
- high-speed processing with co-processor (future)

HRE-X

Hardware Routing Engine for GRS

Features:

- IP and IPX, RIP, RIP II, OSPF, IP Multicast, DHCP Relay support
- 1.5 to 12 Million Packets Per Second
- One HRE-X on MPX, or one HRE-X per blade
- ISP-class table size
  - **256,000 route entries**
  - **64,000 next-hop destinations**



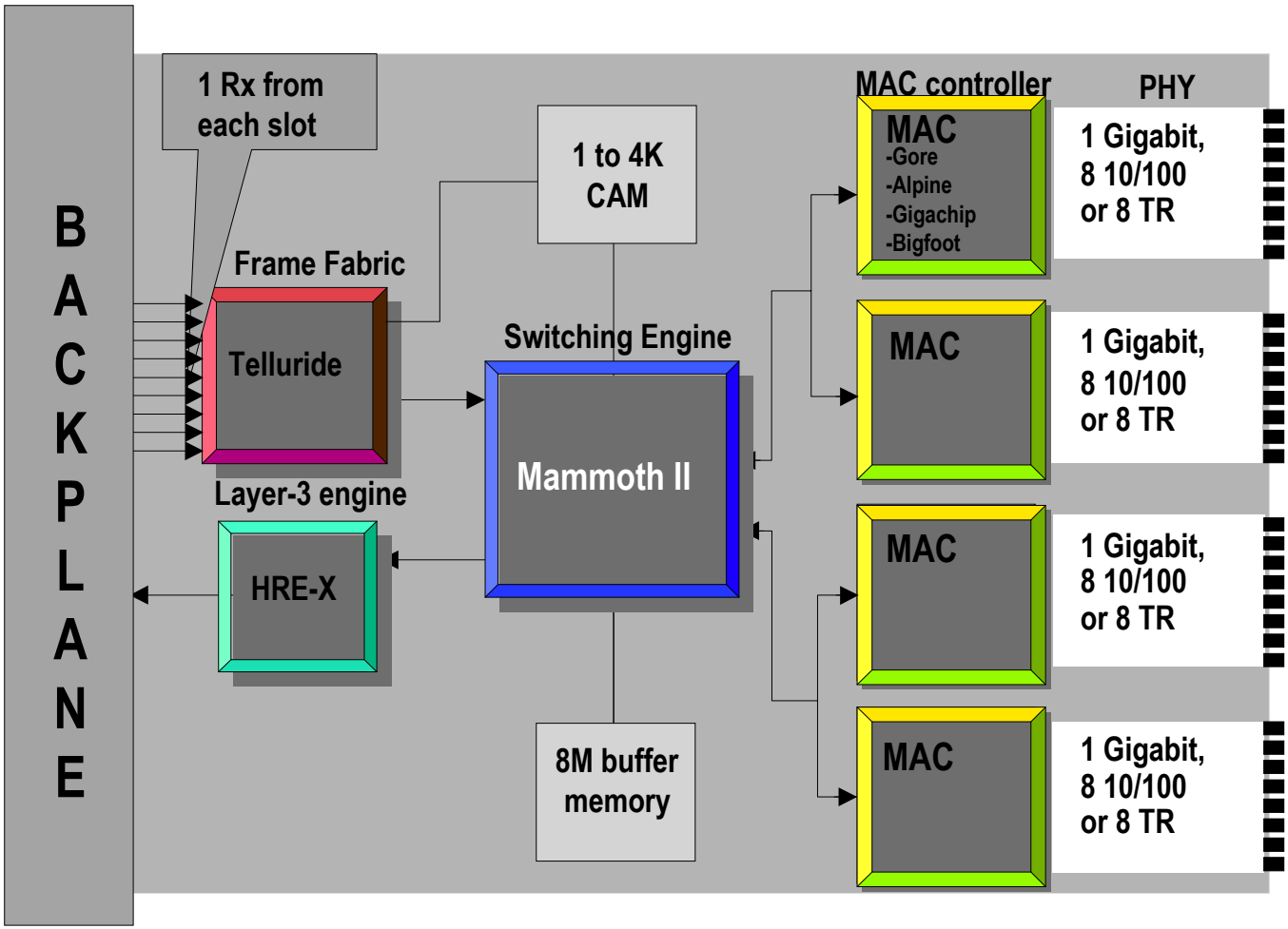
GRS product family

Modules in first release:

- 2-port backbone Gigabit Ethernet (MMF or SMF)
- 4-port Gigabit Ethernet (MMF)
- 12-port backbone 10/100BaseTX Ethernet
- 32-port desktop 10/100BaseTX Ethernet
- 12-port backbone 100Base-FX Ethernet
- 16-port desktop or MAU 4/16 Token Ring
- 32-port desktop 4/16 Token Ring
- 1-port ATM OC-3

GRS architecture

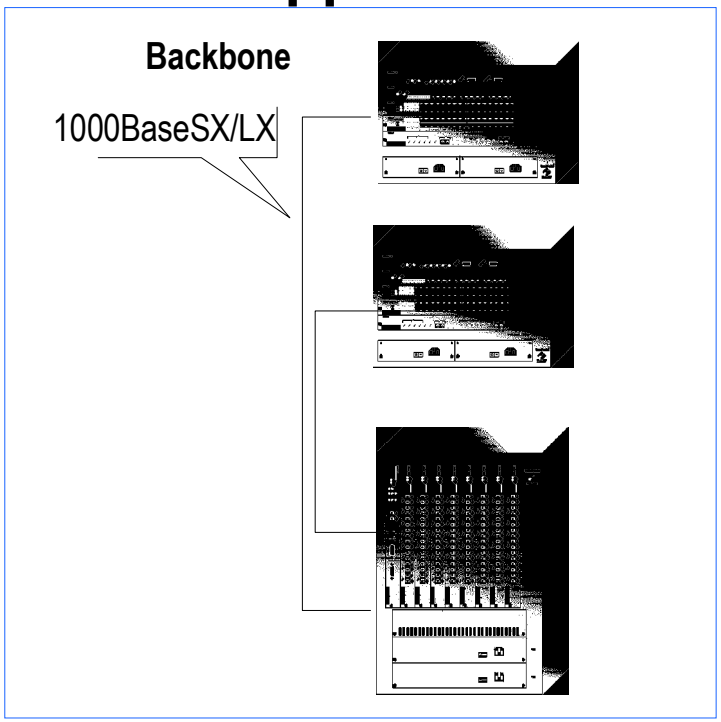
Typical Ethernet or Token Ring module



GSX-FM/FS-2W

High-performance Gigabit switch module for GRS

Application



Features:

- single mode and multi-mode options
- standards-compliant to 1000BaseSX and 1000BaseLX
- high-speed Gigabit backbone

Note: GSM-FM/FS-2W also available for 8274

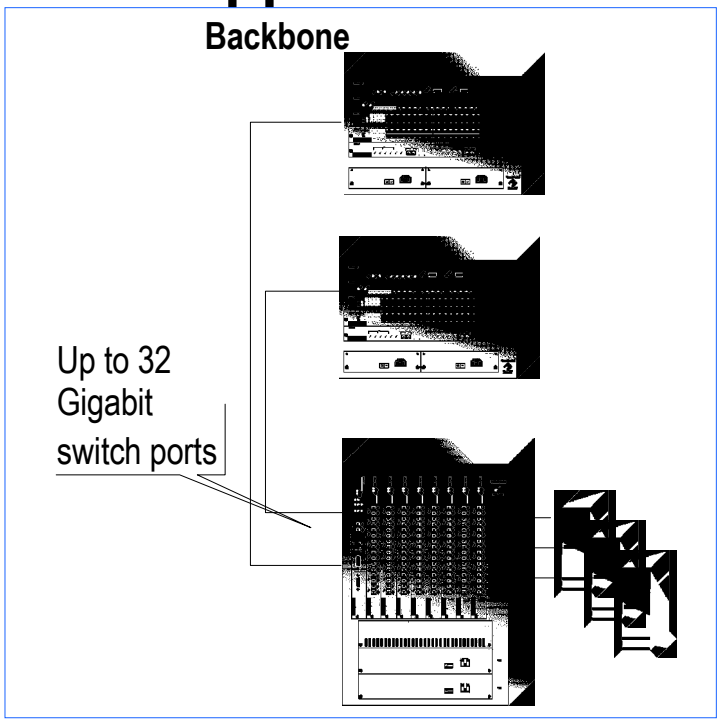
GSX-FM-4W

High-density Gigabit switch module for GRS

Features:

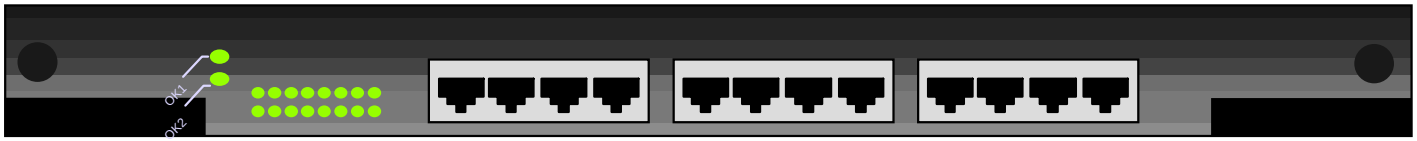
- high-density Gigabit switching - up to 32 ports per chassis
- multi-mode fiber
- backbone or server connections
- low cost - $2K per port

Application

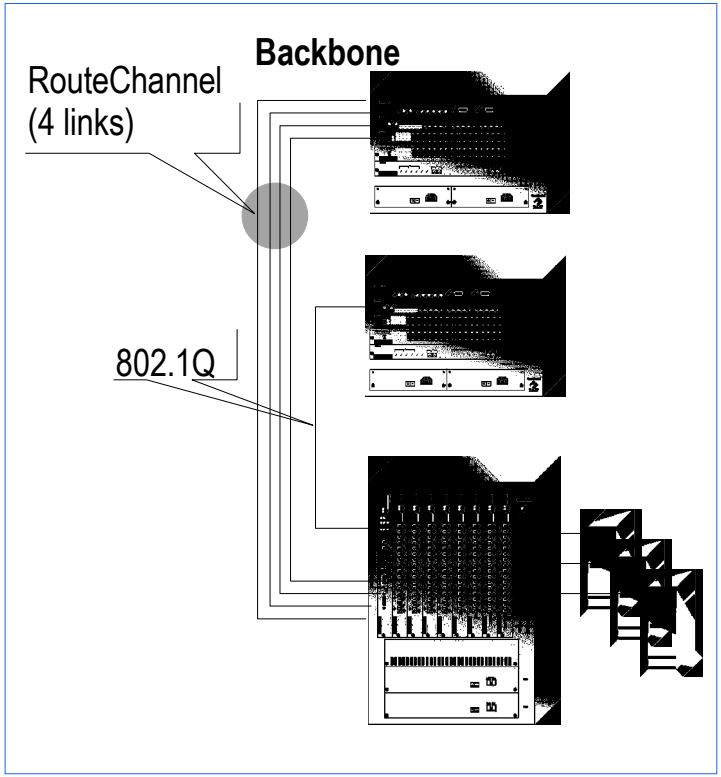


ESX-100C-12W

10/100 backbone switch module for GRS



Application

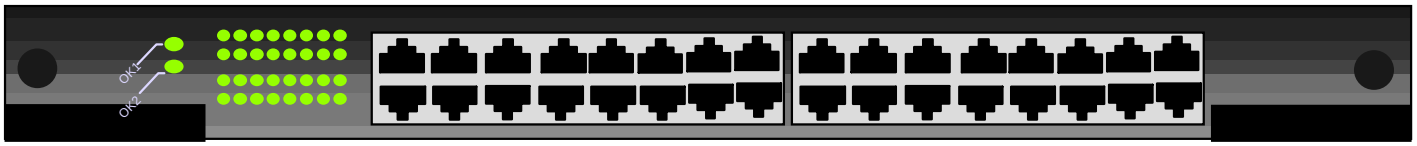


Features:

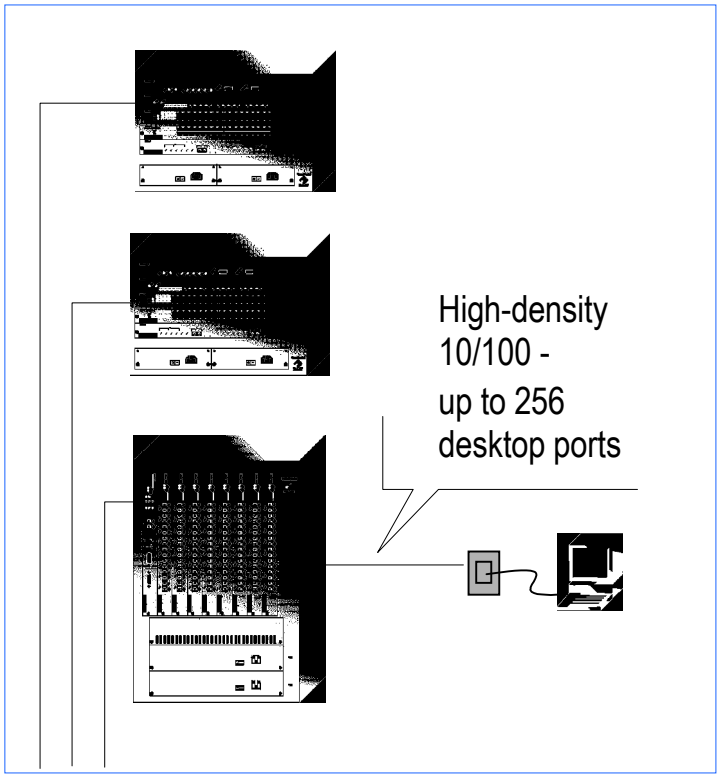
- auto sensing 10/100 switching
- high-speed GRS switch fabric
- powerful backbone features such as 802.1Q and RouteChannel
- high-speed server links

ESX-100C-32W

10/100 desktop switch module for GRS



Application



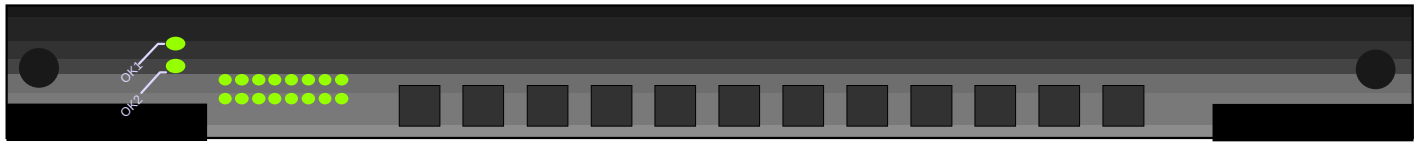
Features:

- auto sensing 10/100 switching
- high-density (up to 256 ports) Fast Ethernet desktop switching
- low cost - $230 / port

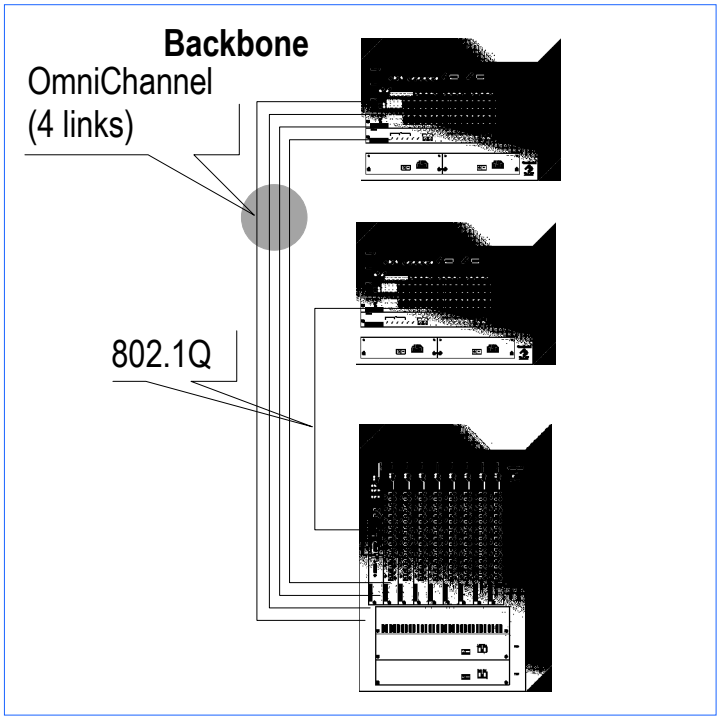
Note: ESM-100-32W also available for 8274

ESX-100FX-12W

100Base-FX backbone switch module for GRS



Application



Features:

- full duplex 100BaseFx switching
- small, compact MT-RJ fiber connector
- multi-mode fiber

TSX-CD-16W

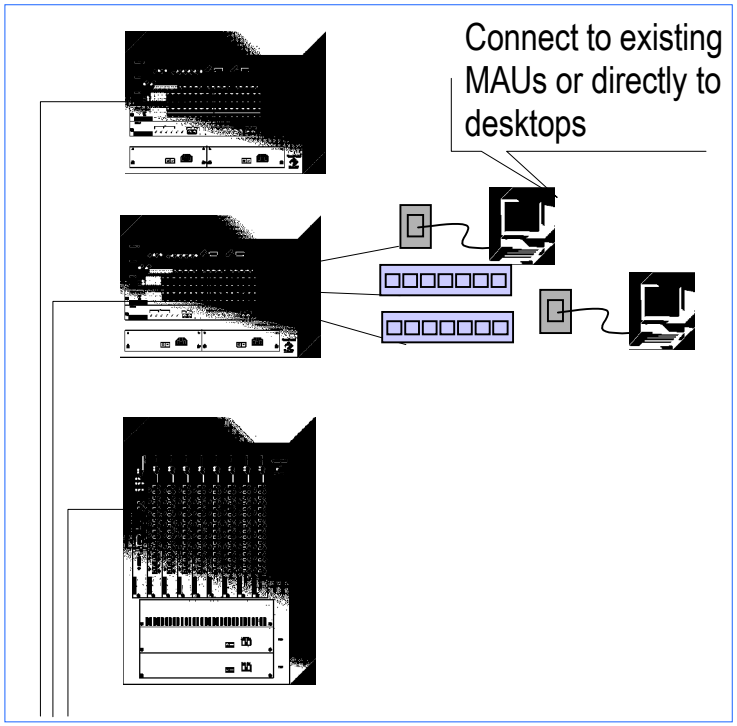
Token Ring desktop or MAU switch module for GRS

Features:

- desktop or MAU connections
- micro-segmentation support for existing MAUs
- auto-sensing support for 4/16Mbps and half / full duplex operations

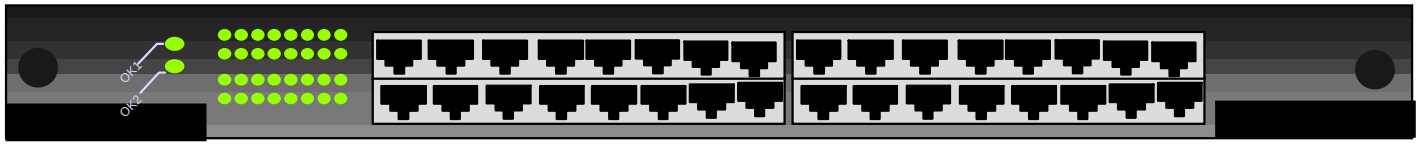
Note: TSM-CD-16W also available for 8274

Application



TSX-C-32W

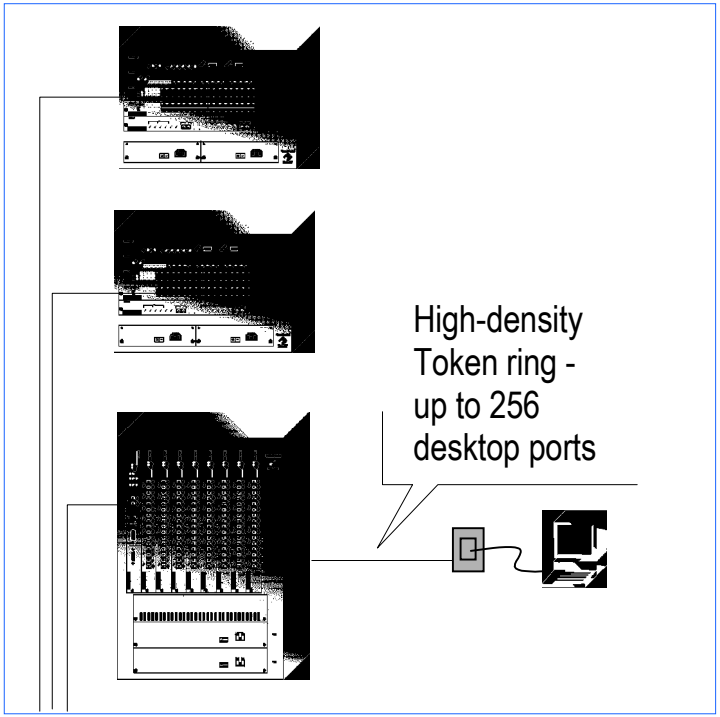
Token Ring desktop switch module for GRS



Features:

- desktop connections
- high-density (up to 256 ports) Token Ring desktop switching
- low cost - $370 / port
- auto-sensing support for 4 / 16Mbps and half / full duplex operations

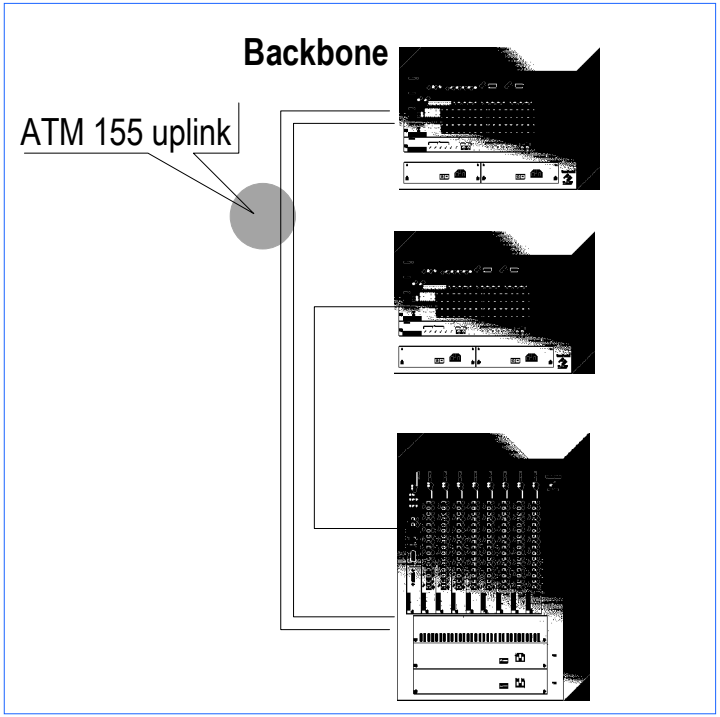
Application



ASX-155FM-1W-4C

ATM 155 Uplink 1-port

Application

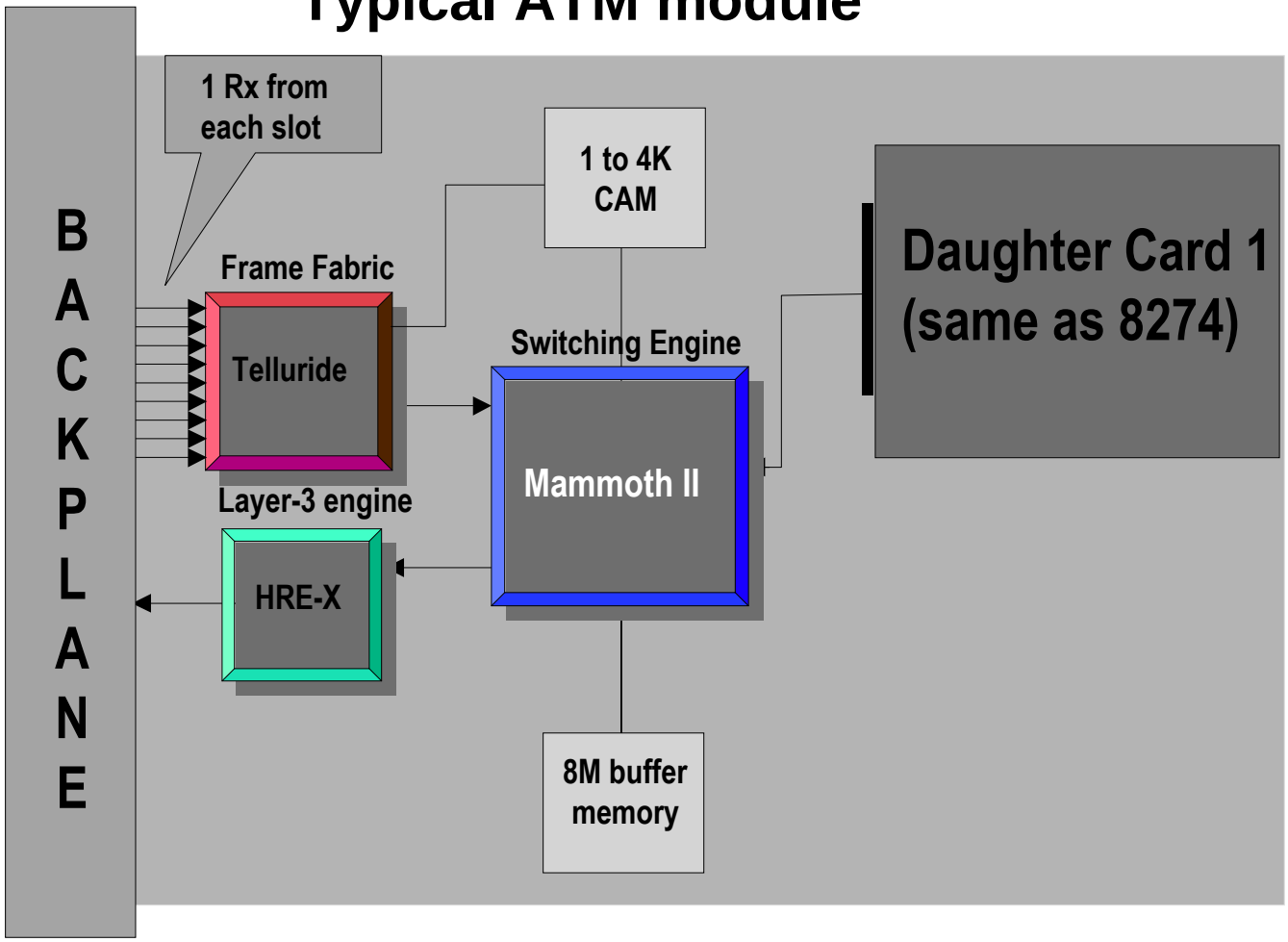


Features:

- multi-mode fiber
- provides high-speed uplink connectivity for GRS to ATM backbones

GRS architecture

Typical ATM module



Additional functions for GRS

Additions for possible release over the next 3-6 months:

- Layer 3 switching (HRE-X)
- 1 port ATM 622 Mbps uplink with redundant media (MMF / SMF)
- 5 slot chassis
- MPOA Client
- SR-TB translation
- RSVP, VRRP
- 9-level RMON

8274 / 8277 - Next Release (mid-year)

8274-GRS

- HRE-X

8277

- ATM OC-12 Uplink (MMF or SMF)
- Gigabit Ethernet Uplink (MMF or SMF)

8274

- ATM OC-12 uplink (MMF or SMF)

So, in summary…

8274 GRS from IBM

Gigabit L2/L3 Switching

It's here.