

Service Transport in ATM Systems

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Introduction

- Many Requirements and Objectives
 - ◆ Speed
 - ◆ Interoperability / Integration
 - ◆ Reliability
 - ◆ Management and Security
 - ◆ Rapid Design and Deployment Strategies



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Topics of Discussion

- Access Cards and Interoperability
- Network Management
- Protected Ring Network
- Cost Effectiveness



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Access Cards and Interoperability

- Shelf Controller
- NMIC
- DS1 UNI
- DS1 CES
- DS3 ATM UNI
- DS3 CES
- DS3 M13
- OC3 SM
- OC3 MM
- OC12 UNI
- OC12 RIC
- OC48
- ADSL
- RADSL
- Fractional Frame Relay
- Frame Relay



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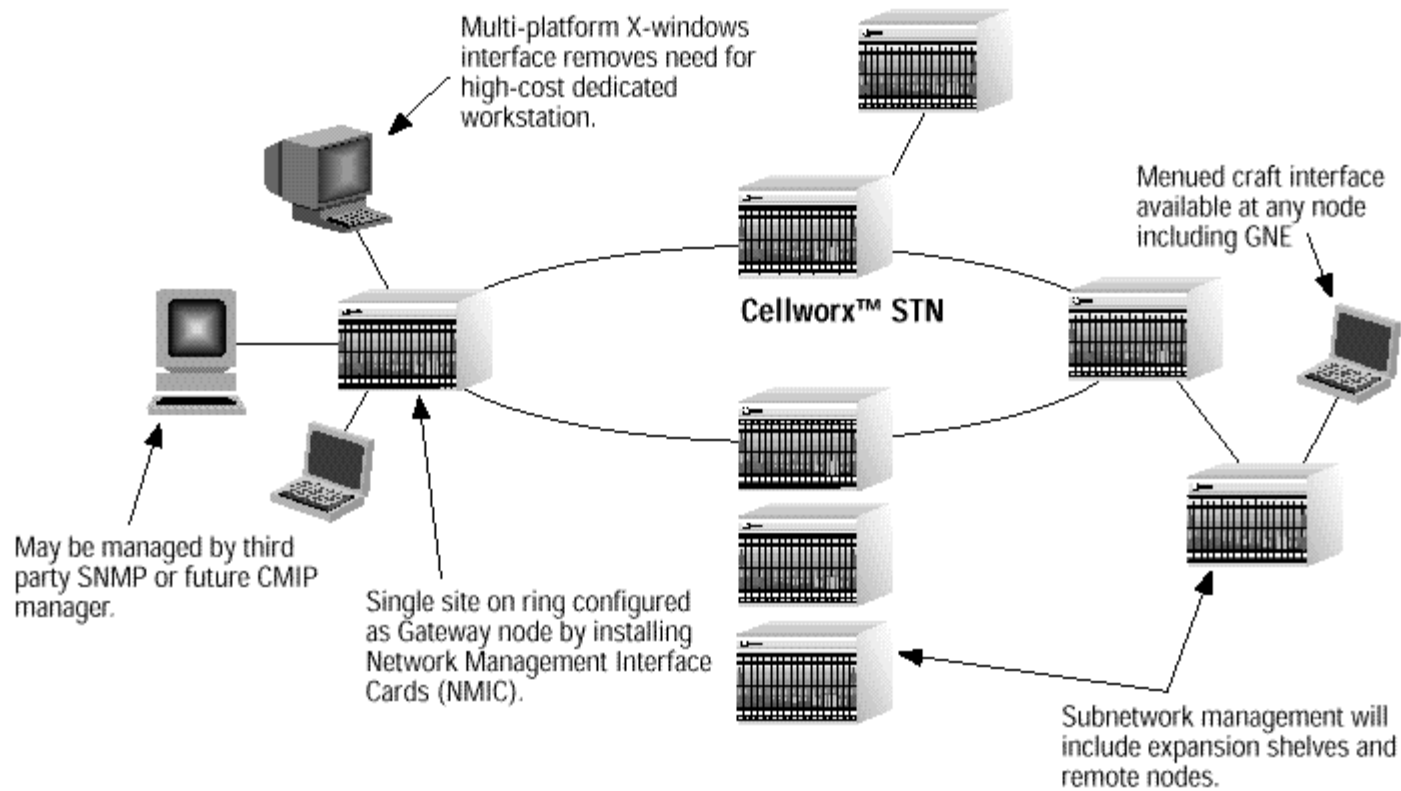
Card - Port - BW

Card Name	VPI (bits)	VCI (bits)	Ports	Port BW (Mb/s)	Card BW (Mb/s)	Max cells/sec per Port
OC12c RIC	12	0	1	599.04	599.04	1412830
OC12c CRS	10	6	1	599.04	599.04	1412830
OC3c SM	7	6	2	149.76	229.52	353207
OC3c MM	7	6	2	149.76	229.52	353207
DS3 CRS (PLCP)	5	6	3	40.704	122.112	96000
DS3 CRS (Direct)	5	6	3	44.096	132.288	104000
DS1 Frac FR	12	13	8	1.536	12.288	3622
DS1 CES	4	6	16	1.544	24.704	3622
DS1 Ch FR	12	13	4	1.536	6.144	3622
OC48c RIC	12	0	1	2396.16	2396.16	5651320
DS3 CES	4	6	3	44.736	134.208	101962
DS3 Frac FR	12	13	1	43.232	43.232	101962



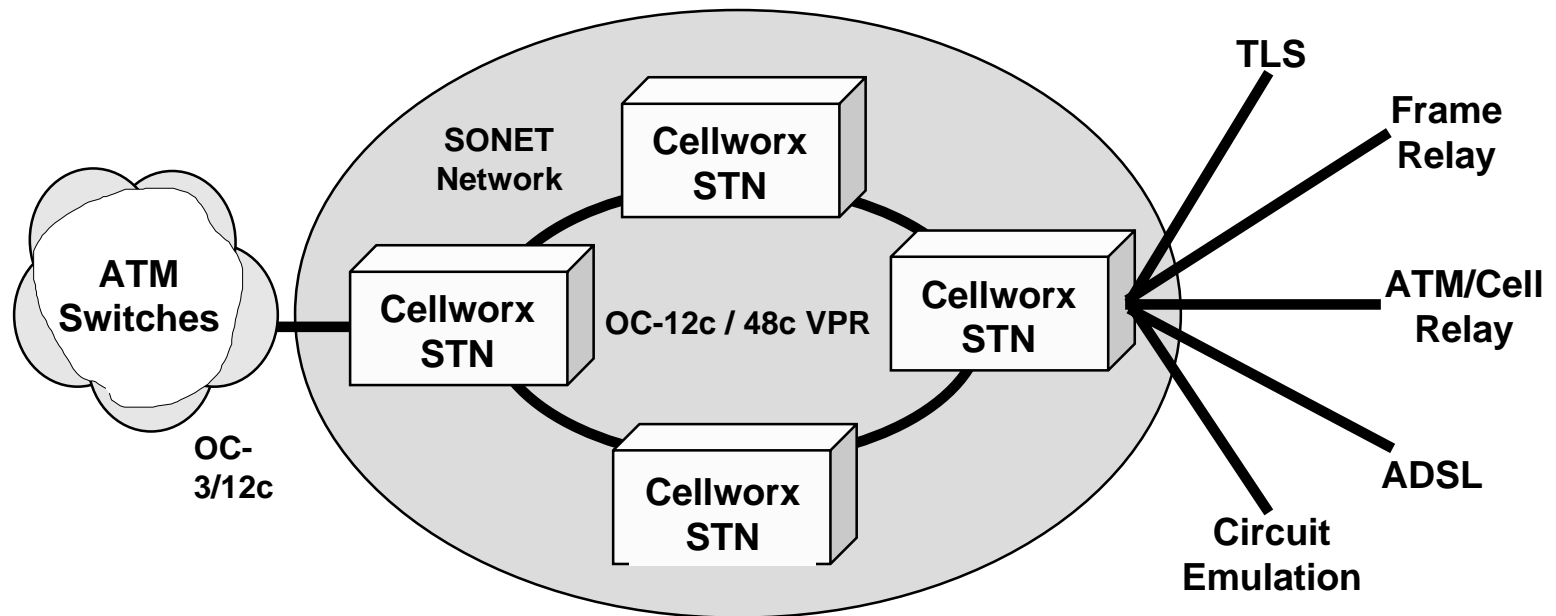
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Network Management



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Protected Ring Network

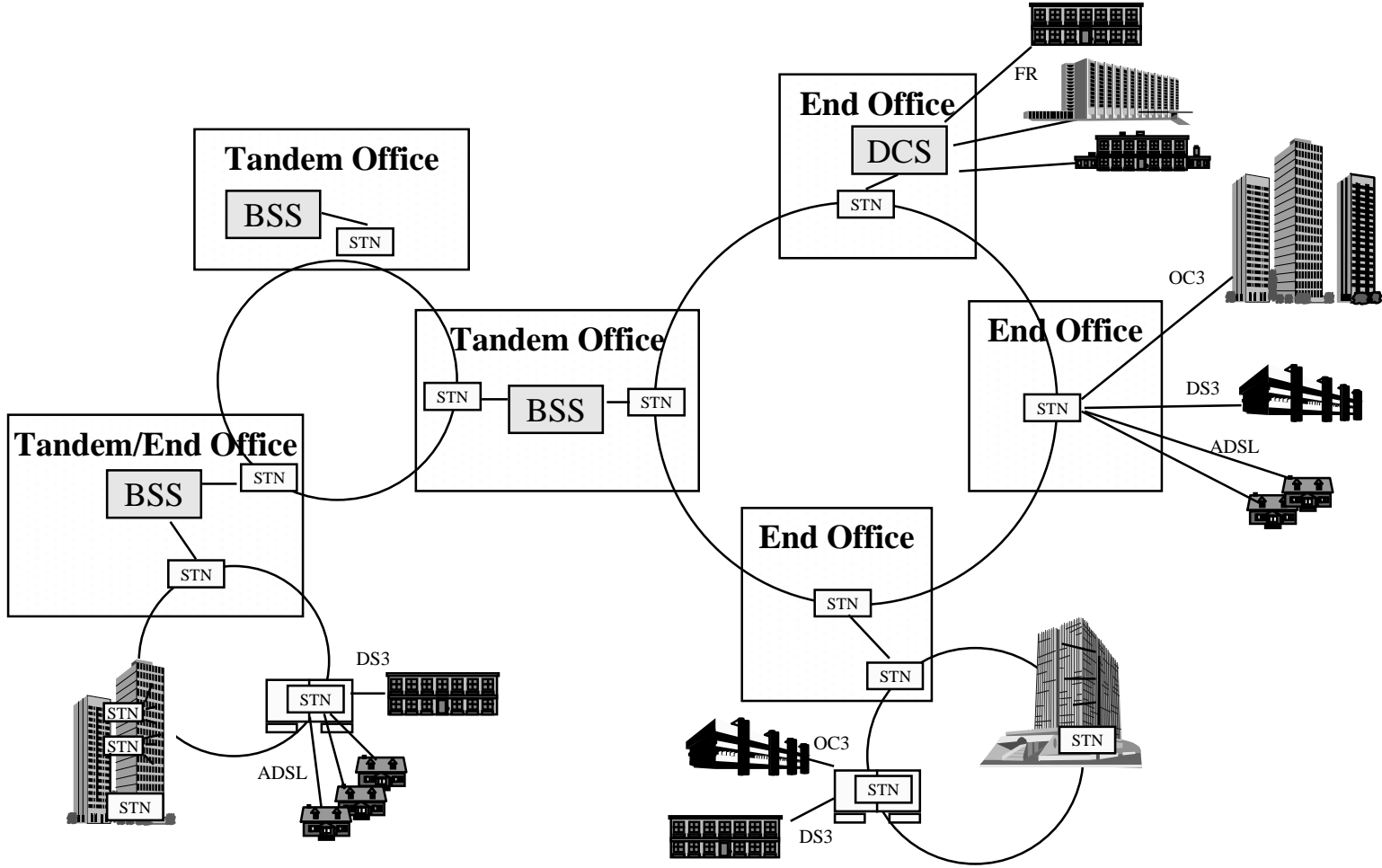


- Integrated transport and broadband access element
- ATM Virtual Path Ring (VPR) element with STM capability (GR 2837)
- Integrated Service Access Mux (SAM) functionality (GR 2842)



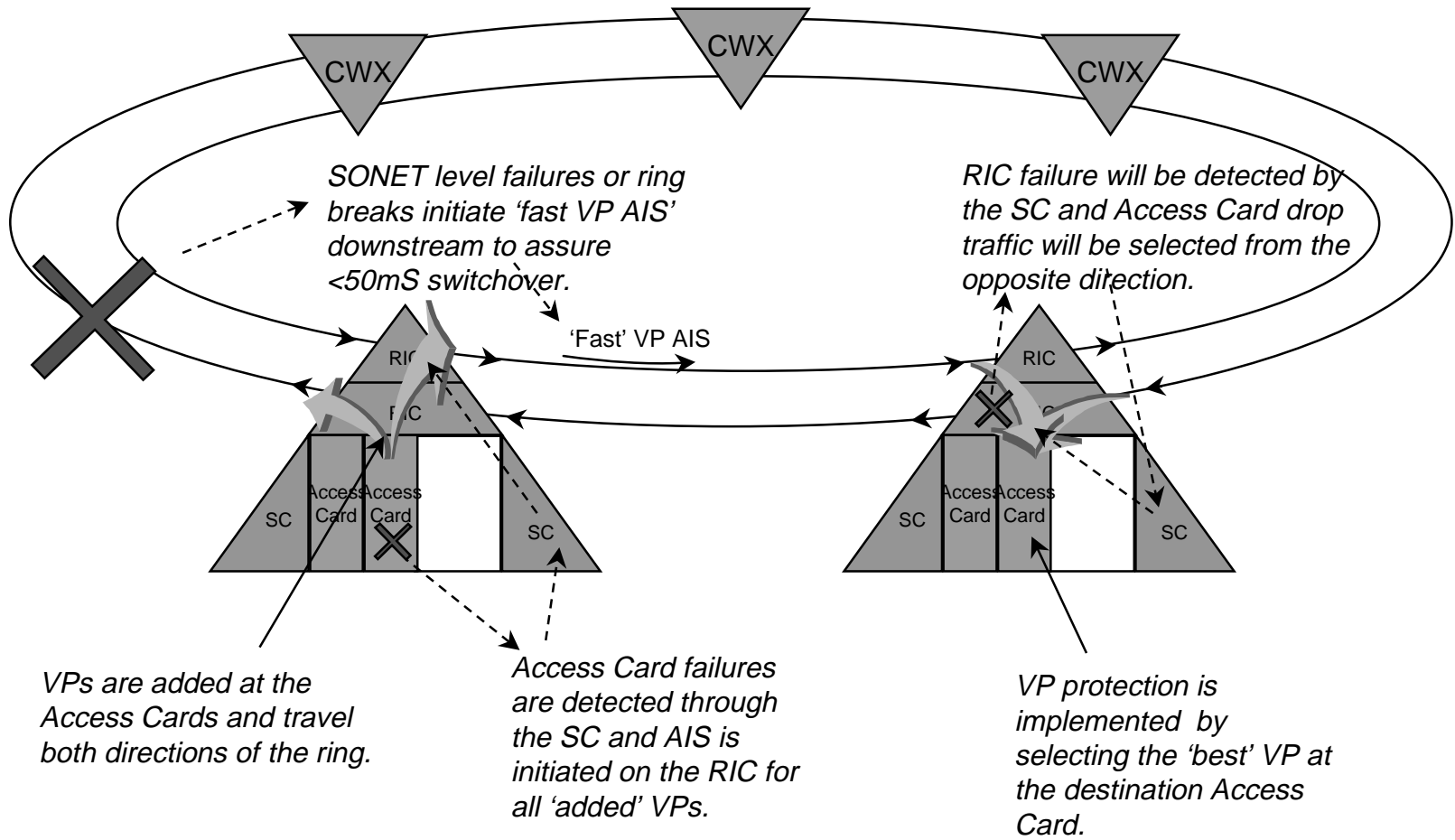
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Real Life



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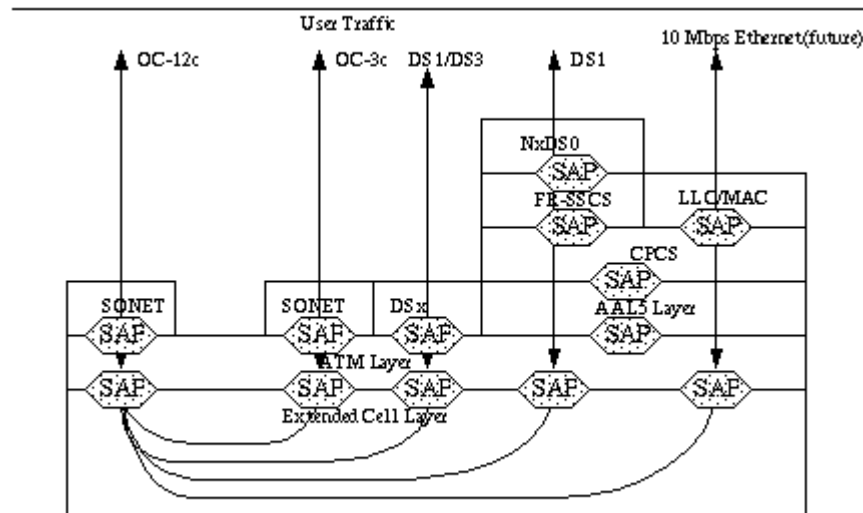
ATM VP Protection



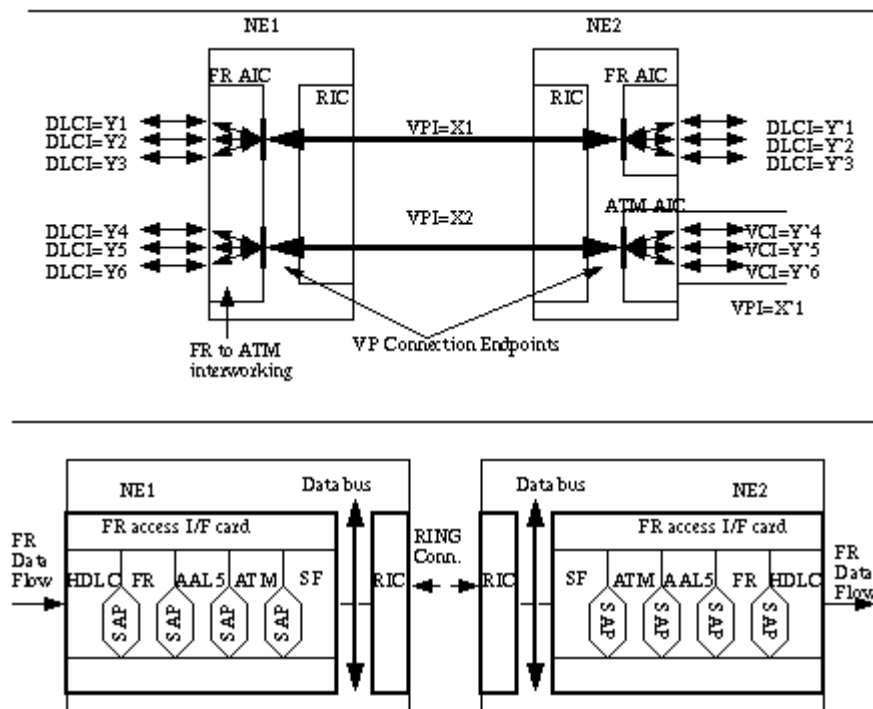
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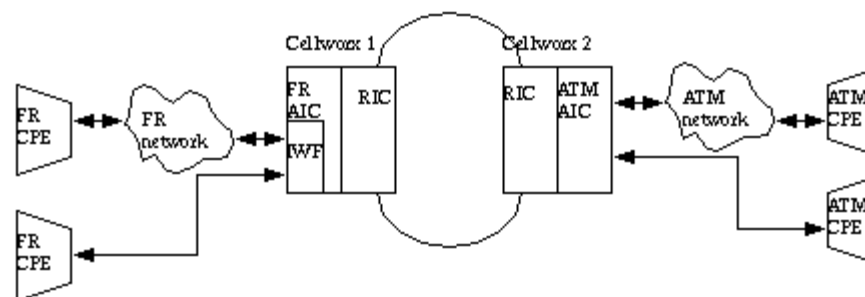
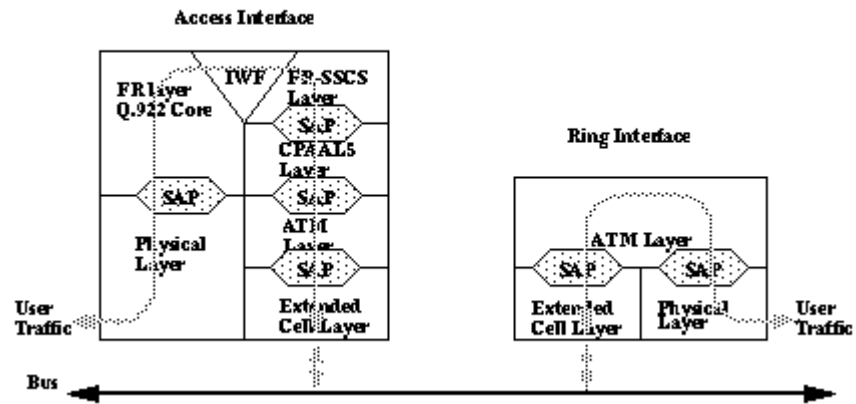
Service Transport Protocols

- Protocol Stack Reference Model



■ Frame Relay Reference Model





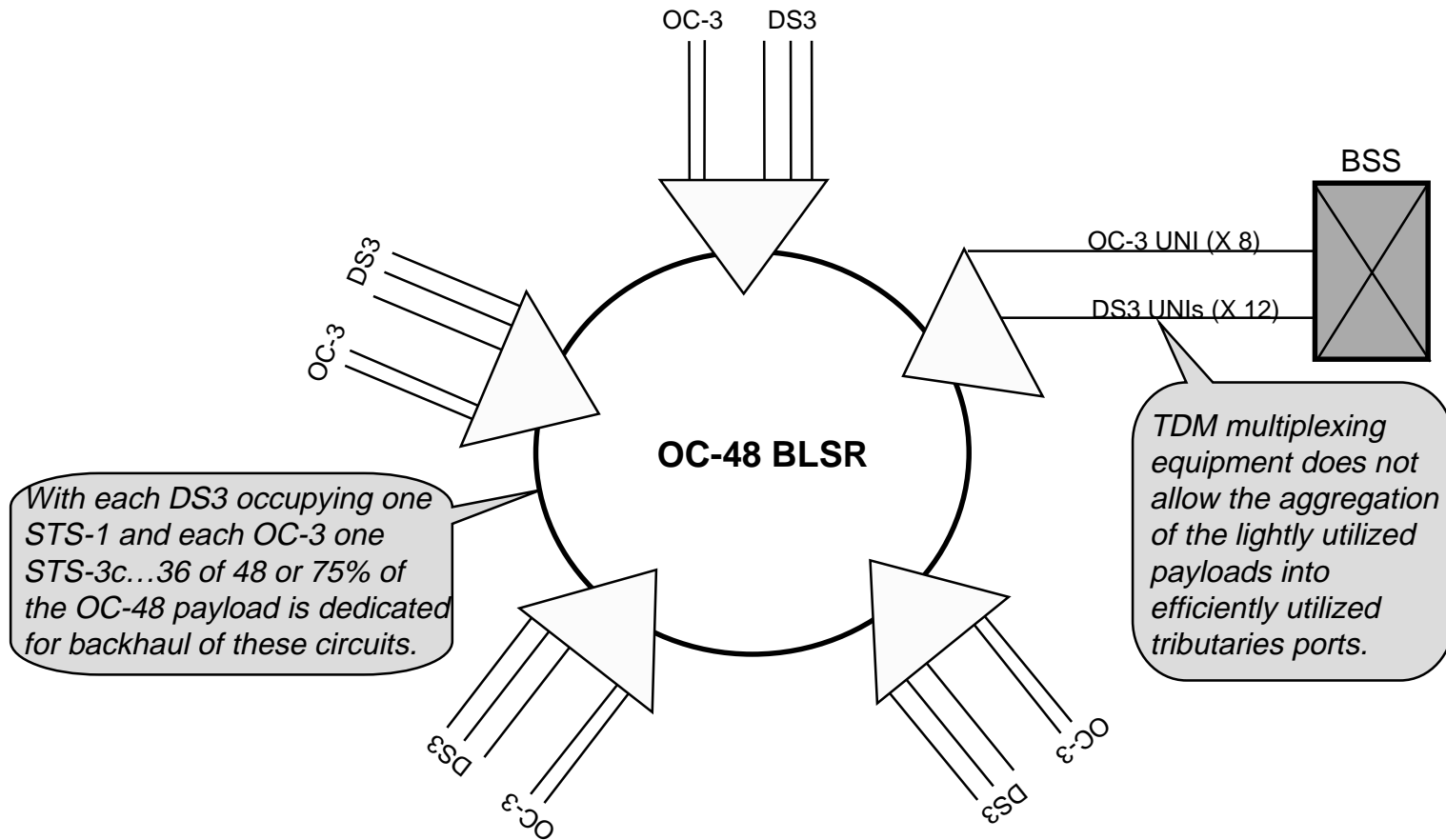
VP Ring Applications

- TDM Backhaul
- Distributed Switch
- DSLAM Deployment



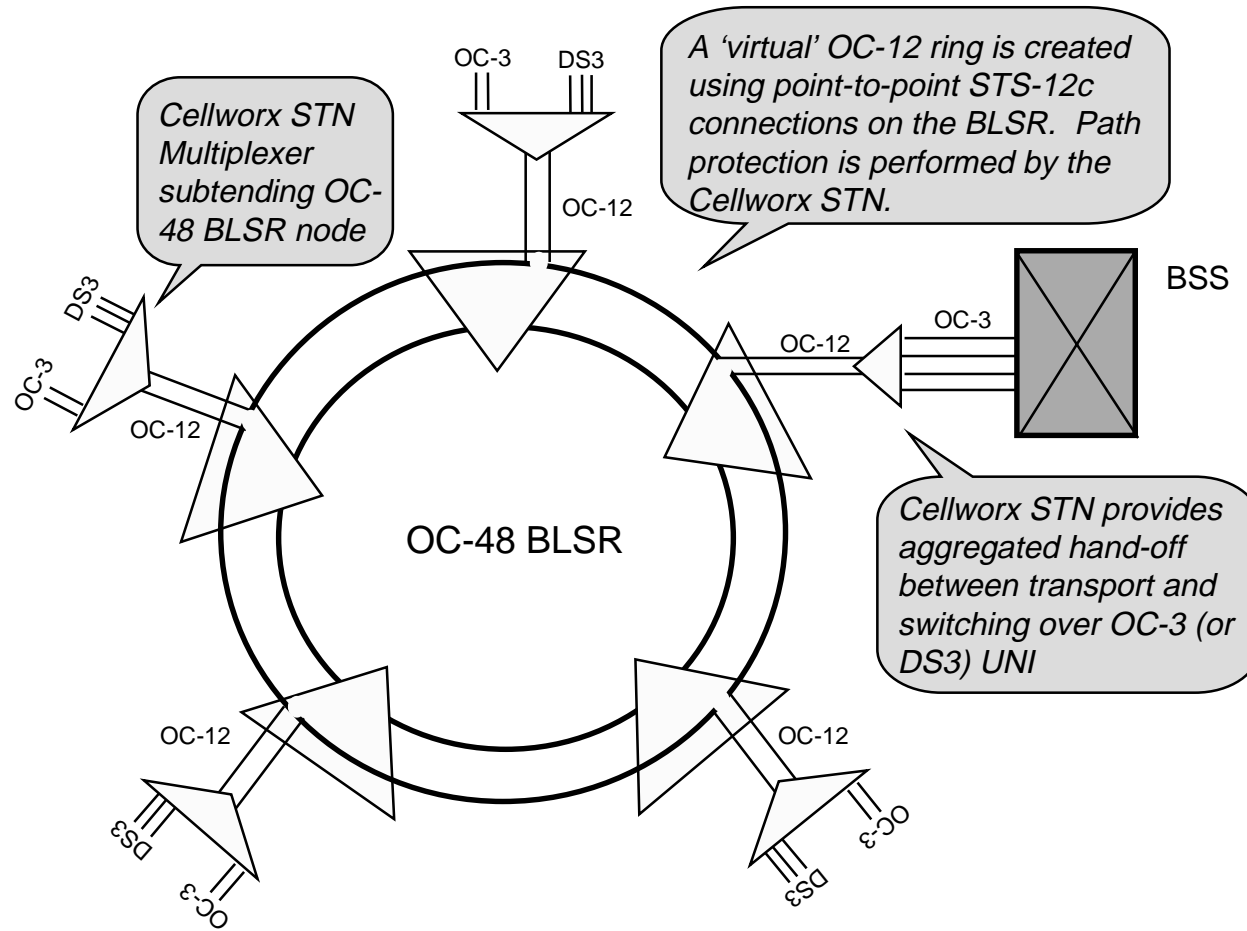
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Broadband Backhaul: TDM Only



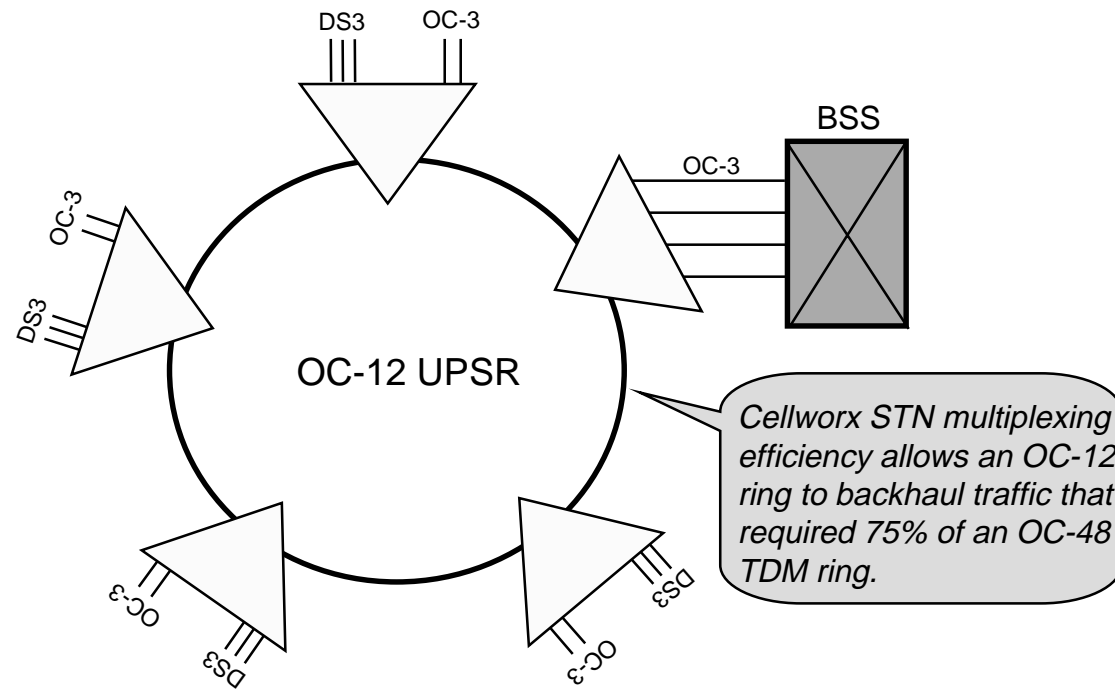
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Broadband Backhaul: Hybrid



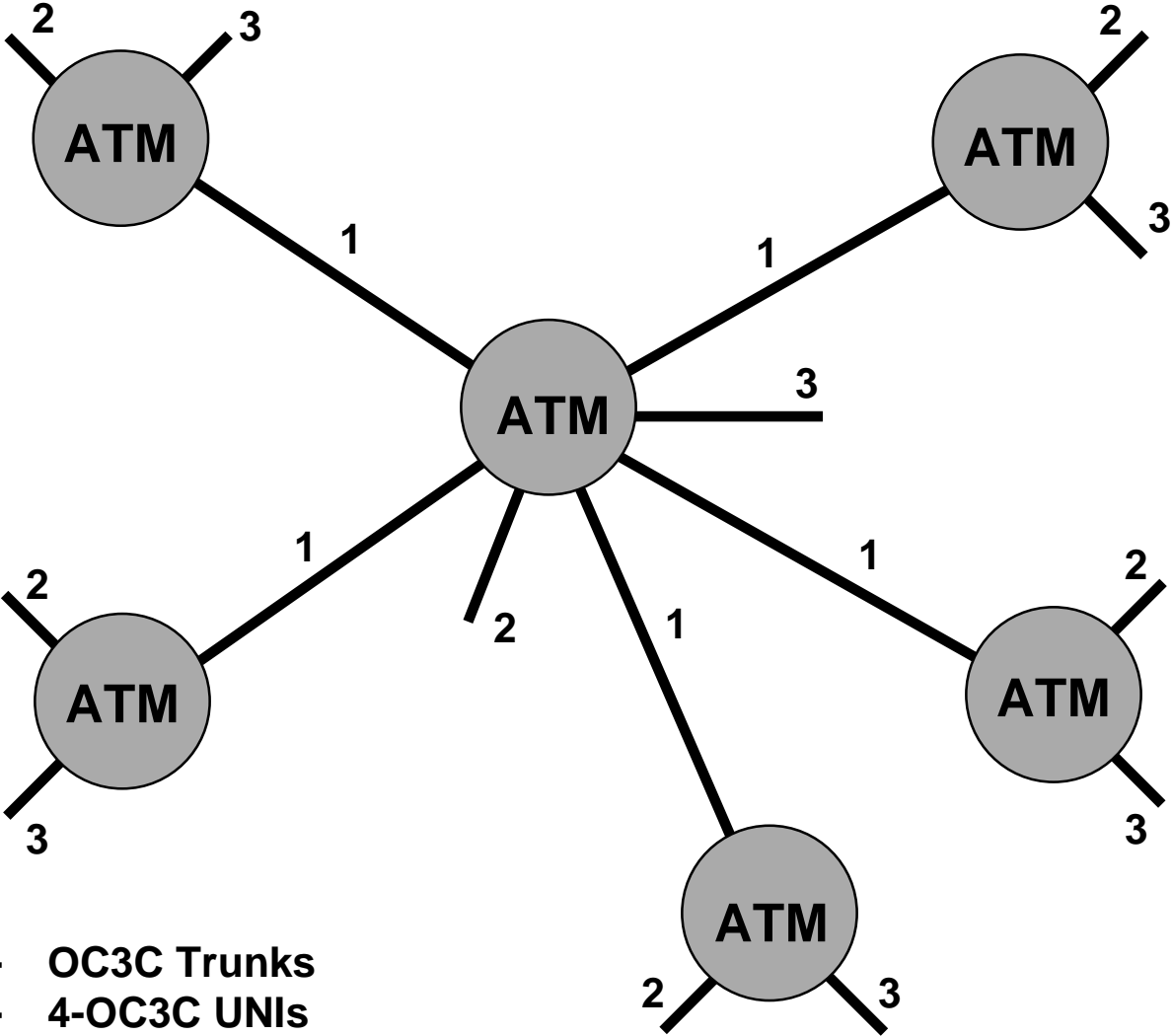
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Broadband Backhaul: STN Only



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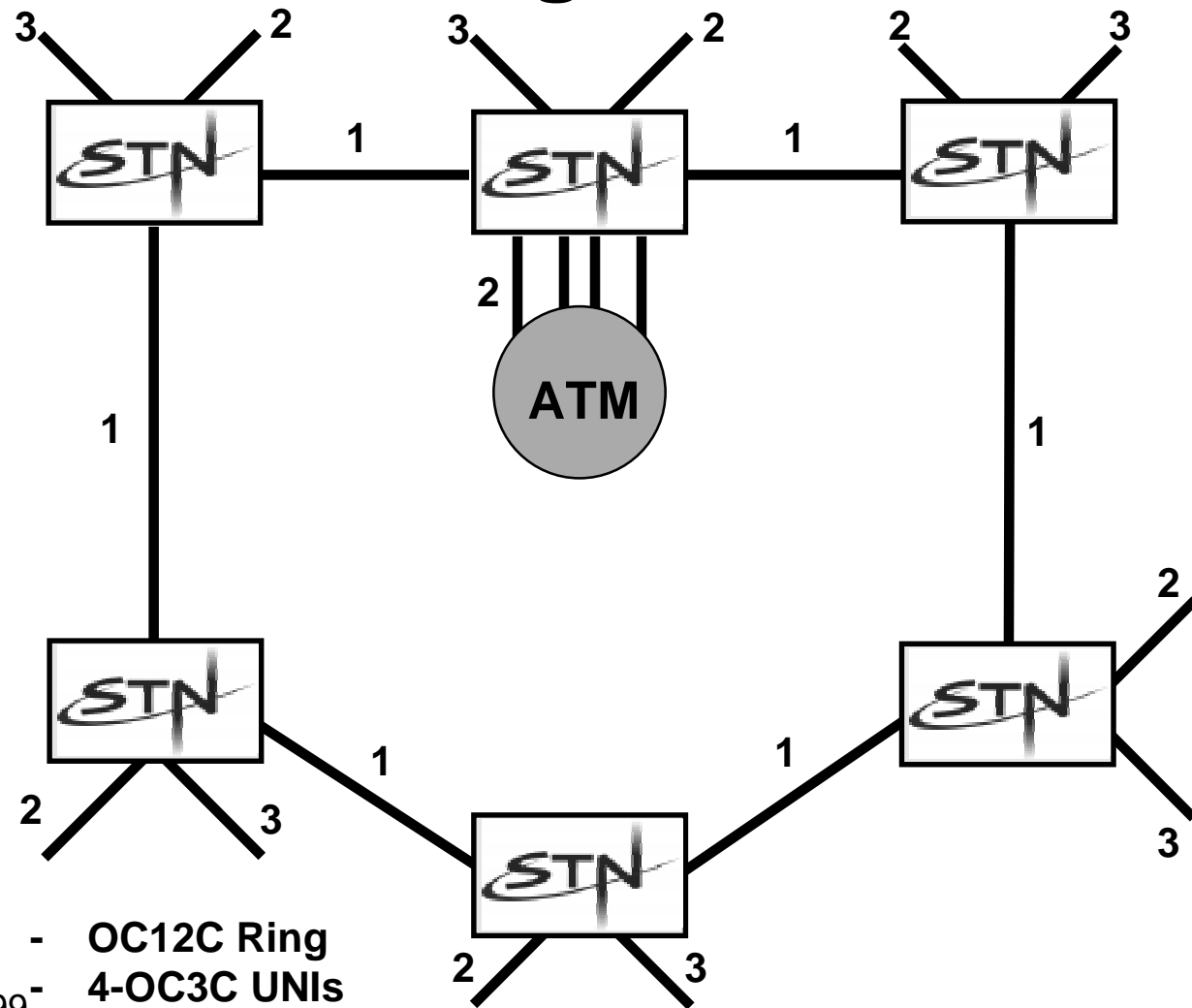
Distributed ATM Switch



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- 1 - OC3C Trunks
- 2 - 4-OC3C UNIs
- 3 - 8-DS3 UNIs

STN Ring Model



- 1 - OC12C Ring
- 2 - 4-OC3C UNIs
- 3 - 8-DS3 UNIs



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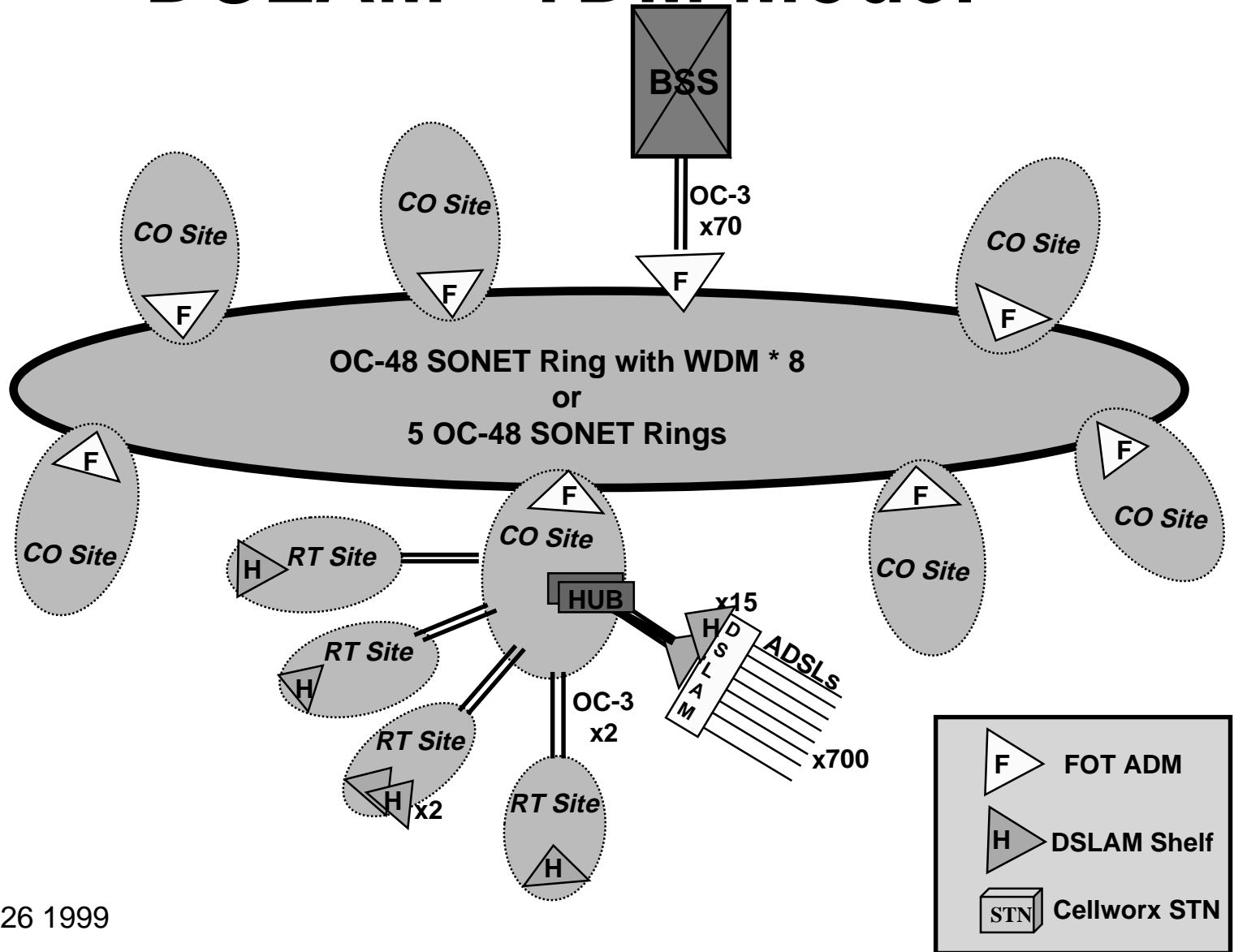
DSLAM Options

- TDM Backhaul
- ATM VP Ring Backhaul
- Integrated DSLAM VP Ring Backhaul



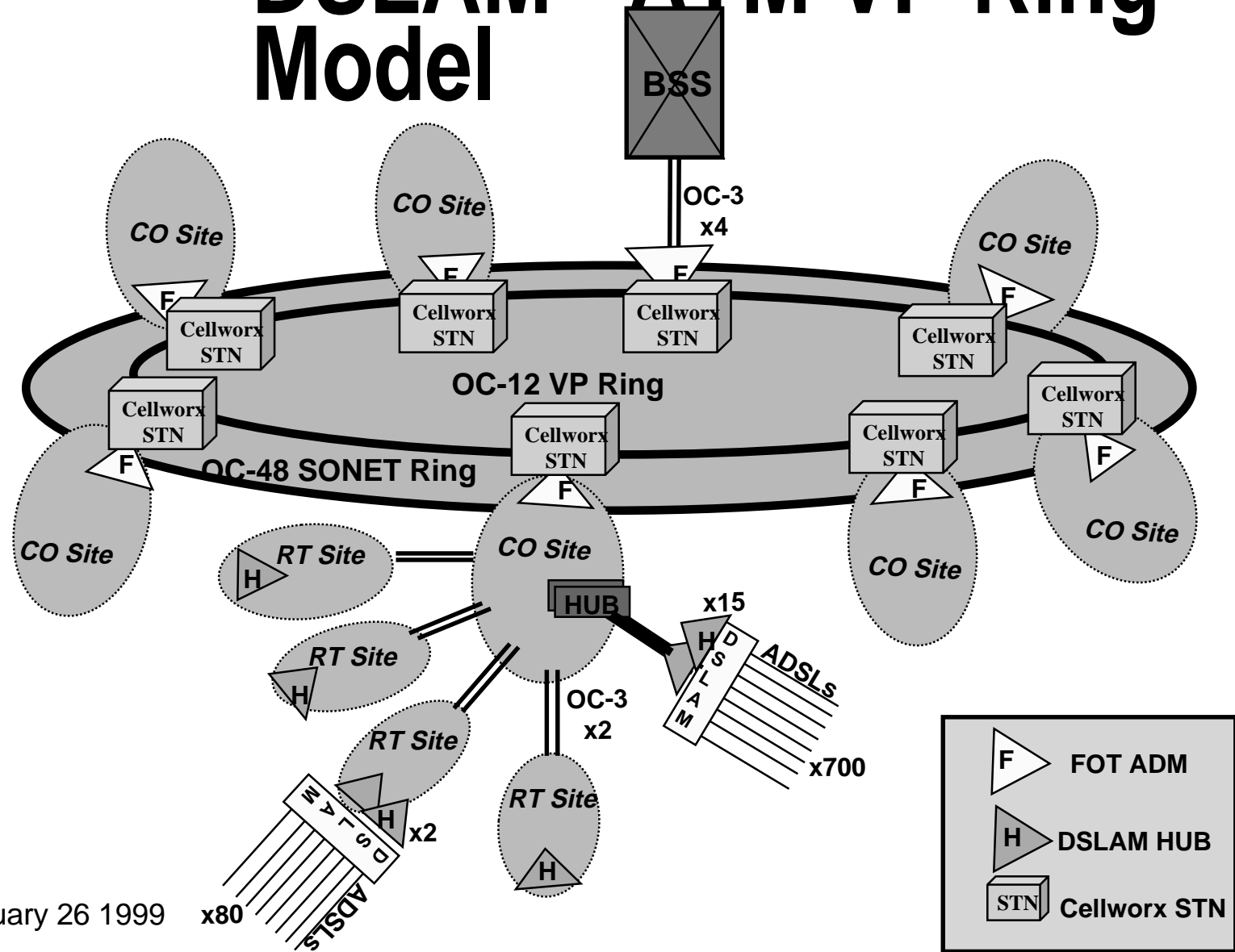
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DSLAM - TDM Model



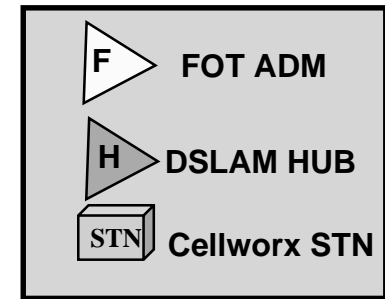
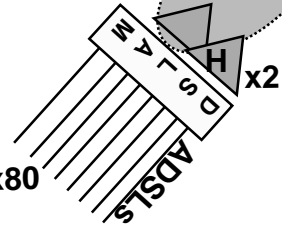
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DSLAM - ATM VP Ring Model

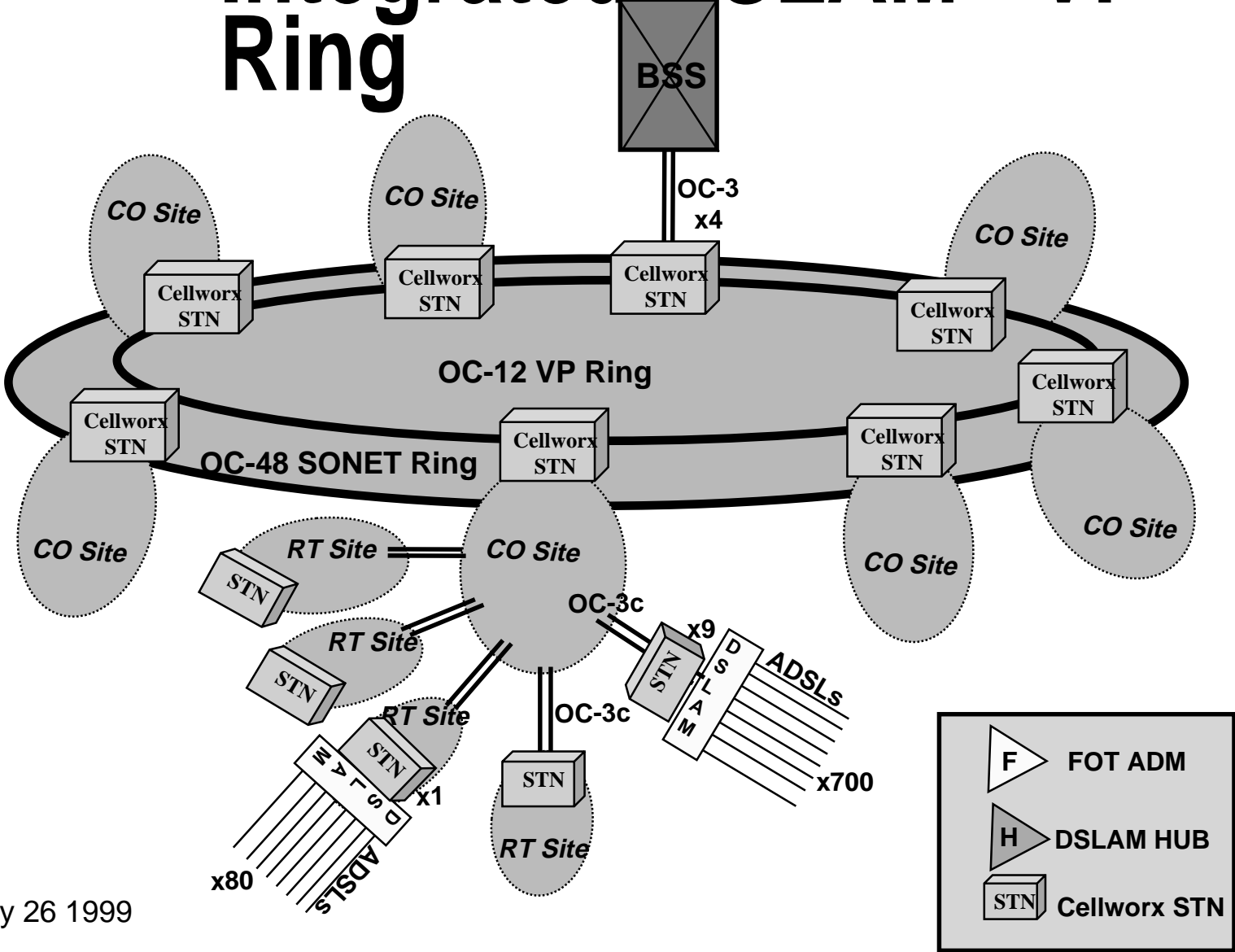


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x80



Integrated DSLAM - VP Ring



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Rapid Design and Development Strategies

- Use Object Oriented Methodologies for realtime software
- Use SNMP protocol for Management
- Used Tcl/Tk scripts w/ Scotty extensions for Management unit



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Next Step

- Multicasting (Point to MultiPoint)
- Satellite Broadband



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Conclusion

- TDM Backhaul Inneficient
- Distributed ATM Switches too expensive
- Multi-Service Platforms reduces the risk of broadband service provisioning
- ATM VP Rings with Integrated Service Provisioning is most economic Broadband Service Transport



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- New services not confined to the Internet - All areas of telecommunications
 - ◆ Telephone Networks
 - ◆ Cable TV
 - ◆ Local Area Networks



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