



interWAN Packet Transport

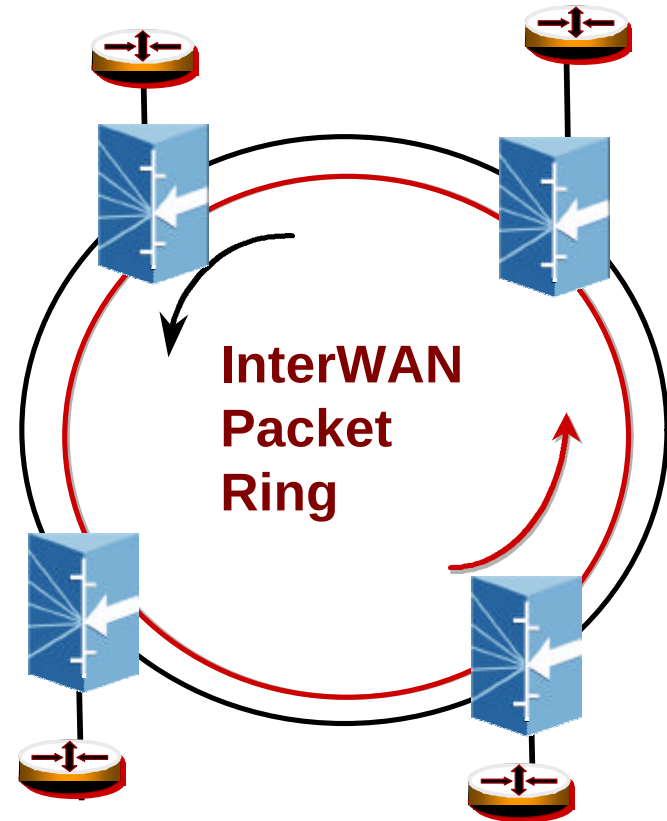
Alan Hurren

Agenda

- interWAN Packet Transport Overview
- Applications

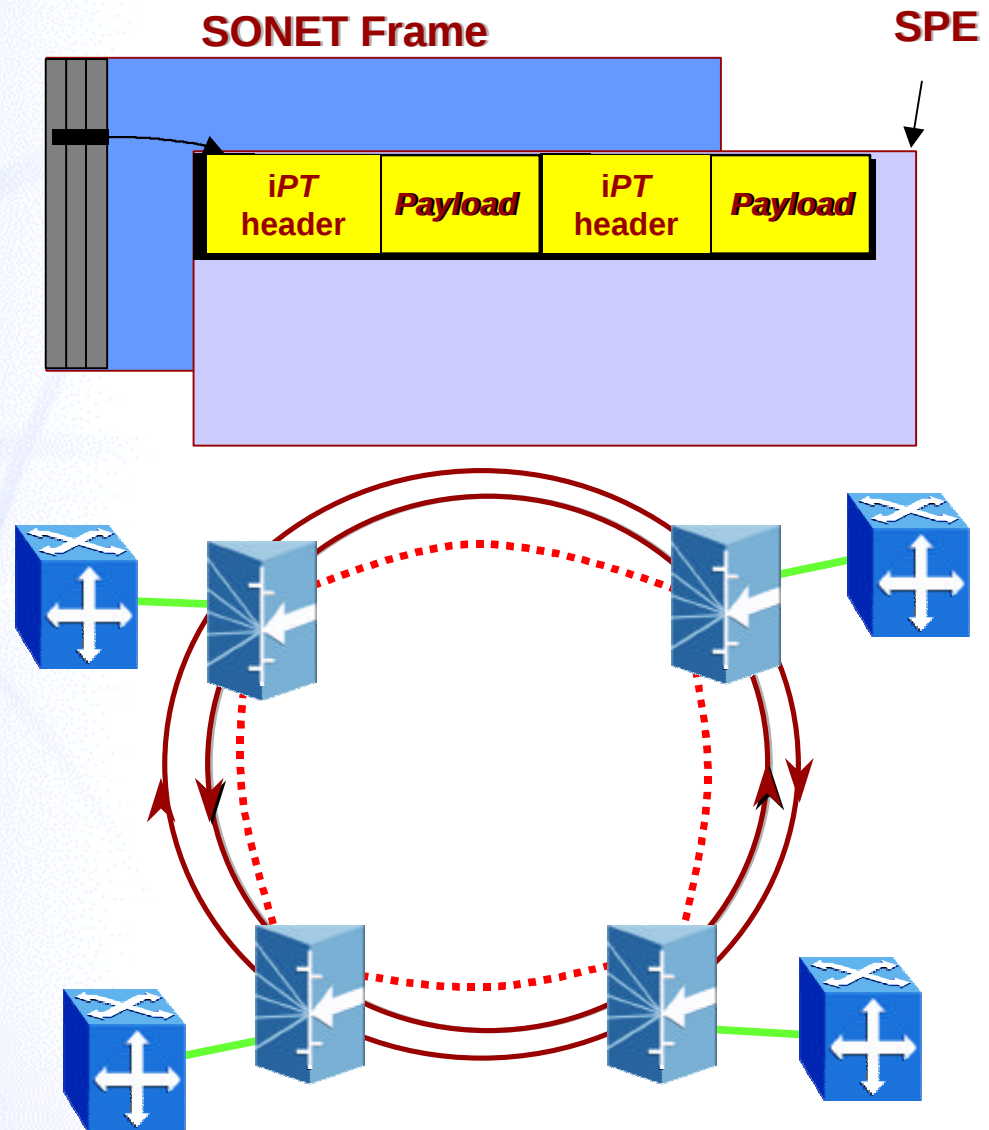
iPT - interWAN packet transport

- **Ring Protocol**
 - Packet Add/Drop/Pass through
 - Efficient Multicast
- **Effective Use of Bandwidth**
 - Spatial re-use
- **Ring Protection**
 - Fast and reliable layer2 protection
- **Control Access Protocol**
 - Ensures fair access to ring BW
- **Class of Service**

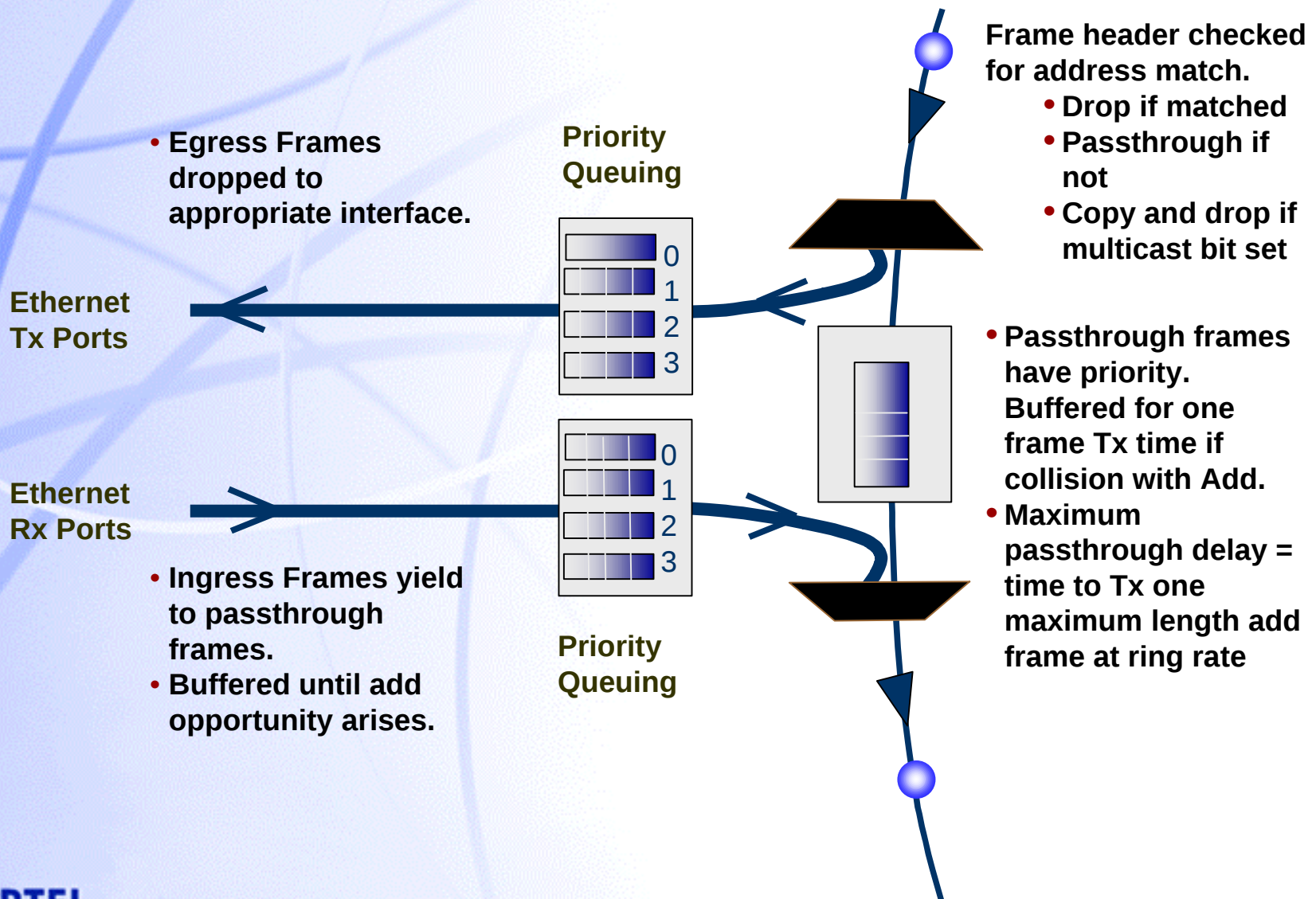


iPT - interWAN packet transport

- SONET/Optical Connections established between adjacent iPT network elements
- iPT frames mapped into Synchronous Payload Envelope
- Dual counter rotating packet ring
- Scalable concatenated payload

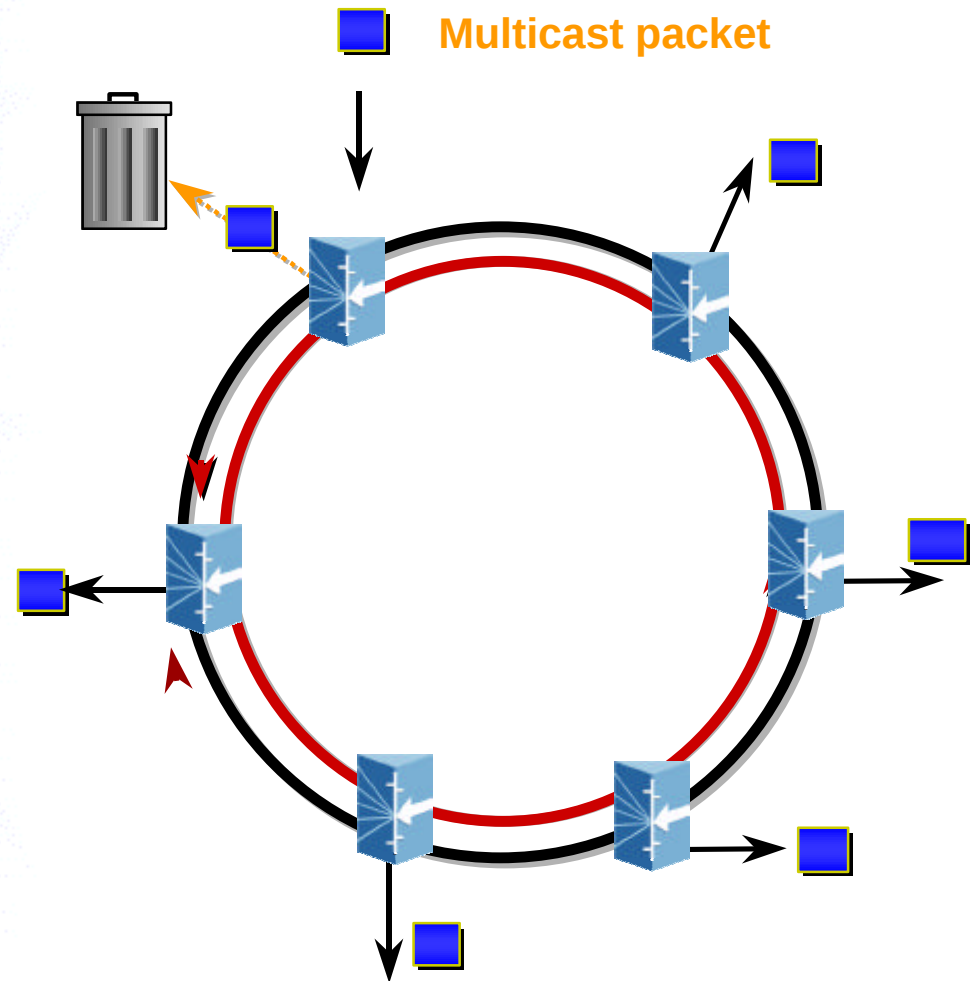


iPT - Ring protocol



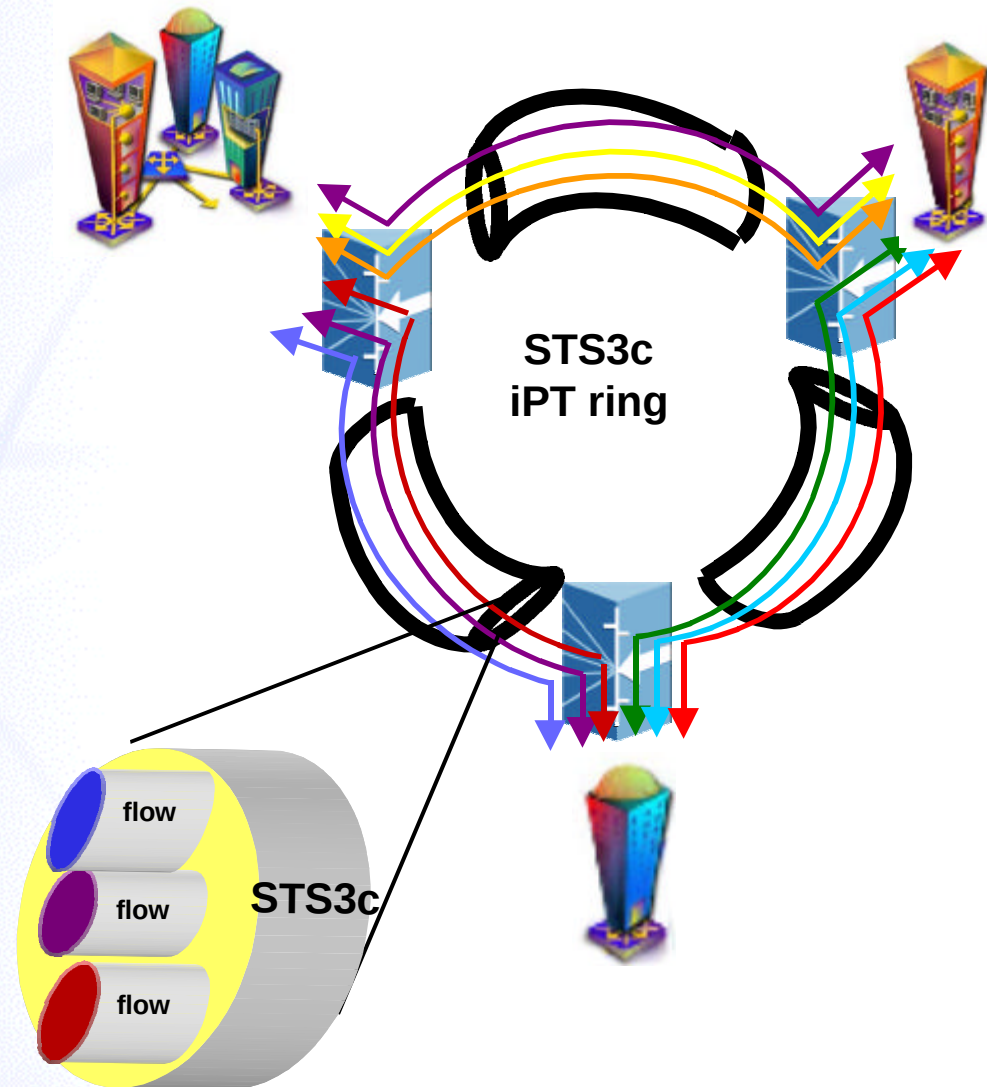
iPT - Multicast Support

- Frame transmitted onto ring by source node with multicast bit set
- Frame copied off the ring at each node
- Frame circulates the ring and removed by the source node
- More efficient than equivalent point to point scenario which involves packet replication and multiple transmits from source node



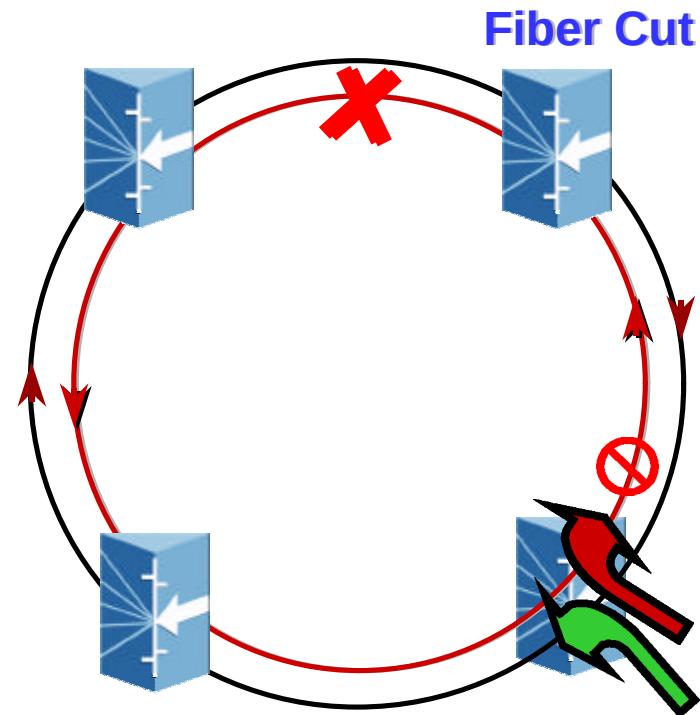
iPT - Spatial Reuse

- Bandwidth consumed only on traversed segment
- Destination removal of frames
- Multiple nodes may transmit concurrently
- Dynamic, per-packet spatial reuse
- Statistical Gain for increased BW utilization



iPT - Ring Protection Protocol

- **Layer 2 protection**
 - No dedicated protection bandwidth
 - Both fibers carry working traffic
- **Auto-discovery of primary and secondary paths**
- **Continuous fault detection**
 - Fast detection, protection and restoration



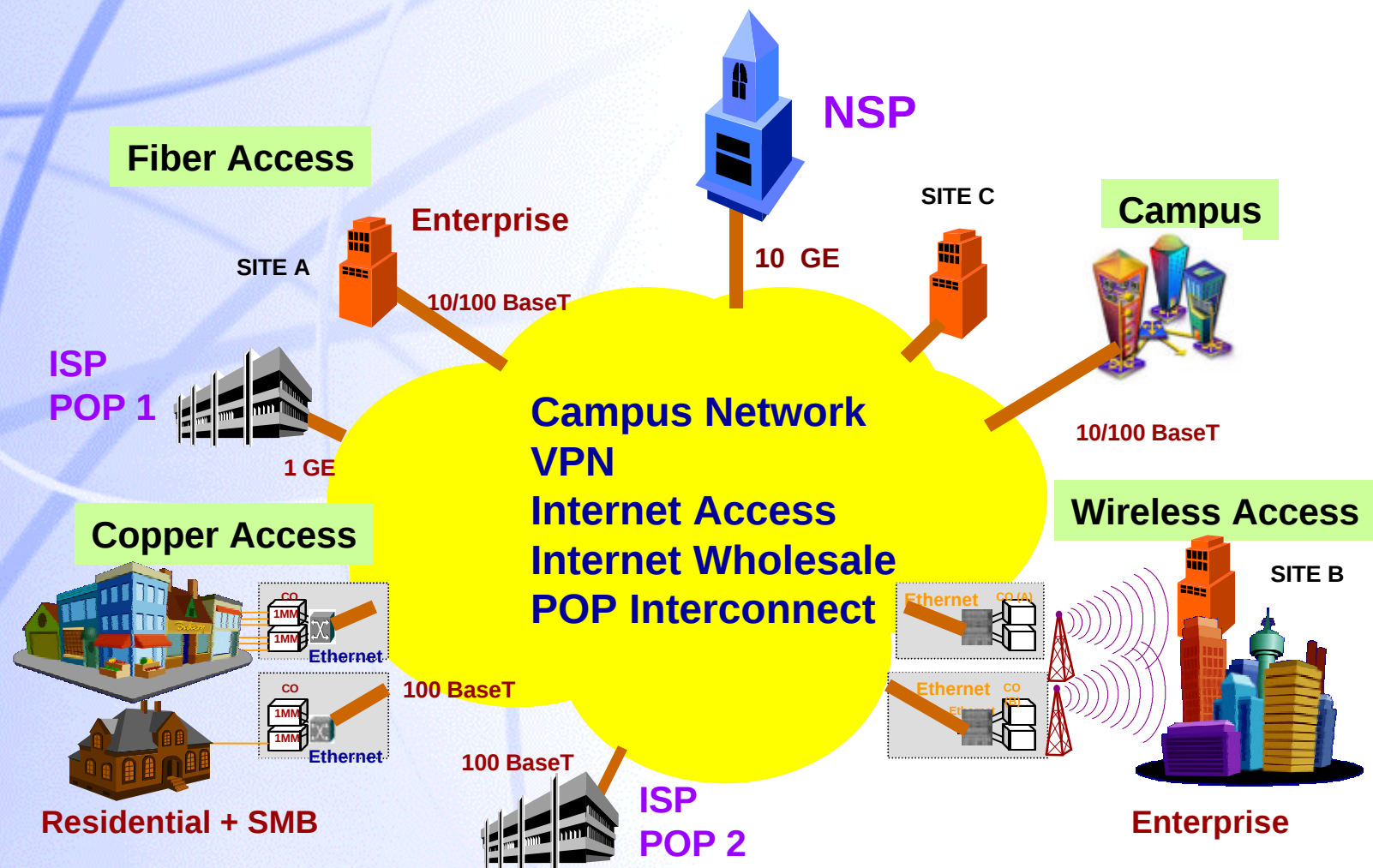
iPT - Control Access Protocol (CAP)

- **Prevents Starvation during ring Congestion**
- **Provides fair/unfair access to shared WAN BW for competing nodes**
- **Enabler for over subscribed ring**
- **Local Fairness as opposed to Global Fairness**
- **Utilized only during periods of congestion**

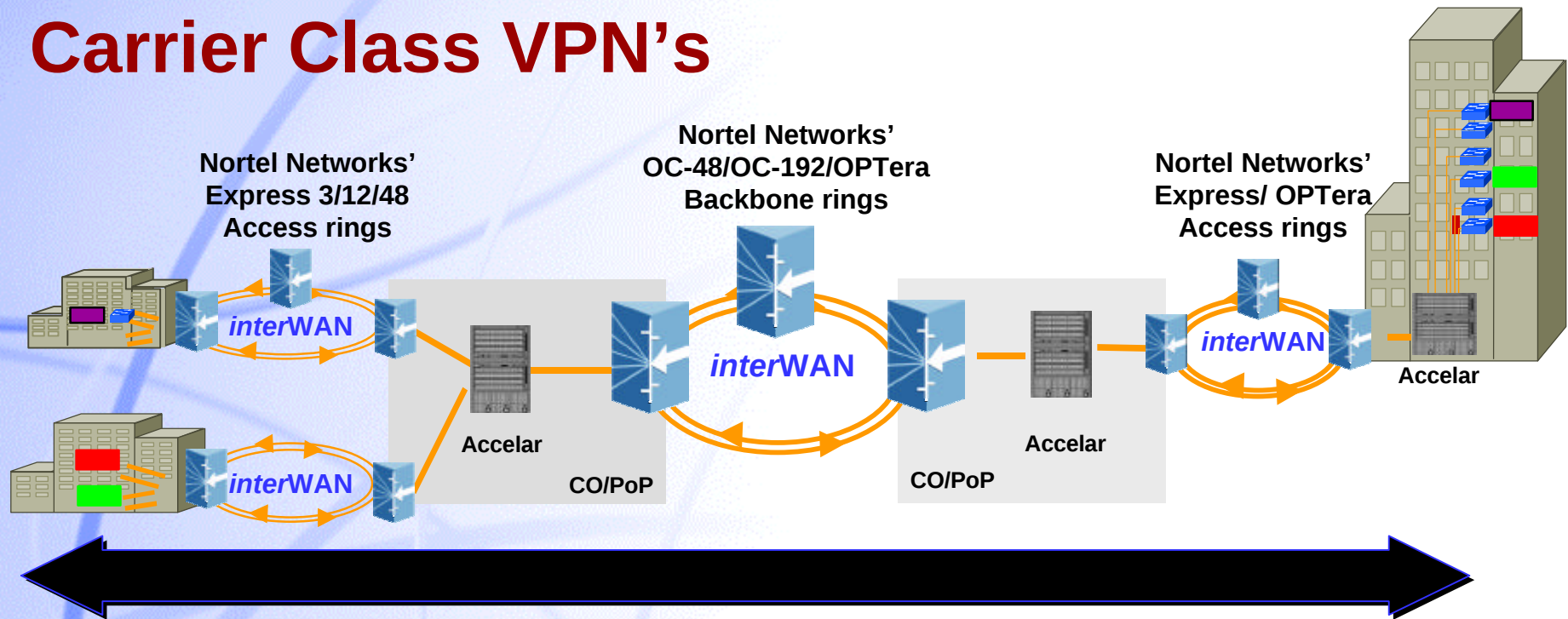
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Differentiated High Speed Data Services to the Enterprises and the ISPs

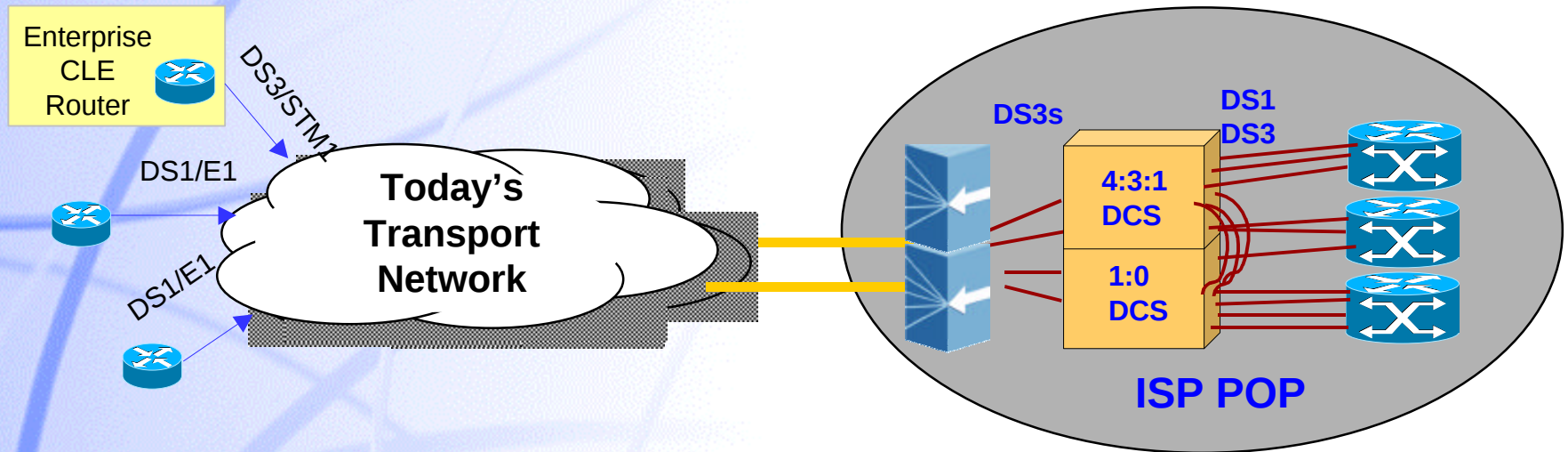


Carrier Class VPN's



- 10/100/1000 Mbps customer access to Carrier's network
- True VLAN 802.1q service between customer sites
- Tunable customer access bandwidth from 1M to 1G
- Scalable to thousands of end users
- Security/Customer Segregation
- Multiple Class of Service Offering for voice and video
- Mechanisms to deliver advanced customer SLA's

Internet Access



End user

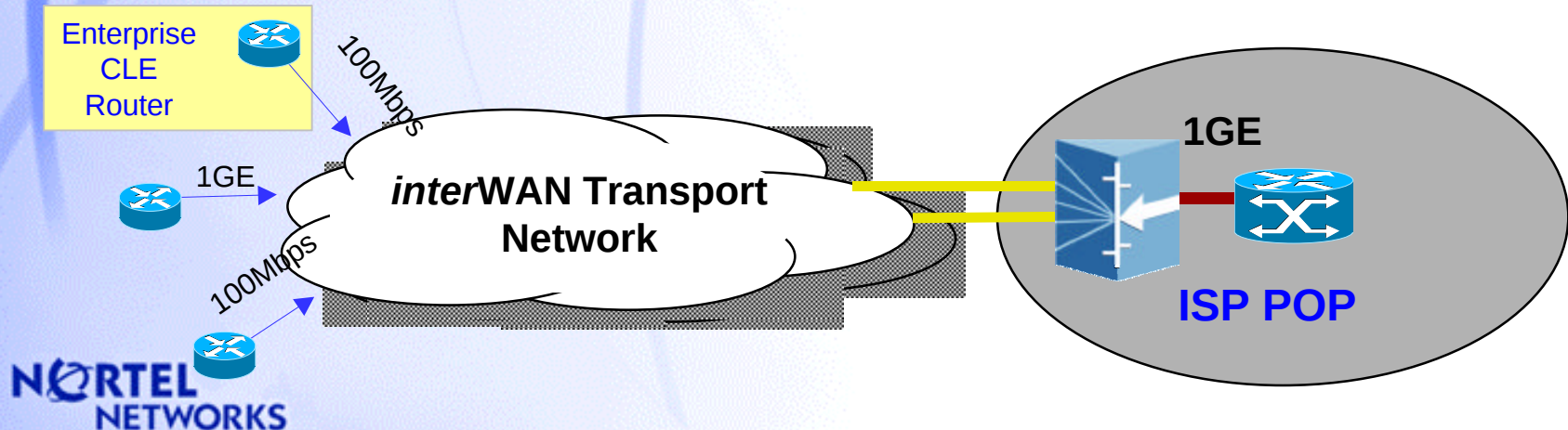
Lower cost interface
Faster Service turn-up
Flexible bandwidth 1M to 1G

Carrier

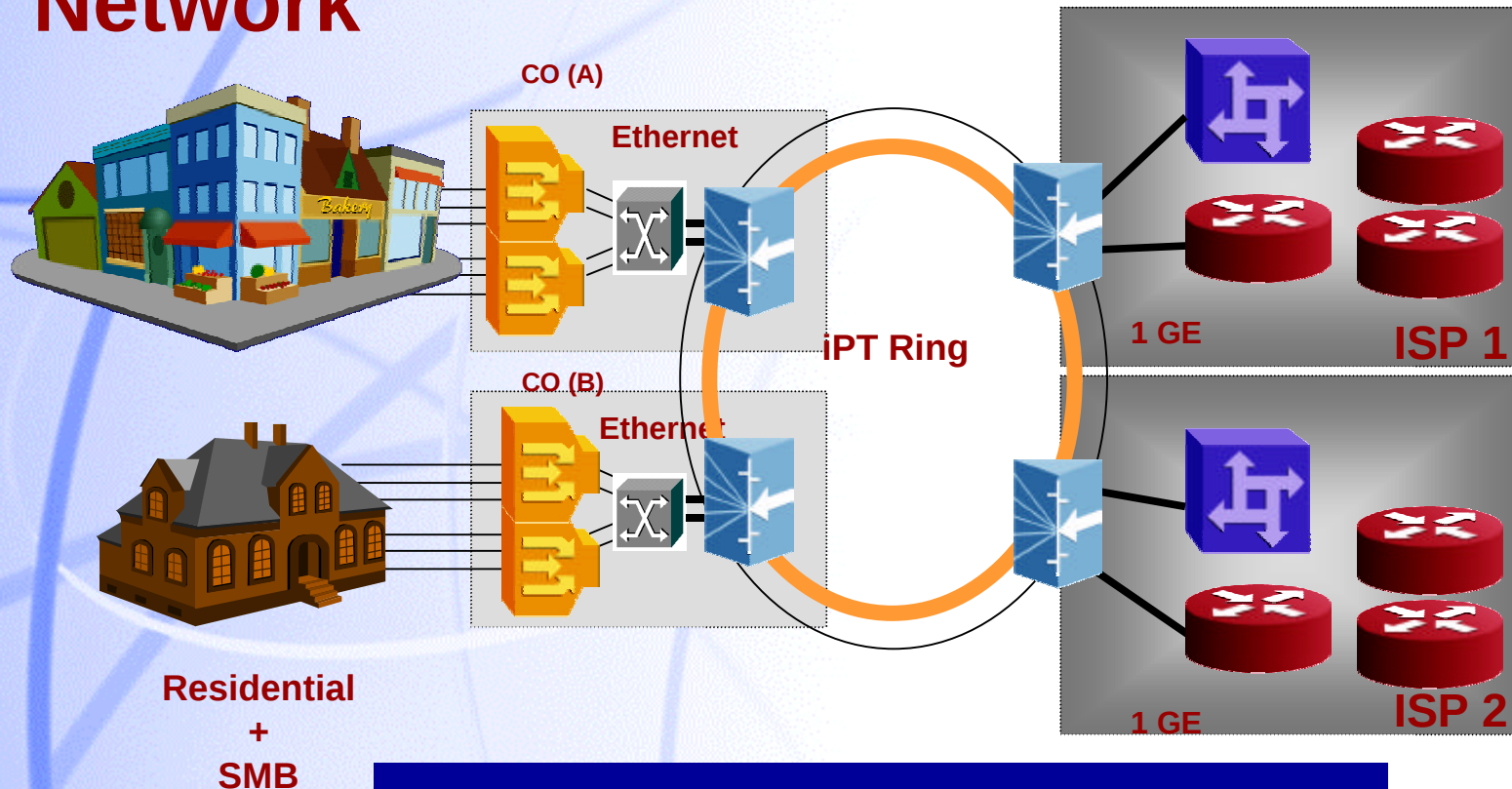
Differentiated Service
Dramatic cost reductions

ISP

POP Equipment Cost Reduction
Simpler customer adds
Scalability: 10's of thousands of users
Saving on POP real-estate



Affordable High Speed Modem Collector Network



- Network Efficiency + Port Consolidation
- Services to Multiple ISPs
- High Speed Connectivity
- High Availability
- End to End Network Management

iPT Values

- **Improve Bandwidth utilization in the network**
 - Remove stranded BW (eg. 25 Meg in DS3)
 - Utilitize protection BW in SONET network
 - Spatial Reuse
- **Provide redundant architecture with fast protection switching**
 - Dual homed packet rings
- **Provide packet aggregation in the access network**
 - Port consolidation at the central office