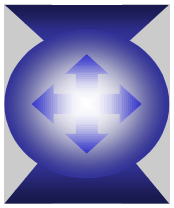

LANTERN
COMMUNICATIONS

Metropolitan Area Networks (MAN)
and
Resilient packet Rings

IEEE 802 Resilient Packet Ring Study Group
Interim Meeting
May 22, 2000

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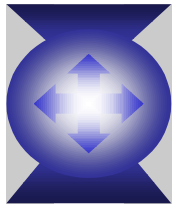
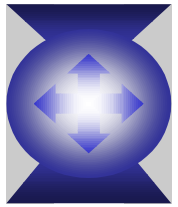
Agenda



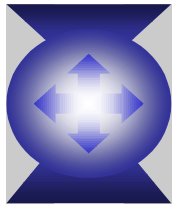
- Why RPR is needed in the Metropolitan Area Networks
- What are some of the requirements

Why RPR in Metro is Important



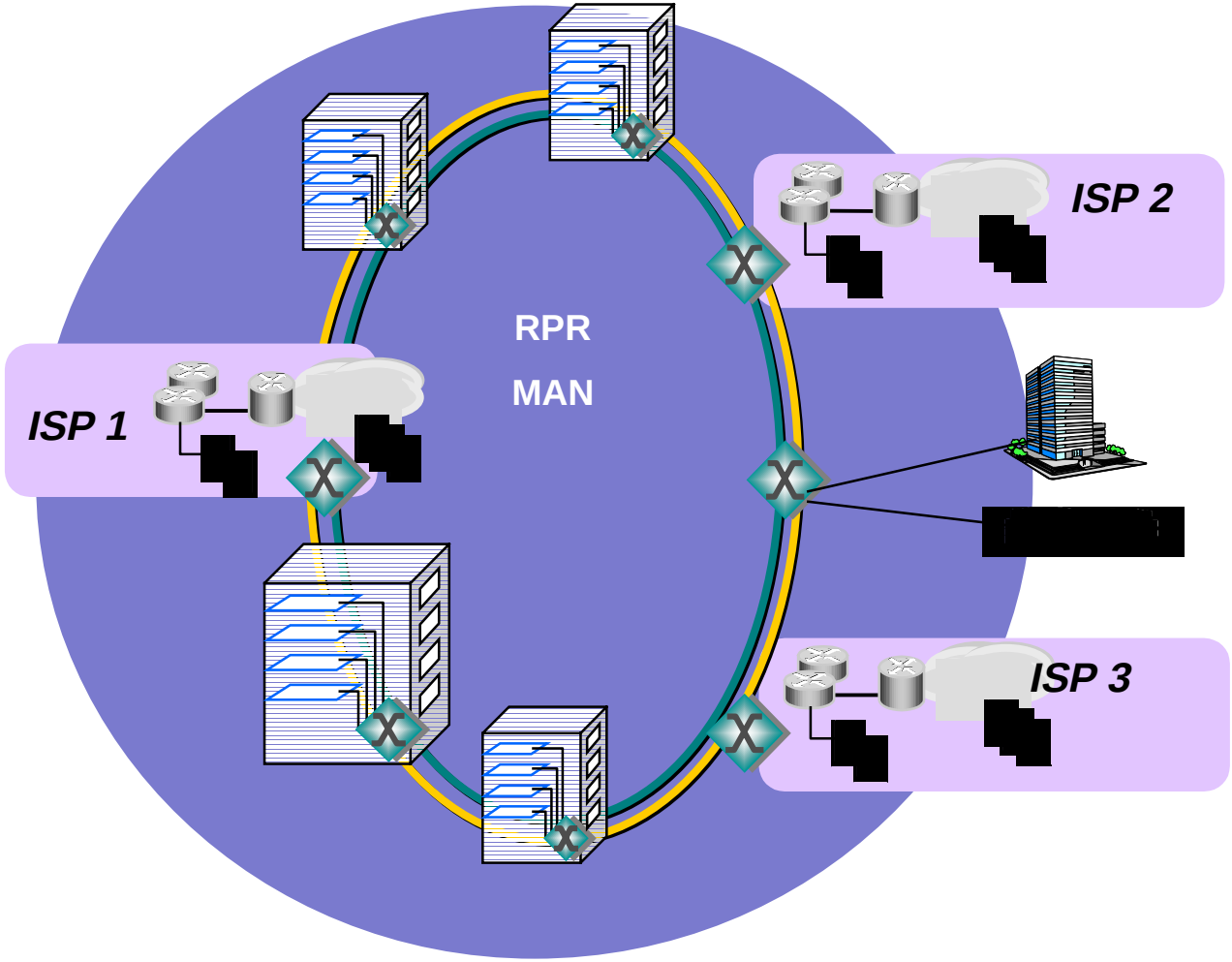
- LANs are generally owned and operated by the same entity (enterprise)
- Long Haul (WAN) links are SONET/DWDM and granularity is at Circuit/Lambda level
- MAN
  - Multiple entities may be involved in the MAN environment
    - C/N/APs, C/D/E/V/LECs, A/I/?/SPs
  - MANs require a “resilient” means to distribute bandwidth at packet level
  - Fiber is efficiently laid out in Rings through Metros

Fiber Rings in Metro

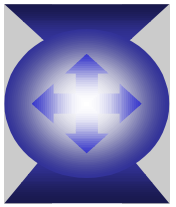


- Fiber is most often laid out in rings
  - Rings are more efficient than meshes when optimizing for Fiber Route-Miles
- Rings simplify route diversity and failure protection
  - Rings are more deterministic than meshes
  - Simple route calculation algorithm

Network Diagram

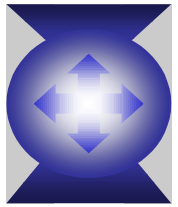


New Carriers' Requirements



- Optimize for Fiber Rings
  - Spatial Reuse to take advantage of multiple Exit/Entry points
- Sign deterministic SLAs
  - Provide high quality access and services (Bandwidth, delay/jitter, availability)
  - Provide security
  - Efficiently distribute available Internet bandwidth to many subscribers
  - Manage over-subscription
- Efficiently support Broadcast and Multicast
- Optimized for carrying Ethernet Packets
- High Bandwidth and Lower Cost

RPR Requirements



- Ring aware Media Access Protocol (Algorithm)
  - Optimized for Packet with Spatial Re-use
- Handle congestion at any point on the ring
  - Active Bandwidth Control
  - Fair and Dynamic distribution of Available Bandwidth
- Loss-less Low transit delay
- Provide support for Guaranteed and Committed data rates and delays
- Fast Fault Recovery and Restoration
- Media Independence
  - Support 10 Gigabit Ethernet Physical Layer

Conclusion

Time is right to develop

the standard for

Resilient Packet Rings