Two Key RPR MAC Features

Gunes Aybay

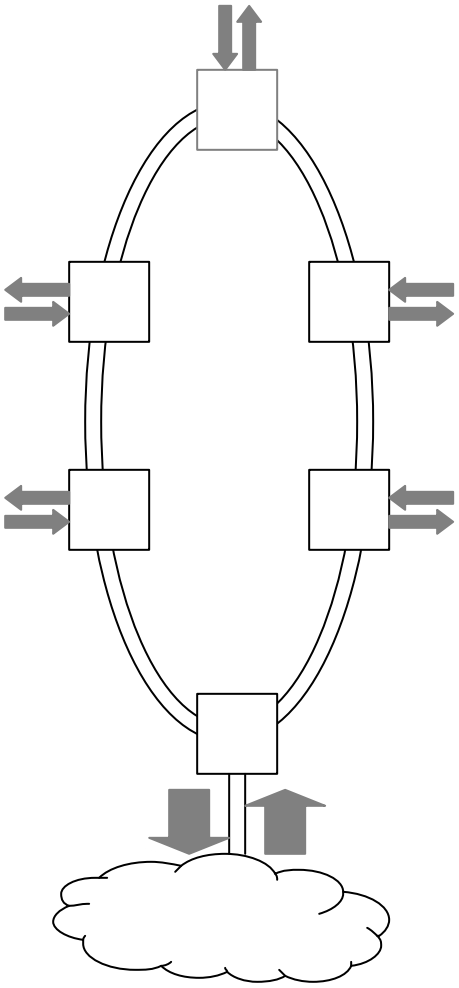
Director, Technology Strategy

Riverstone Networks

MAC Definition Challenges

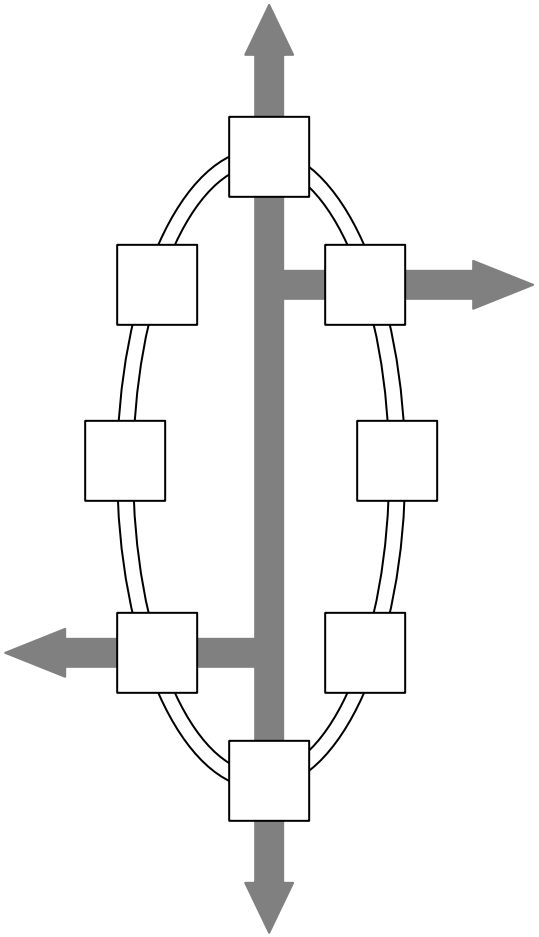
- Objective: keep RPR MAC simple
  - Finish the standard in “finite” time
  - Define a solution that is cost effective and implementable
  - Defer value-add features to upper layers whenever possible
- At the same time:
  - Support critical emerging applications
  - Deliver key MAC features to differentiate RPR against other competing MAN technologies

Fairness for Access Rings



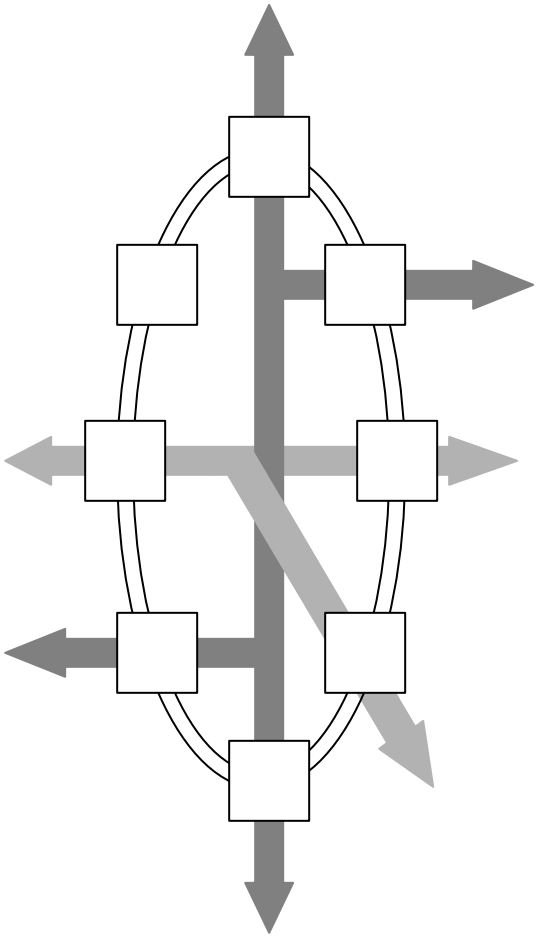
- Logical star topology (hub & spoke) is very common in access rings
- Most traffic originates from and terminates at the “hub” (uplink) node
- Allocating equal share of *Add* bandwidth for every node under congestion is not optimal in this configuration
- Weighted *Add* bandwidth allocation that favors the hub node is necessary
- Ability to provision relative weights for uneven distribution of *Add* bandwidth under congestion is desirable

Transparent LAN Services



- Transparent LAN services over Metro and WAN backbones is becoming a popular service
- Transparent LAN services is one problem RPR can solve better than Ethernet or MPLS for ring topologies
- Currently TLS is implemented over Ethernet backbones using VLANs
- Ethernet is NOT good at supporting ring topology or 50ms protection
- MPLS claims to be good at provisioning point to point protected paths across any topology
- MPLS not good at supporting multipoint TLS

Multiple Fairness Domains



- Problem: How to allocate bandwidth for each TLAN on the ring instead of allocating bandwidth per TLAN port
- Solution: Maintain multiple fairness domains over one physical ring
- One proposal:
  - run multiple instances of fairness algorithm per TLS instance
  - Can be implemented by keeping multiple contexts at the point where *Add* traffic is admission rate is calculated
- Need a tag to differentiate customers similar to VLAN tag
  - 802.1Q compatible tag field in RPR header