Mapping Disparate Service Models of RPR into a Single Standard

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Types of Equipment

- Different types of equipment have been presented to date which vary on
  - Service Provider
  - Service Delivered
  - Provisioning Method
  - Size of Service Area
- The following slides are not meant to be exhaustive
  - Some systems/scenarios may have been missed

SONET / SDH ADM

- Legacy TDM transport
- Packet Carriage with Multiple Classes
  - Delay / Jitter Sensitive
  - Best Effort
- TDM Provisioned point to point
- Packet carriage
  - Provisioned and
  - Unprovisioned / globally shared

Packet ADM

- No TDM Timeslots but Service Model is essentially the same as a TDM ADM
  - TDM encapsulated in packets
  - Packet data has multiple classes
- “TDM” & Committed Classes provisioned
  - delay and jitter sensitive
  - point to point
  - node based
- Packet both provisioned & shared

Switch / Router

- Packet Carriage with Multiple Services
  - VOIP & other Delay / Jitter sensitive services
  - Packet data with multiple classes
- Nodal / Global provisioning for Low Delay classes
  - No complexity of point to point provisioning
- Nodal fairness for other classes

Key Features

- Scalability in bit rate
  - SONET/SDH ADMs require an RPR MAC chip to support a wide range of bit rates
  - Data ADMs & Switch/Routers likely to be fixed bit rate at a particular cost point
- Scalability in number of nodes and distance
  - Regional (WAN), Metropolitan (MAN), Campus/Corporate (LAN), ISP POP (LAN)
- Resiliency to faults with restoration within 50ms
  - Exact mechanism hotly debated

The Other Big Issue

- Service Provisioning & BW Management
  - Wide range of views
    - [totally | partially | un] provisioned
    - [single | multiple] fairness domains
- This is a key box differentiator
- RPR MAC should provide basic service to the upper layer
  - Upper layer contains whatever complexity you think you can sell

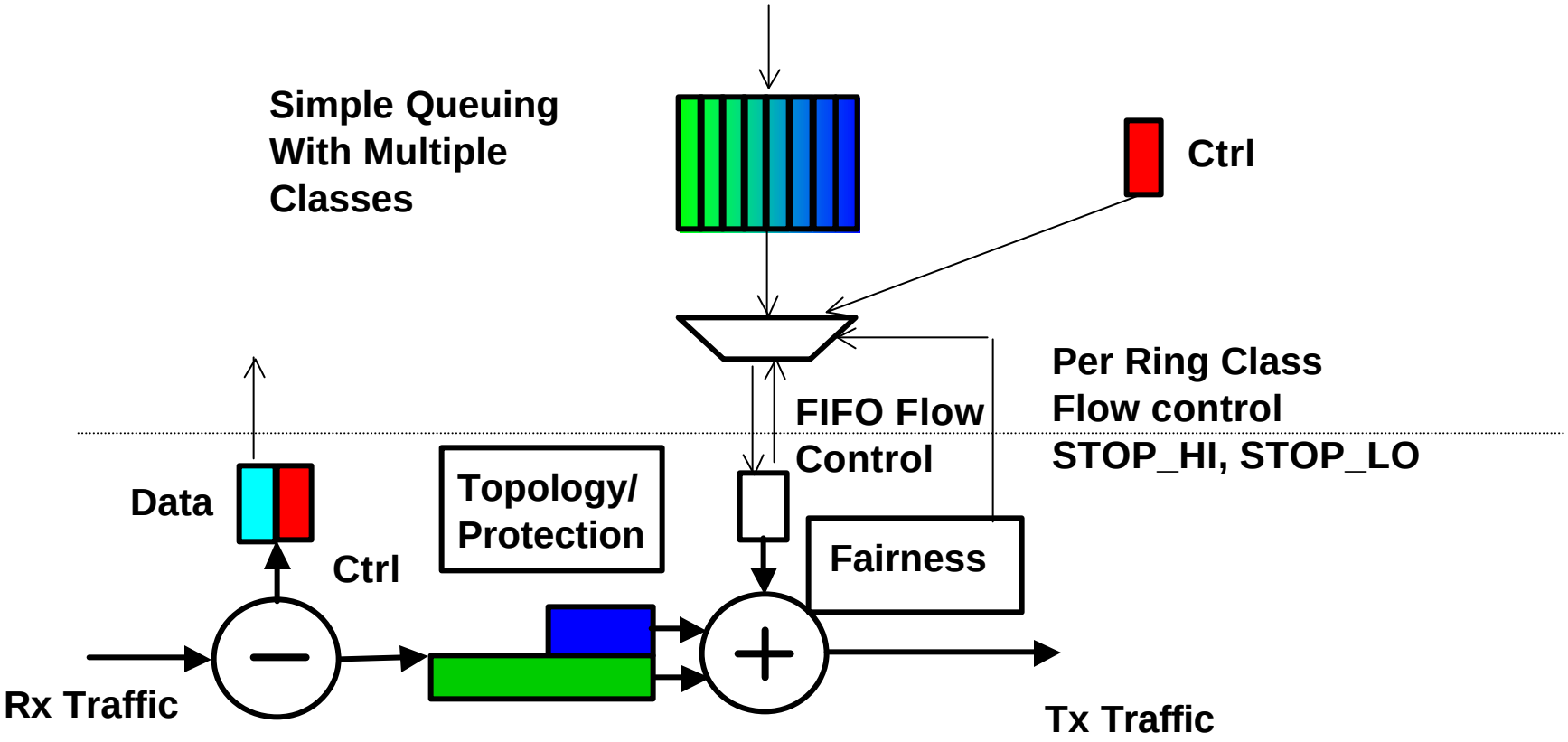
RPR MAC Basics

- Support for at least 2 ring priorities
  - Low latency / jitter which can be provisioned at each node (and summed globally)
    - Rate limiter in MAC guarantees compliance
  - Best Effort which is subject to a fairness algorithm
    - Algorithm + Rate limiter in MAC guarantee compliance
- Fairness Algorithm starts in fair mode (plug and play)
  - but can be provisioned into a scaled unfairness mode
- Flow control to the upper layer on a per priority basis
  - Upper layer can implement arbitrary number of classes, fairness domains
  - Allows upper layer to determine how much BW is used
  - Adjust its behavior accordingly

RPR MAC Basics

- MAC is payload agnostic, services built in upper layer
  - IP, MPLS, …
  - Customer Separation …
  - Transparent LANs
  - Carriage of TDM services

RPR MAC Model



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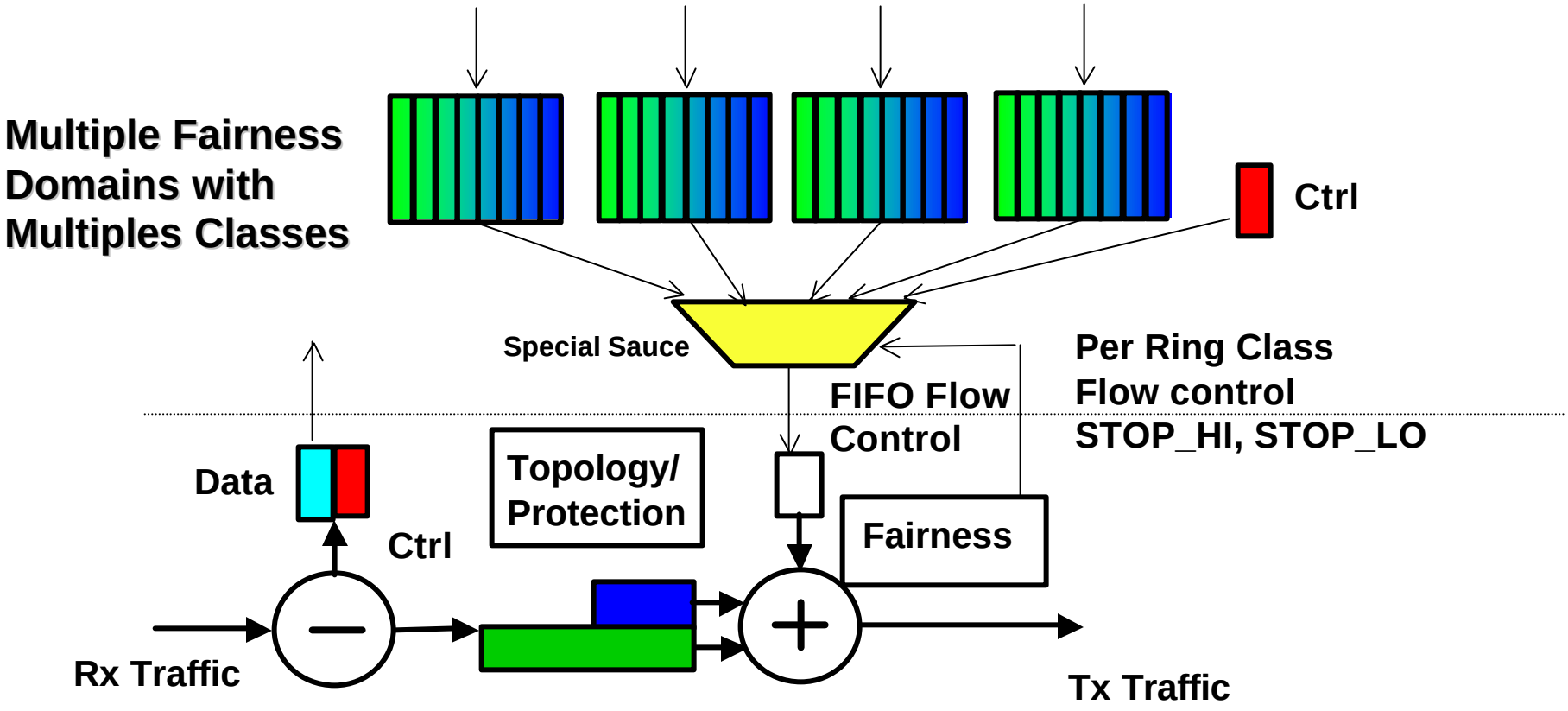

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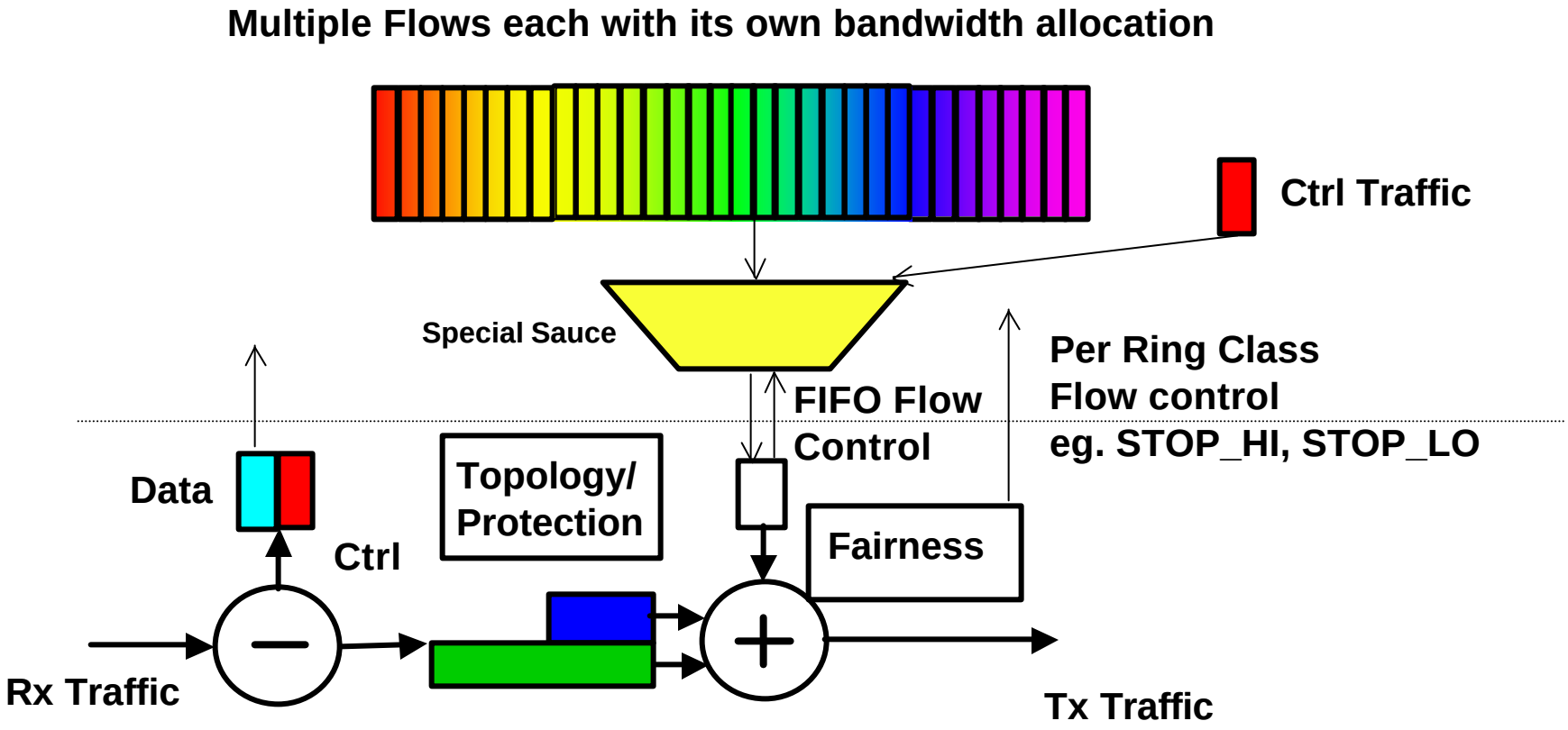

Conclusions

- 802.17 should ensure the MAC has the right basic set of features that allows

  interoperability

  vendors to implement their own product vision and compete

  customers to purchase the product that best suits their needs

  silicon providers to build standard silicon and then add additional features to differentiate