RPRWG Objectives

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802.3z Objectives

- 1. Speed of 1000 Mb/s at the MAC/PLS service interface
- 2. Use 802.3/Ethernet frame format
- 3. Meet 802 FR, with the possible exception of Hamming Distance
- 4. Simple forwarding between 1000, 100, 10
- 5. Preserve min and max FrameSize of current 802.3 Std
- 6. Full and Half Duplex operation
- 7. Support star-wired topologies
- 8. Use CSMA/CD access method w/ support for at least 1 repeater/collision domain
- 9. Support Fiber media and if possible copper media

802.3z Objectives

- 10. Use ANSI Fiber Channel FC-1 and FC-0 as basis for work
- 11. Provide a family of Physical Layer specifications which support a link distance of:
  - a. At least 25 m on copper (100 m preferred)
  - b. At least 500 on multimode fiber
  - c. At least 3 km on single mode fiber
- 12. Support maximum collision domain diameter of 200m
- 13. Support media selected from ISO/IEC 11801
- 14. Adopt flow control based on 802.3x
- 15. Include a specification for an optional Media Independent Interface

RPRWG Objectives

- Key to bullets on following slides
  - Normal text implies likely agreement
  - *Italicized underlined text implies likely disagreement*
  - *Italicized text implies somewhere in the middle*
  - **Bold text requires definition of term to insure agreement on objective.**

RPRWG Objectives

- 1) Dual Counter Rotating Ring network with
  - Media agnostic MAC capable of supporting speeds ranging from 1 to multiple Gb/s
  - spatial reuse & multi-cast support
  - mechanism to insure packets do not circulate forever
  - **plug and play (no provisioning for basic operation)**
  - *same media (link speed) on a single RPR ring*
  - *no packet loss on ring except during protection events*
  - **Inter-operability** to the level of allowing boxes from different vendors on the same ring
  - ***Masterless ring***

RPRWG Objectives

- 2) New frame format that can efficiently transport packets
  - simple mapping for 802.3 frames into 802.17 frames
    - GFP <-> to RPR?
  - *extensions to support enhanced VLANs (virtual private line)*
  - mechanism to insure packets do not circulate forever
  - support for a header field that supports differentiated services
  - *What kind of payloads do we want to carry on 802.17*
    - **MAC is Payload agnostic**
      - *Does not preclude TDM services / circuit emulation*

RPRWG Objectives

- 3) Define mapping of MAC frame into existing PHY layers
  - OC-48c/STM-16, OC-192c/STM-64 SONET/SDH
  - 1 Gb/s Ethernet PHY
  - 10 Gb/s Ethernet (LAN and/or WAN) PHY
  - *and not preclude the lower rates (HarryPeng-SONET)*
  - *and not to preclude higher rates*
  - *clocking and synchronization*

RPRWG Objectives

- 4) Define a protection scheme that recovers from node or facility failures in under 50ms
  - *minimize packet loss beyond fault recovery time*
  - *wrapping vs steering*
  - *design of protection and topology messaging protocols*
- 5) Support both Layer 2 and Layer 3 networks
  - support 802.1D/Q
  - expose certain features / functions to upper layer

RPRWG Objectives

- 6) Class of service support
  - *on the ring*
  - *ingress to the ring*
  - *egress from the ring*
- 7) *Support packet size up to 9K bytes*
- 8) *Address OAMP requirements*

RPRWG Major Decisions

- MAC Features
  - *Cut through vs Store and Forward*
  - *Packet Loss on Ring*
  - *Transit Buffer Design / Size*
  - *Bandwidth Management Mechanism*
    - *Fairness vs Weighted Fairness*
  - *Transit traffic priority support*
  - *Transmit traffic priority support*
  - *Receive traffic priority support*
  - *Congestion Control*