Proposal For Protection Algorithm

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Goals

- Scalable from 1 to 100's of stations
- Quick dissemination of loss of connectivity information on the ring
- Tolerance of message loss
- Operation without any master station on the ring
- Operation independent of and in the absence of any management systems
- Operation with dynamic addition and removal of stations to/from the ring
- Minimal overhead

Overview

- Each station knows of a ring segment failure and steers ring traffic away from the failure within 50ms of the failure
- Ring protection is initiated by all stations that become directly aware of a failure
- Reuses information from Status_Change messages sent as part of the RPR Protection Protocol

Triggers

- Protection is triggered by reception of a STATUS_CHANGE message indicating a downed link

Unicast Protection

- If sourcing station can reach intended destination through normal route, then use normal route
- Otherwise, if packet is protected and it can reach intended destination through alternate route, then use protection route

Multicast Protection, 1

- No optimization
  - Each packet is multicast in both directions with TTL = Max_Ring_Size

Multicast Protection, 2

- Partial optimization
  - If sourcing station can reach farthest destination through normal route, then use normal route
  - If packet is protected and it can reach farthest destination through alternate route, then use protection route
  - Otherwise, use both routes (both ringlets)
  - In all cases, TTL = Max_Ring_Size

Multicast Protection, 3

- Full Optimization
  - Same as partial optimization except that TTL = distance of the farthest station for the packet for each ringlet