

# Work items addressed

- **SAS ringlet selection (w.r.t. maintaining frame order)**
- **Pruning of SDB entries on topology change (versus Emptying SDB)**



# SAS ringlet selection requirements and objectives

- **Requirement: SAS shall not cause packet reordering/duplication of strict-order frames on transition between directed and undirected modes.**
- **Requirement: SAS shall not cause packet reordering/duplication of relaxed-order frames on transition between directed and undirected modes except during periods of topology change when some reordering is tolerated.**
- **Objective: History need not be maintained**
  - Prior transitions
  - Prior ringlet selection choice
  - Prior topology changes
- **Objective: Minimize or eliminate FLUSH**



# Ringlet Selection Method

- Directed frames shall be sent via the ringlet on which the frame would have been received by the destination station had the frame been undirected.
- And one of the following conditions is true:
  - The cleave point does not change unless there is a change in ring topology.
  - The cleave point may change independent of topology but the station provides a method (eg. FLUSH) to avoid disorder.
- ***Note: In relaxed mode, is there currently a requirement that cleave point not change (except as a result of topology change) in order to prevent 'excessive' reorder?***



# Open ring scenarios

## ■ Steered open ring

- Per Specification – for a open steered ring, the cleave point is the point at which the protection event exists
- When the ring closes, SDB is flushed and cleave point is recomputed
- While the ring is open, the rules above will avoid packet reordering/duplication

## ■ Wrapped open ring

- Needs to be further studied



# Motivation for SDB Pruning

- **Change in RPR topology or protection need not imply a change in SDB associations**
  - Most of the times this will be due to - Station being added, removed, stations entering and exiting pass-through, fiber cuts, SPAN maintenance (FORCED/MAN switches) etc.
  - All of these do not affect the SDB association
- **It does imply change in ringlet/cleave point selection**
- **Extra Overhead =  $(PL * NumClientStations * 8)$  Bits over a period of time (as entries are relearned)**



# Pruning Method

- Use the RPR topology database to determine which RPR stations are reachable
- Mark SDB entries associated with only reachable RPR MAC addresses as valid



## Downsides

- **Requires looking up SDB by RPR MAC or by Customer MAC**
  - May not be suited for existing silicon solutions/vendors
- **Emptying the database coincides closely with 802.1D/Q**
  - This is an advantage if the objective is align SDB with 802.1D/Q Specifications
- **Emptying the entire SDB may be necessary for Support for Multicast and Secondary MAC**
  - Depends on the results of other Action Items

