Work items addressed

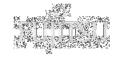
- SAS ringlet selection (w.r.t. maintaining frame order)
- Pruning of SDB entries on topology change (versus Emptying SDB)





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 misorder.
- 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?



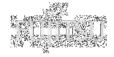
Open ring scenarios

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

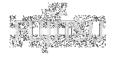
■ Wrapped open ring

Needs to be further studied



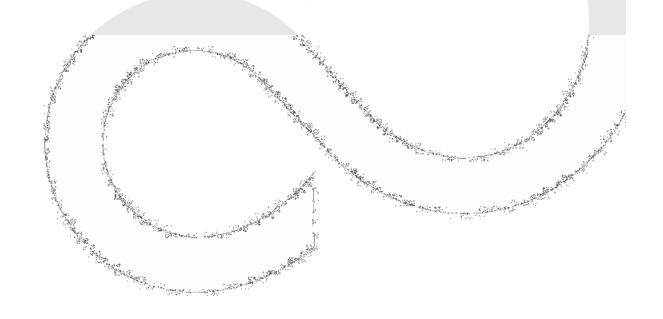
Motivation for SDB Pruning

- 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 <u>may</u> be necessary for Support for Multicast and Secondary MAC
 - Depends on the results of other Action Items

