802.1 TSN Tasks

- Defined main tasks for Rev2

Task	Functionality	PAR
Timing Protocol	Timing and Synchronization: Enhancements and Performance Improvements	802.1ASbt
Flow Management	Path Control and Reservation	802.1Qca
	Frame Replication and Elimination for Reliability	802.1Qcb
Traffic Shaping	Enhancements for Scheduled Traffic	802.1Qbv
	Frame Preemption	802.1Qbu

Timing Protocol - 1

- Define a Model for 802.1AS / IS-IS:
  - End (E) & Bridge (B) Devices
    - E_C Master Clock capable devices
    - E_1 are 802.1AS Rev 1 complaint devices
    - B_1 are 802.1AS Rev 1 compliant bridges
    - B are IS-IS capable bridges
    - B_C are bridge with Master Clock capabilities
    - B_C are composed of 2 entities: E_C + B

IEEE 802.1 TSN , Jan 2013
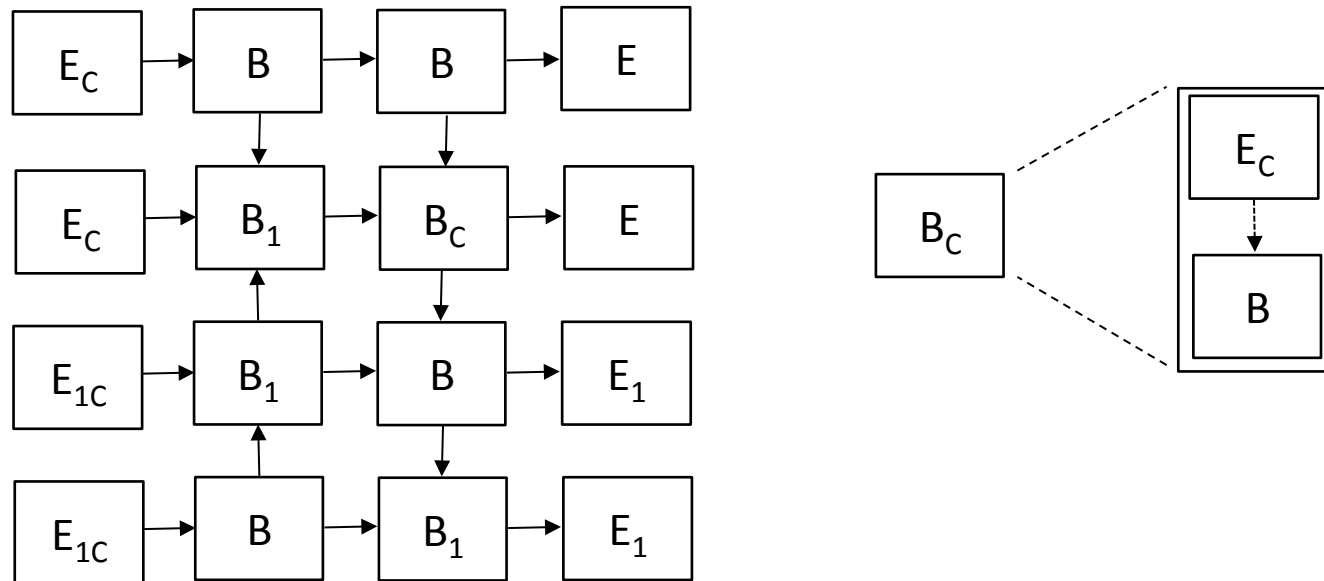
Timing Protocol - 2

- Define the functional behavior for each entity and port

| Port	Advertise Msg	Link Delay	BMCA	Sync Msg
$E_C \rightarrow B$				
$E_C \rightarrow B_1$				
$E_{1C} \rightarrow B$				
$E_{1C} \rightarrow B_1$				
$B \rightarrow B$				
$B \rightarrow B_1$				
$B_1 \rightarrow B$				
$B_1 \rightarrow B_1$				
$B \rightarrow E$				
$B \rightarrow E_1$				
$B_1 \rightarrow E$				
$B_1 \rightarrow E_1$				

Timing Protocol - 2

- Define the functional behavior for each entity and port

- Example:

Port	Advertise Msg	Link Delay	BMCA	Sync Msg
$E_{1c} \rightarrow B$	▪ E_c send Advertise Msgs ▪ I incorporates clock information in its IS-IS DB	▪ Pdelay/Resp Protocol	▪ E_c performs BMCA to determine the BMC (and Backup BMC)	▪ E_c could send Sync Msgs if BMC (or Backup BMC) ▪ I adds source ID to Sync Msgs if missing in the Msg
$B \rightarrow B$	Clock information is part of the IS-IS LSRs	▪ Pdelay/Resp Protocol		▪ Propagates Sync Mgs
$B \rightarrow E_1$	▪ I generates Advertise Msgs to E, build from its IS-IS DB cloc k information	▪ Pdelay/Resp Protocol	▪ E performs BMCA to determine the BMC (and Backup BMC)	▪ E notifies of received Sync with a source ID different of the BMC (and Backup BMC)

Stream Management - 1

- Define a Model for MSRP / IS-IS:
  - Talker (T), Bridge (B) & Listener (L) Devices
    - T & L devices could be MSRP Rev1 compliant devices
    - B_1 bridges are MSRP Rev1 compliant bridges
   - B bridges are IS-IS capable bridges
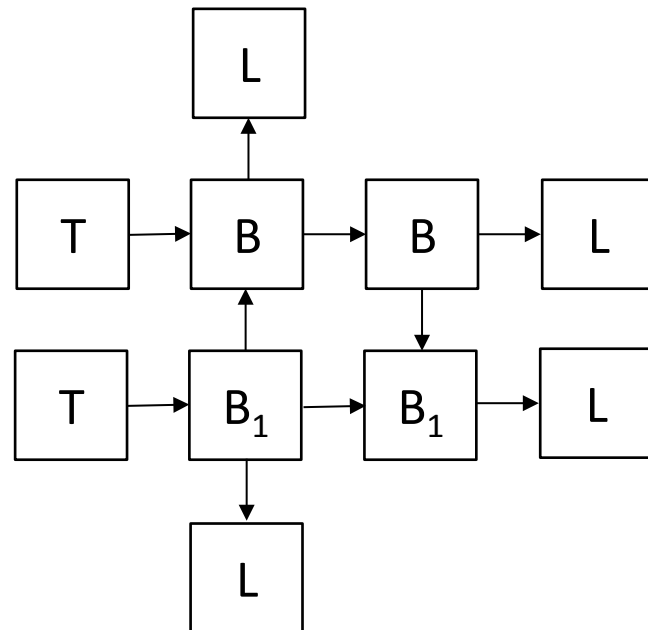
Stream Management - 2

- Define the functional behavior for each entity and port

Port	MAD Join (new)	MAD Join	MAD Leave	MAD Leave All
$T \rightarrow B_1$				
$T \rightarrow B$				
$B_1 \rightarrow B_1$				
$B_1 \rightarrow B$				
$B \rightarrow B_1$				
$B \rightarrow B$				
$B_1 \rightarrow L$				
$B \rightarrow L$				

Traffic Shaping- 1

- Define a Model for Traffic Shapers:
  - Talker (T), Bridge (B) & Listener (L) Devices
    - T devices could be Credit Base Shaper Rev1 compliant devices
    - B_1 bridges are Credit Base Shaper Rev1 compliant bridges
    - B bridges are IS-IS capable bridges
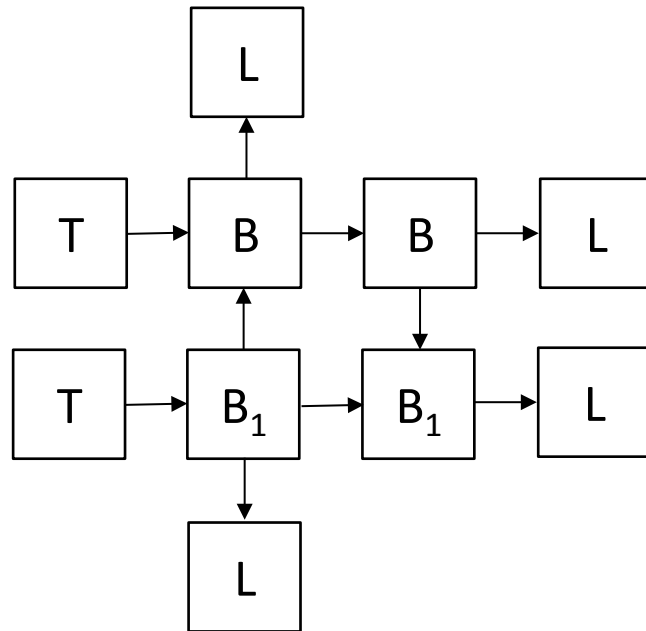
Traffic Shaping - 2

- Define the functional behavior for each entity and port

Port				
$T \rightarrow B_1$				
$T \rightarrow B$				
$B_1 \rightarrow B_1$				
$B_1 \rightarrow B$				
$B \rightarrow B_1$				
$B \rightarrow B$				
$B_1 \rightarrow L$				
$B \rightarrow L$				