

# Discussion on Maintenance Comment 201 & 202

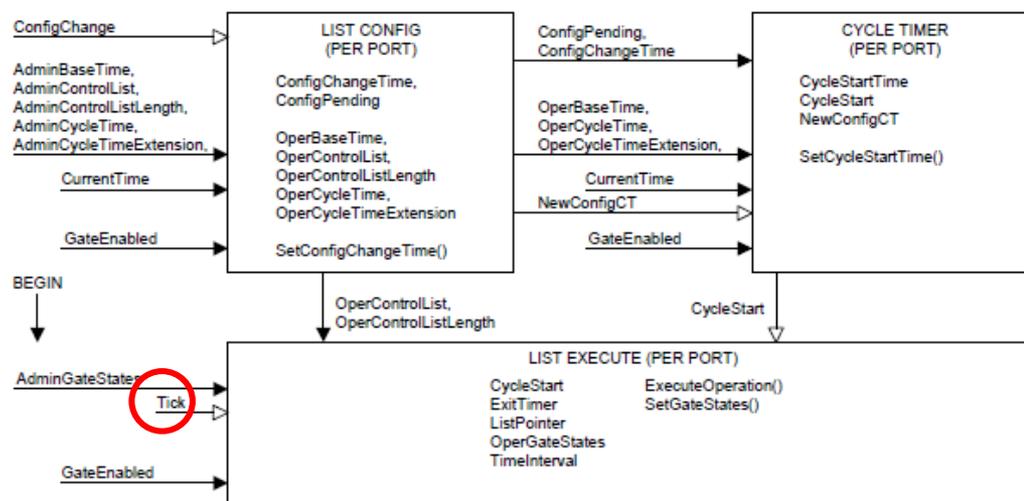
(<https://www.802-1.org/items/318> & 317)

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# Comment 201 : 802.1Qbv Tick granularity

- Tick input List execute FSM as time\_unit signal;



- Tickgranularity is the absolute time length for one tick;

Table 12-28—The Gate Parameter Table

TickGranularity	Integer (tenths of nanoseconds)	R	BE	8.6.9.4.16
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Tick granularity is used to compute  $\text{timeInterval}/\text{adminCycleTime}$  length and set TAS time gate accordingly.

# Comment 201: Tick granularity

- MII Interface for 1GE/10GE/25GE MAC.

	1GE	10GE	25GE	400GE
Data path width@MII	8b	32b	64b	64b
Data path interface clocking (bit_time*bus_width)	8ns	3.2ns	2.56ns	0.16ns
MII TX_CLK	125Mhz	156.25Mhz	390.625 MHz	6250Mhz

- Interface clocking is a logic unit time, not implementation specific; (not friendly to FPGA)
- Tick granularity is the time basis of TAS scheduling port.
  - timeInterval is computed by number of ticks?! → [Discuss](#)

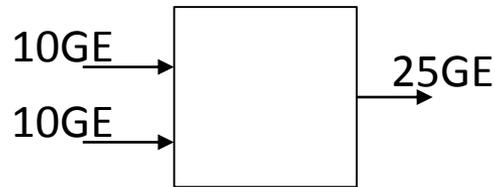
Table 8-6—Gate operations

Operation name	Parameter(s)	Action
SetGateStates	GateState, TimeInterval	The <i>GateState</i> parameter indicates a value, <i>open</i> or <i>closed</i> , for each of the Port's queues. The gates are immediately set to the states indicated in the <i>GateState</i> parameter. This causes gate-close events (3.1) and/or gate-open events (3.2) to occur for any queue where the new <i>GateState</i> represents a change of state relative to the current state of the gate. <u>After <i>TimeInterval</i> ticks (8.6.9.4.16)</u> has elapsed since the completion of the previous gate operation in the gate control list, control passes to the next gate operation.

- Commenter suggests to couple tick granularity with MII interface clocking
  - For better alignment between time gating with physical data clocking.

# Use Case with Different Tick Granularity

- Use case 1: aggregate flows from multiple port to one



- Tick granularity is only valid on egress port;
- Make TAS schedule for flow 1 & 2 according to TSpec

- Use case 2: schedule one flow over multiple device w/ different port rate



- Tick granularity are different on each device;
- Make TAS schedule on each egress port according to TSpec

No need to care common tick granularity for multiple port rate, and TAS schedule is based on PTP timing. It is not necessary to align with MII clocking.

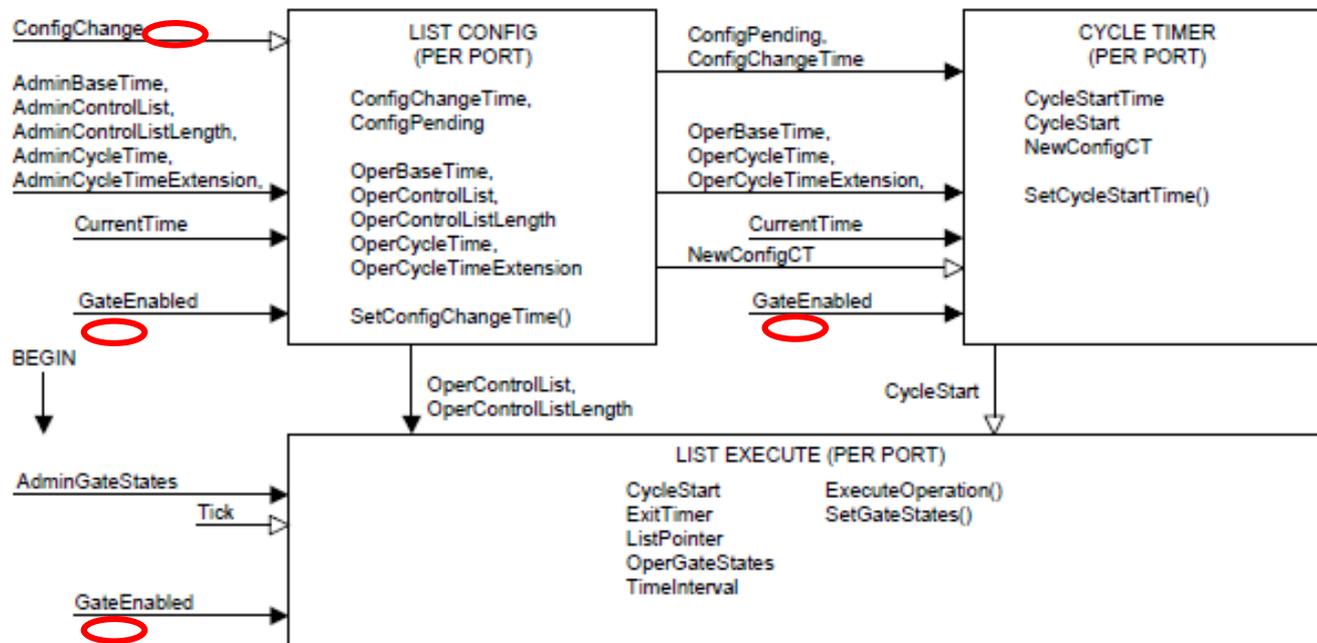
# Comment 201 Discuss

- Tick granularity is the capability of physical port, declaring minimal allocable time unit to the scheduling computation function block.
- Currently minimal allocable time/bandwidth unit is expressed by 0.1ns, which varies with port rate, from 1bit(GE) to 40bit(400GE).
- Shall we change minimal allocable time window from 0.1ns to 1e-x?
  - To make it align with physical MII interface clocking

# Comment 202:

## Qbv ConfigChangeError counter incremented incorrectly

- GateEnable signal input to all three Qbv FSMs;



# ConfigError Counter

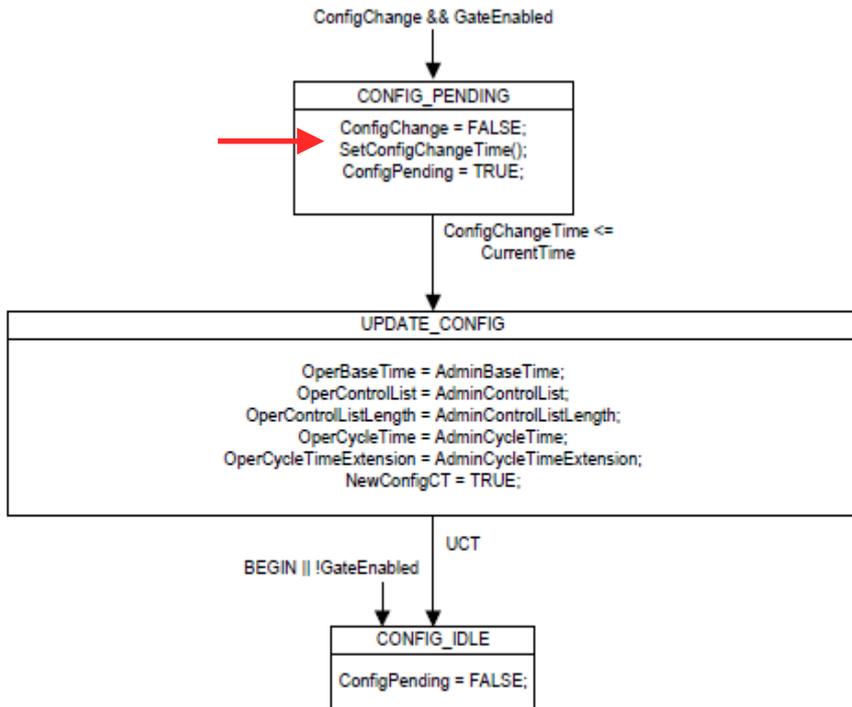


Figure 8-16—List Config state machine

- a) If:
  - AdminBaseTime  $\geq$  CurrentTime (8.6.9.4.10)
  - (i.e., AdminBaseTime specifies the current time or a future time)
  - Then:
    - ConfigChangeTime = AdminBaseTime
- b) If:
  - (AdminBaseTime  $<$  CurrentTime) and (GateEnabled = FALSE)
  - (i.e., AdminBaseTime specifies a time in the past, and the current schedule is stopped)
  - Then:
    - ConfigChangeTime = (AdminBaseTime + N\*AdminCycleTime)
    - where N is the smallest integer for which the relation
    - ConfigChangeTime  $\geq$  CurrentTime
    - would be TRUE.
- c) If:
  - (AdminBaseTime  $<$  CurrentTime) and (GateEnabled = TRUE)
  - (i.e., AdminBaseTime specifies a time in the past, and the current schedule is running)
  - Then:
    - Increment ConfigChangeError counter (12.29.1)
    - ConfigChangeTime = (AdminBaseTime + N\*AdminCycleTime)
    - where N is the smallest integer for which the relation
    - ConfigChangeTime  $\geq$  CurrentTime
    - would be TRUE.

- DISCUSS:

- This erroneous scenario happens only when changing configuration during runtime and AdminBaseTime is mistakenly set.
- Correct procedure for runtime reconfiguration to set Admin variables first and then activate ConfigChange trigger.
  - Ensure admin variables are set correctly to avoid configError warnings.

Thank you

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