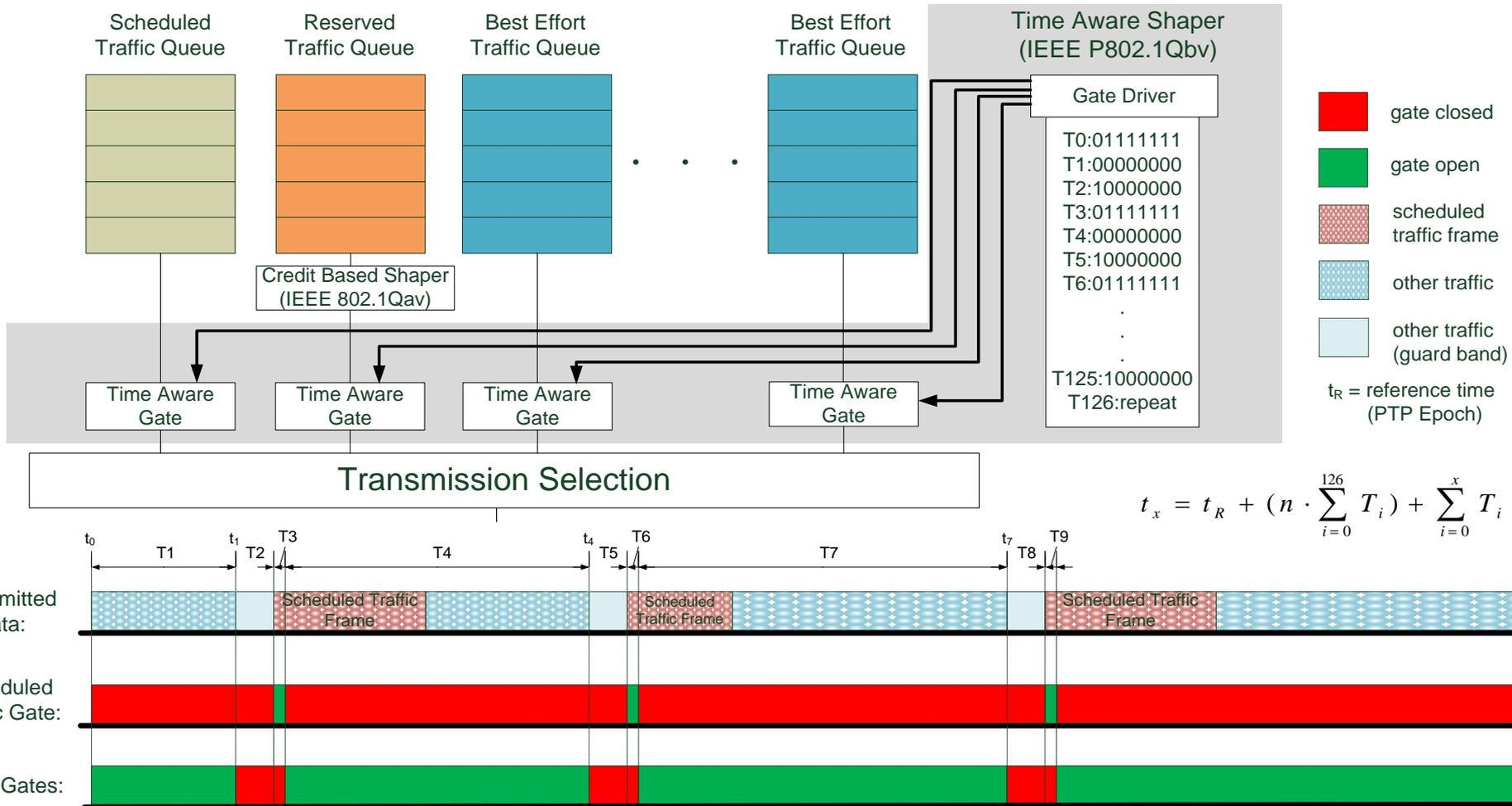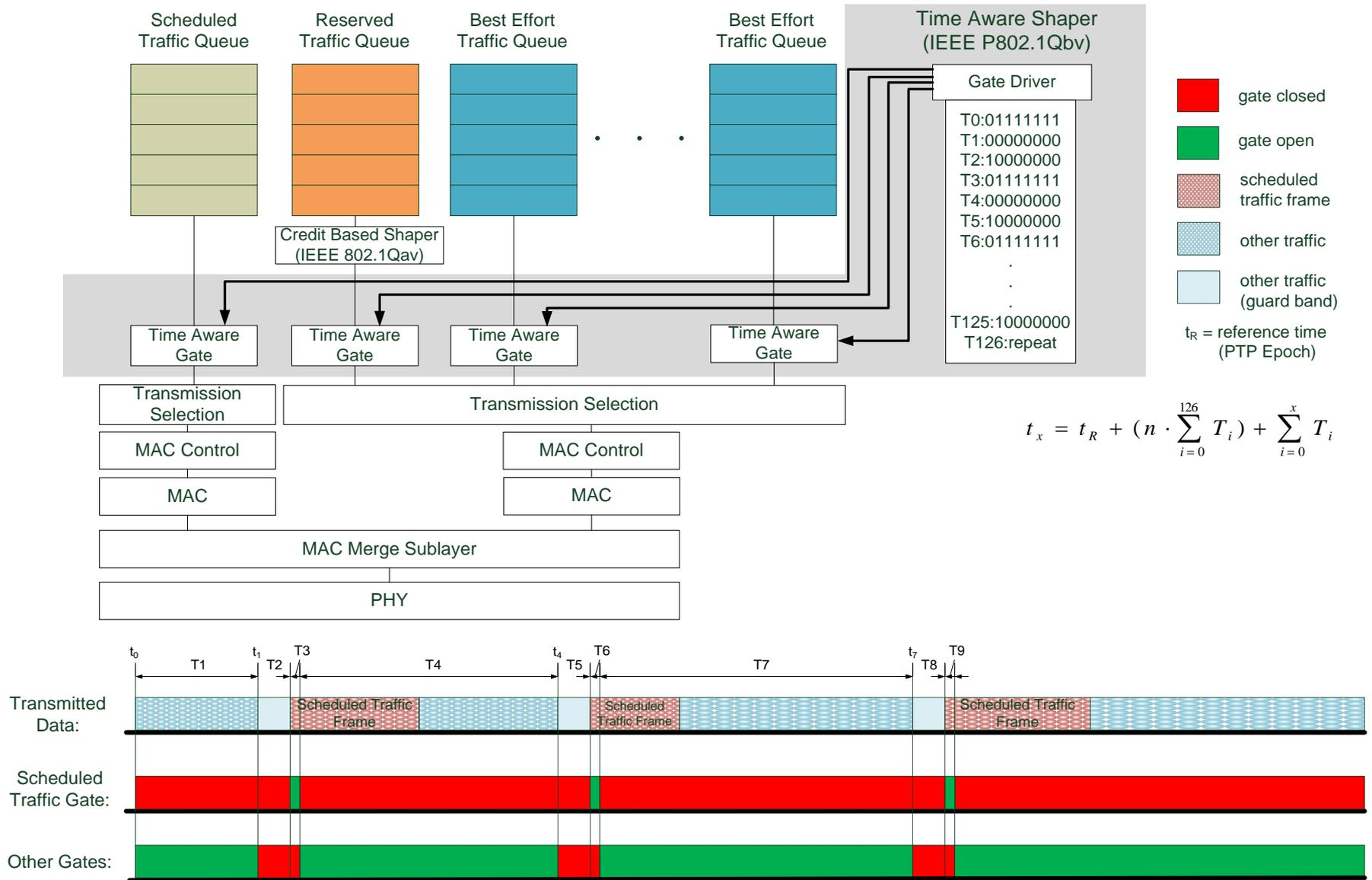# Time Aware Shaper in combination with DMLT

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Time Aware Shaper

Time Aware Shaper with DMLT

Example (1)

scheduled traffic frame
gate closed
other traffic
gate open
other traffic (guard band)

Transmitted Data:

Scheduled Traffic Frame #1 | Scheduled Traffic Frame #2 | Scheduled Traffic Frame #3 | Scheduled Traffic Frame #4

Scheduled Traffic Gate:

Other Gates:
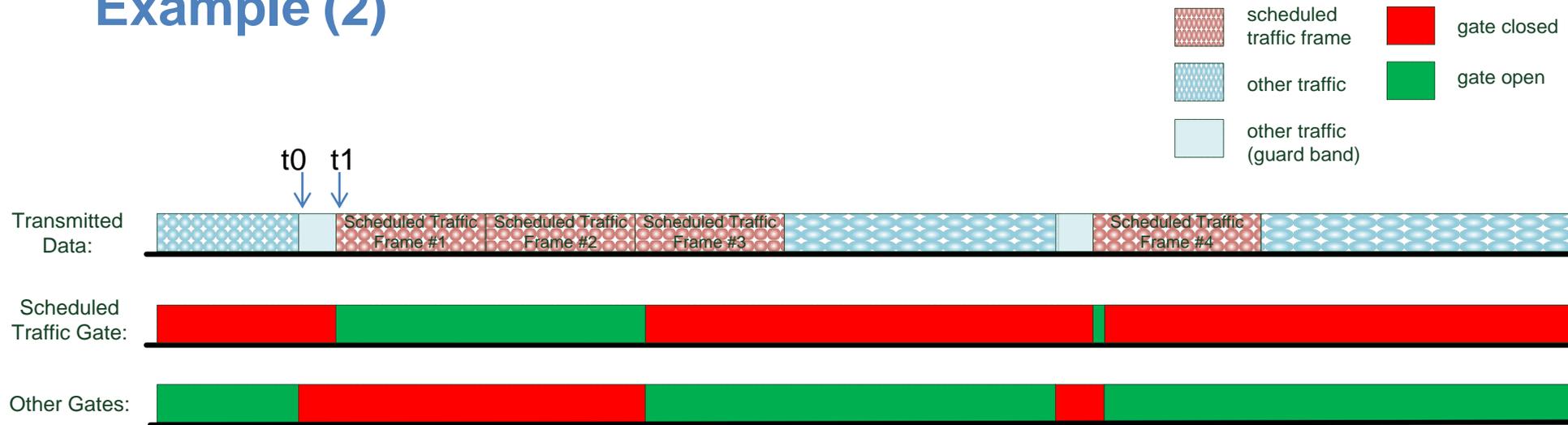
Example:

- Three streams (frames) are scheduled for transmission in the first transmission window one stream (frame) is scheduled in the second one

- What are the impacts on DMLT in order to minimize the guard band in front of the two scheduled transmission windows?
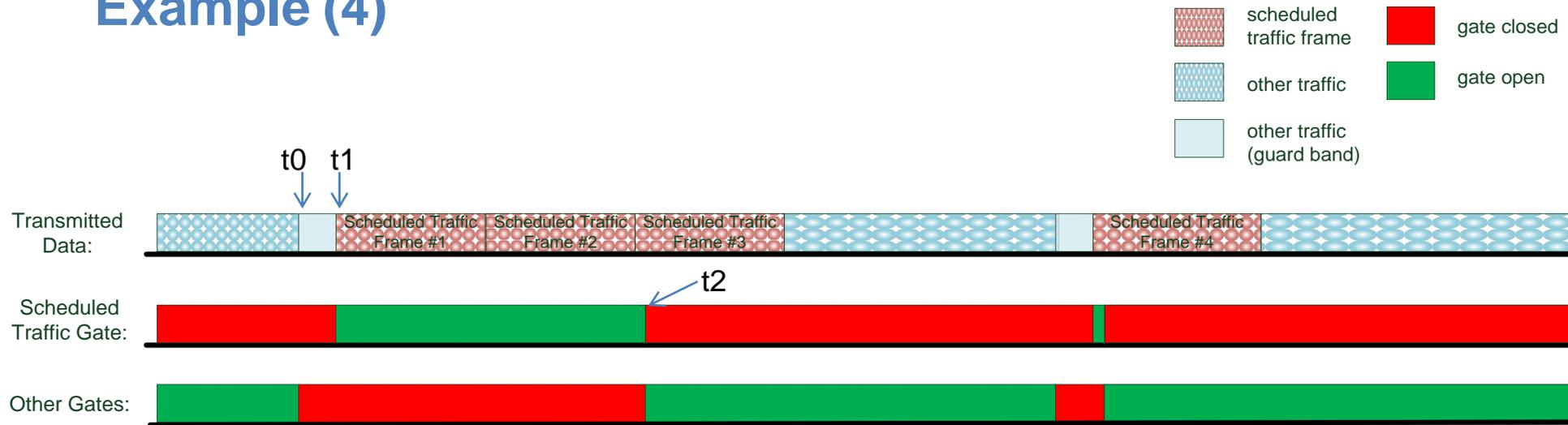
Example (2)

- At t1 the port needs to be idle

- DMLT needs to be initiated before t1 (i.e. at t0)

- The time interval t1-t0 is the guard band

- The guard band is defined by the maximum frame size which can interfere with Scheduled Traffic (without DMLT a maximum 802.3 frame)

Example (3)

scheduled traffic frame

other traffic

other traffic (guard band)

gate closed

gate open
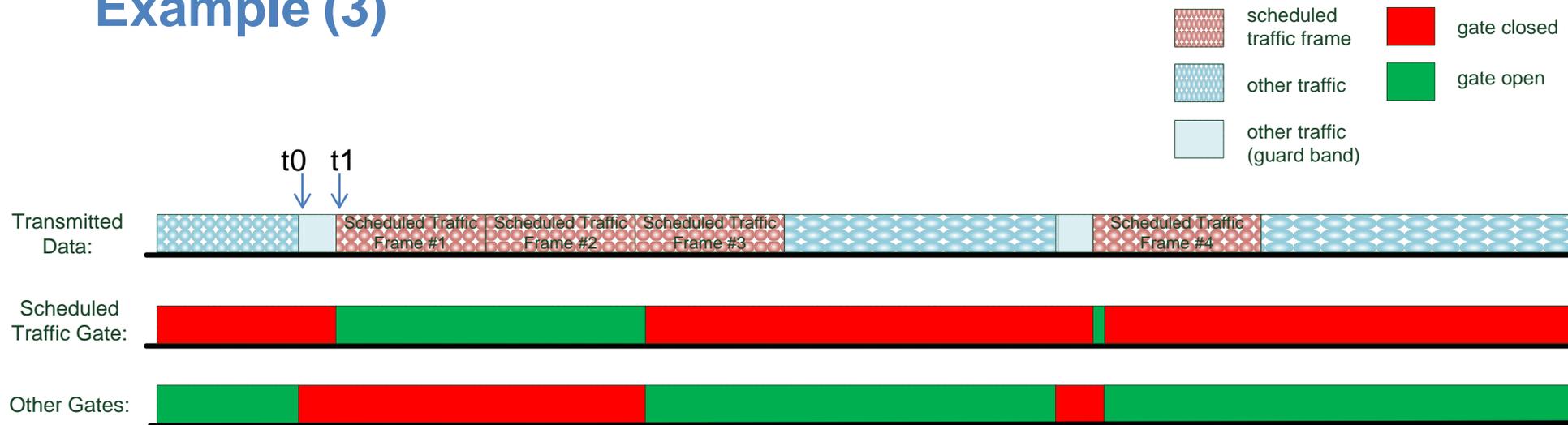
- At t0 the Time Aware Shaper needs to signal the MAC Merge Sublayer to initiate preemption

- This cannot be signaled by sending a frame to the higher priority MAC, as there might be no frame in the Scheduled Traffic queue at this point in time

- In addition the Scheduled Traffic queue is still disconnected from the transmission selection, i.e. even if there is a frame, it is not visible to the transmission selection

Example (4)

scheduled traffic frame   gate closed

other traffic   gate open

other traffic (guard band)

t0 t1

Transmitted Data:

Scheduled Traffic Frame #1 | Scheduled Traffic Frame #2 | Scheduled Traffic Frame #3 | Scheduled Traffic Frame #4
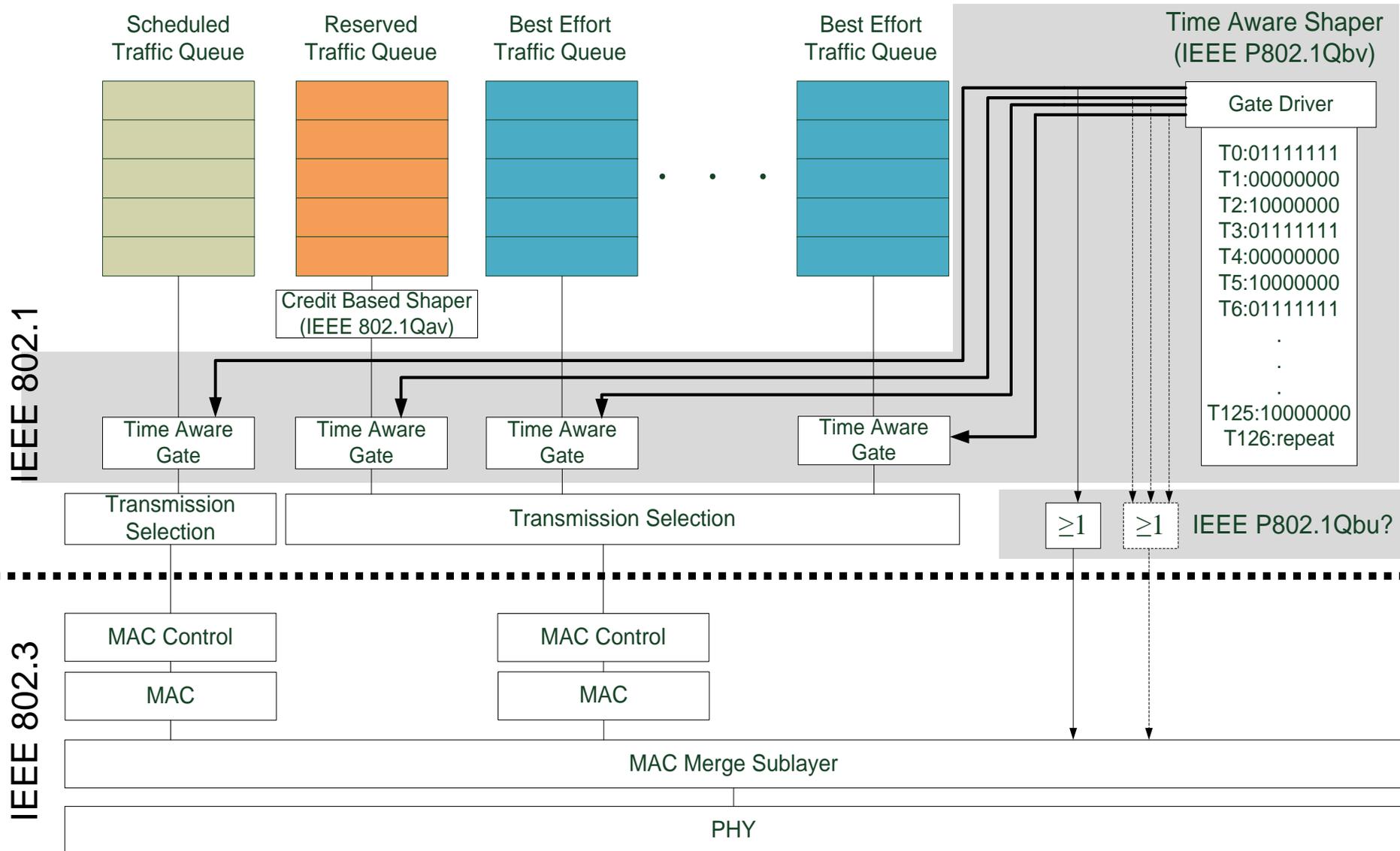
t2

Scheduled Traffic Gate:

Other Gates:

- At t1 the Time Aware Shaper connects the Scheduled Traffic queue to transmission selection and the first ST frame is sent to the higher priority MAC

- Between t1 and t2 the MAC Merge Sublayer is not allowed to resume the transmission of the lower priority traffic, even if there is no frame to transmit from the higher priority MAC. I.e. if the second ST frame in this example is missing, the port needs to stay idle till t2.

Example (5)
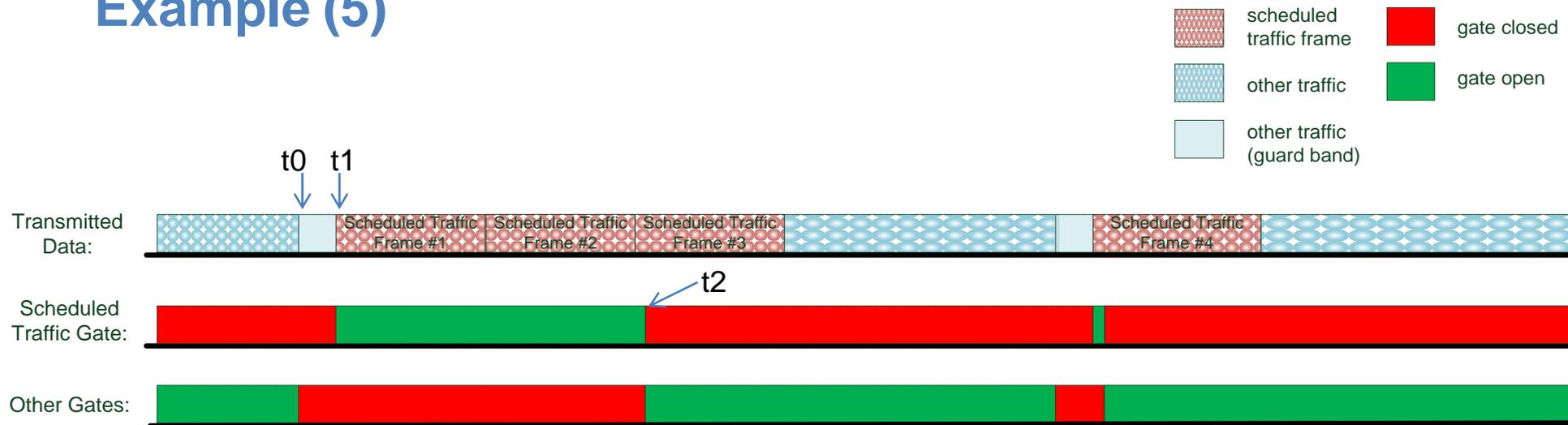
- At t2 the MAC Merge Sublayer is allowed to resume the transmission of frames/framelets from the lower priority MAC.

Time Aware Shaper with DMLT

Thank You