

Text Contribution for P802.1Qdq

12 July 2023

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Overview

- As a response to the comment of the past TG ballot, we propose new text about shaper parameter settings for “Enhancements for scheduled traffic” (Qbv, mainly described in 8.6.8.4 and 8.6.9).
- The new text consists of two new subclause as below.
 - Calculation of latency (X.3.5)
 - Settings as a shaper (X.4.5)

Enhancements for scheduled traffic

- “Enhancements for scheduled traffic” is described in 8.6.8.4 and works as a shaper by installing a gate control list crafted for this purpose.

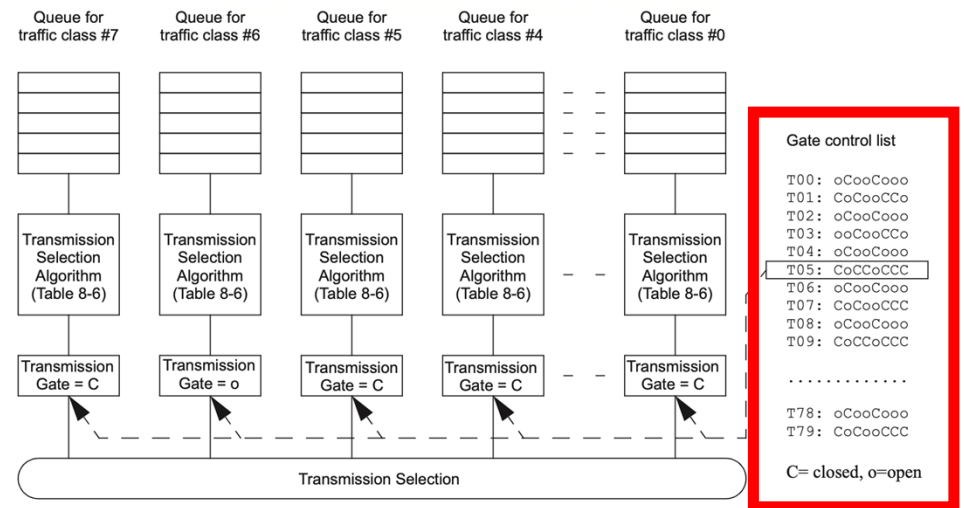
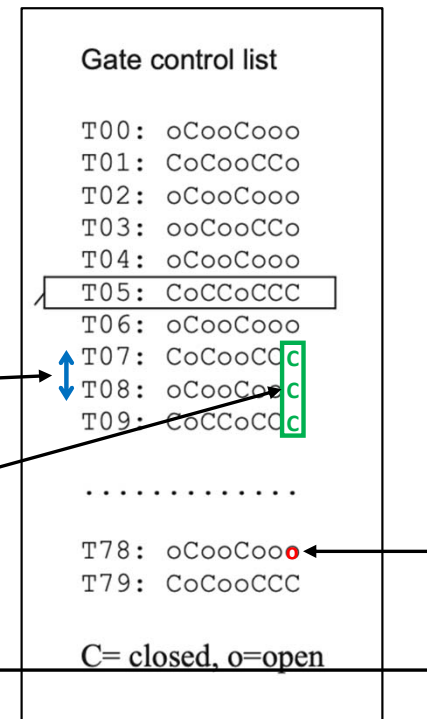


Figure 8-16—Transmission selection with gates

Gate control list

- The following parameters are related to this topic.
 - OperCycleTime (8.6.9.4.19)
 - [a rational number of second]
 - OperControlListLength (8.6.9.4.22)
 - [integer]
 - TimeInterval (8.6.9.4.23)
 - [an integer number of nanoseconds]
 - MaximumLengthOfConsecutiveClose
 - [integer]
 - **NumOfOpen**
 - [integer]



Port information

- portTransmitRate
 - [bits per seconds]
 - The parameter which has the same name is defined in 8.6.8.2, which describes Credit-based shaper algorithm. Therefore, we redefine this parameter in this annex while the definitions are the same.

Add X.3.5 for latency calculation

We propose to add the following clause as X.3.5:

X.3.5 Enhancements for scheduled traffic

Enhancements for scheduled traffic (8.6.8.4) uses gates to stop sending out frames. Therefore, in case that this method is used, latency from Talker to Listener should increase by the maximum time while the gate consecutively closes. Note that TimeInterval (8.6.9.4.23) is larger than the time while the whole of a frame is sent out.

Note: the maximum time while the gate consecutively closes can be calculated as TimeInterval multiplied by MaximumLengthOfConsecutiveClose.

Add X.4.5 for shaper settings

We propose to add the following clause as X.4.5:

X.4.5 Use of enhancements for scheduled traffic

Enhancements for scheduled traffic mechanism works as the intended shaper by configuring its gate control list in which the number of “Open” equals to NumOfOpen derived by the following equation:

$$\text{NumOfOpen} = \left[\frac{\max_i n_i}{\left\lfloor \frac{\text{TimeInterval} \times \text{portTransmitRate}}{8 \times \max_{i,k} F_{i,k}} \right\rfloor} \times \left\lfloor \frac{L_{\text{bounded}}}{\text{OperCycleTime}} - 1 \right\rfloor \right]$$

Anatomy of the equation

The maximum number of fragmented frames of BlockData

$$\left\lceil \frac{\max_i n_i}{\left\lfloor \frac{\text{TimeInterval} \times \text{portTransmitRate}}{8 \times \max_{i,k} F_{i,k}} \right\rfloor} \times \left\lfloor \frac{L_{\text{bounded}}}{\text{OperCycleTime}} - 1 \right\rfloor \right\rceil$$

The minimum number of frames sent out within a TimeInterval

The number of cycles within the bounded latency

Conclusion

- To use “Enhancements for scheduled traffic” (Qbv) as a shaper for bursty traffic requiring bounded latency, we propose to add X.3.5 and X.4.5.