

IEC/IEEE 60802  
End Station buffer model  
Re: CR of #391

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# Requirements

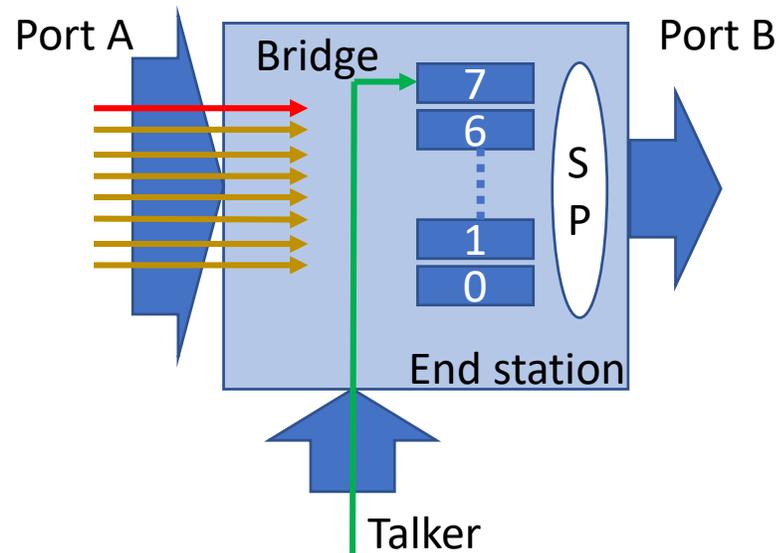
- Qbv and non-Qbv applications exist
  - For Qbv see next slide
  - Requirements below are non-Qbv focused
- Streams
  - Up to 7 stream classes + 1 non-stream class
  - Down to 1 stream class + up to 7 non-stream classes
  - Anything in between
  - Zero congestion loss for streams
- Bridge
  - N bridge ports
- Bridged end-station
  - N bridge ports
  - 1 port for end station with Talkers / Listeners
- "Any speed"
  - Although applicable to all speeds, focus in this presentation on 1G
- Traffic for non-Qbv implementations
  - 200 us window for all streams traffic
  - Buffering of non-stream traffic during stream traffic

# Qbv

- Qbv has the potential to reduce the buffering for zero congestion loss streams
- Buffering requirement for non-streams is about the same as the blocking caused by streams
- However, my guess is that most implementations will want to cover both Qbv and non-Qbv applications. Hence, buffering requirement is set by the non-Qbv applications, see following slides.

# End-station, 2-port + T (N=2)

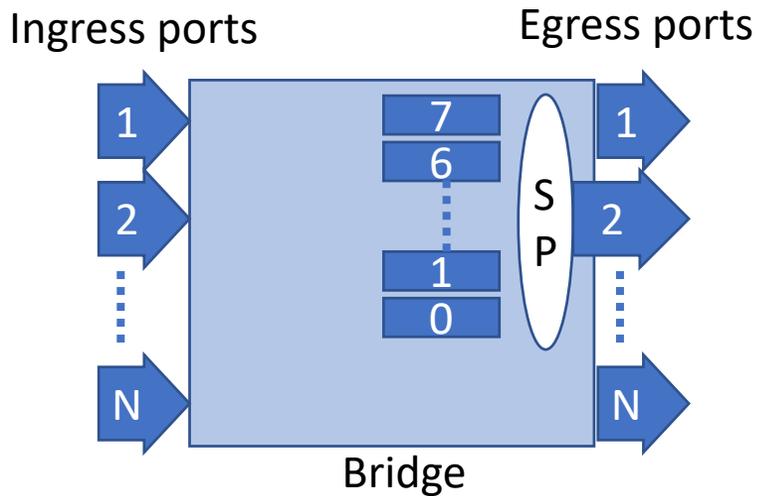
## Model



- The 802.1Q queue-model has queues per traffic class per port
- In a shared memory implementation the lower priorities may fill the shared portion, resulting in a need for dedicated resources for zero congestion loss streams
- Zero congestion loss requires dedicated buffer resources for max. Talker time (here 200 us)
- Hence, for each stream class supported a dedicated buffer of size  $200 \text{ us} \times 1 \text{ Gb/s} = 25 \text{ kB}$  is required
  - Maximum is  $8 \times 25 \text{ kB} @ 1\text{G}$
- All non-stream queue buffers do not guarantee zero congestion loss, but shall be able to buffer during "stream time"

# Bridge

## Model



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- In a shared memory implementation the lower priorities may fill the shared portion, resulting in a need for dedicated resources for zero congestion loss streams
- Zero congestion loss requires dedicated buffer resources for max. Talker time (here 200 us)
- Hence, for each stream class supported a dedicated buffer of size  $N \times 200 \text{ us} \times 1 \text{ Gb/s} = 25 \text{ kB}$  is required
  - Maximum is  $N \times 8 \times 25 \text{ kB} @ 1\text{G}$
- All non-stream queue buffers do not guarantee zero congestion loss, but shall be able to buffer during "stream time"

# Proposal for CR #391

- Current text
  - Bridge implementations shall support buffering of at least 200  $\mu$ s of frame data transmission at or above the 1 Gb/s data rate per traffic class per port.
- Suggested text
  - Bridge implementations shall support buffering of at least 200  $\mu$ s of frame data transmission at or above the 1 Gb/s data rate per **supported** stream traffic class per port.