

P802.1Qdt Discussion

June 2022

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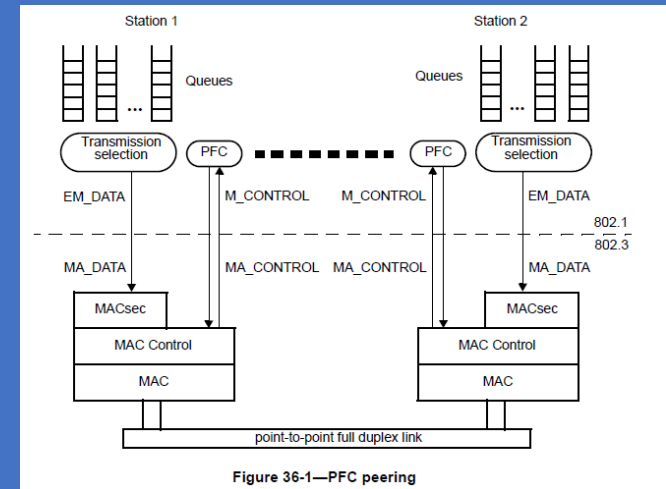
Topics

1. PFC interface stack diagram
2. PFC and link aggregation
3. MAC privacy protection on PFC
4. Where to specify PFC shim?

Topic 1: PFC interface stack diagram (1/2)

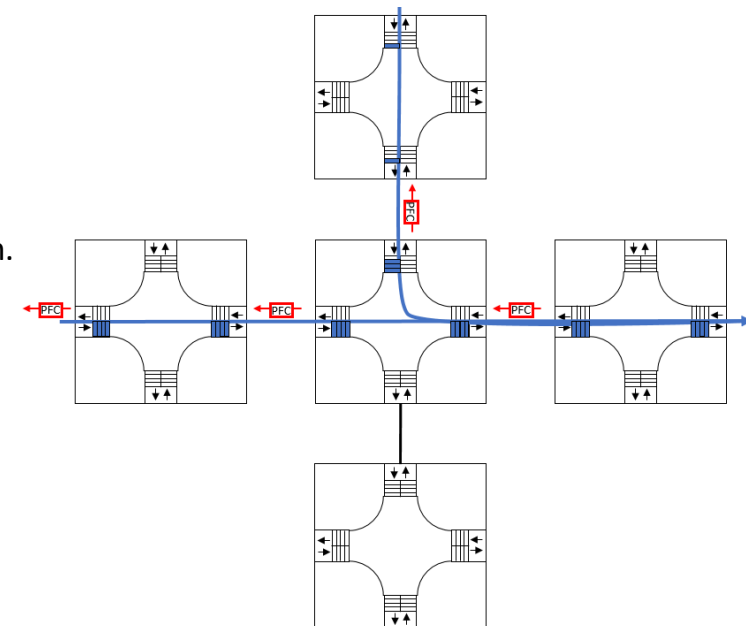
Figure 36-1 in 802.1Q seems to illustrate a simple PFC interface stack. However, the figure has issues.

- It draws the wrong boundary between 802.1 and 802.3.
- It does not reflect the correct logic of the PFC mechanism.
 - It shows communication between transmission queues to the same LAN, but PFC asserts back pressure from a reception queue on the LAN to a transmission queue. It propagates back through a bridge through the reception queue to the transmission queue.



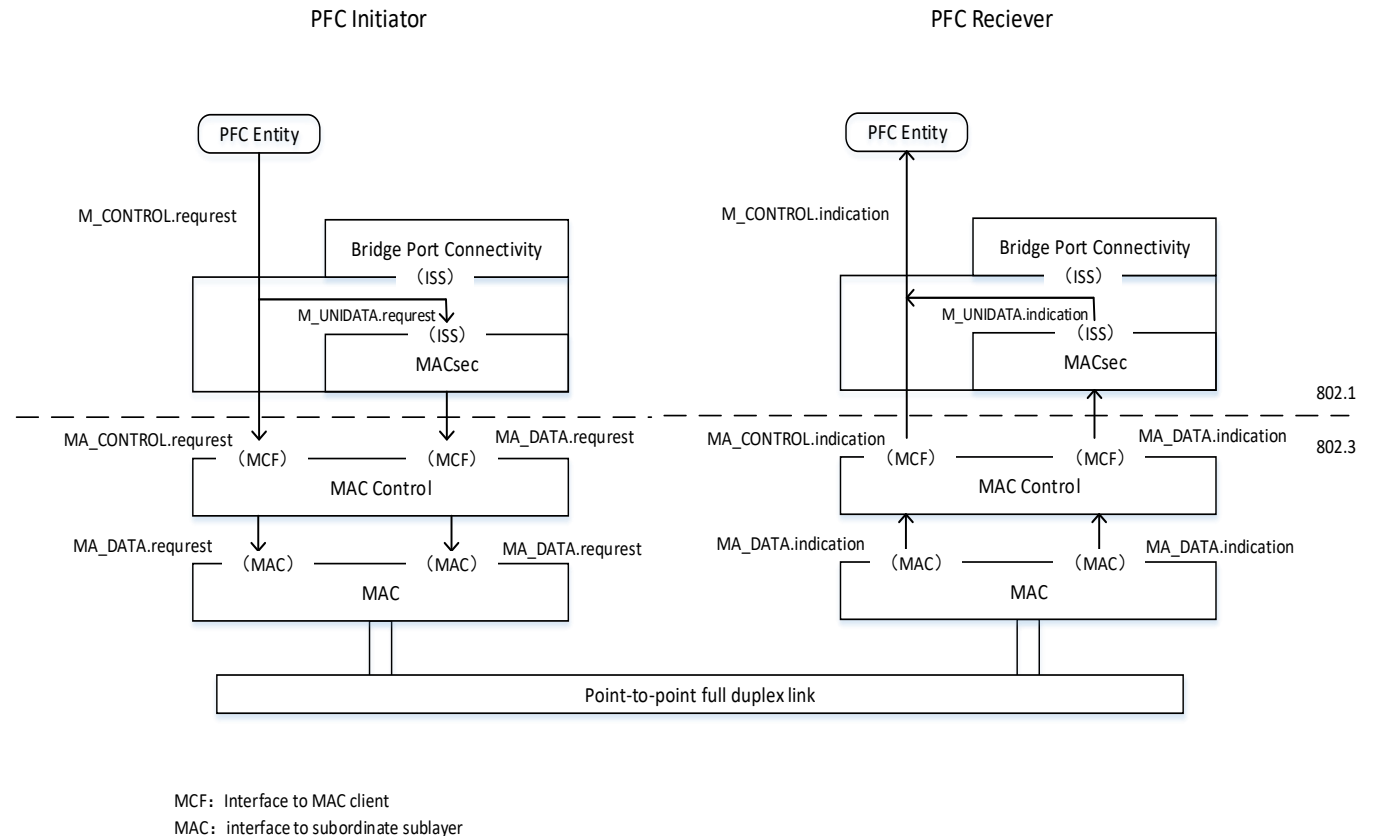
Explanation/Solution:

- Add a new figure showing how PFC propagate hop by hop across the network.
 - PFC pause frame is initiated when ingress port receiving queue is above headroom threshold.
 - Pause frame stops upstream port egress transmit queue.
 - The pause on the port egress transmit queue impacts different port ingress receive queues of the same switch. This is internal backpressure.
 - Internal backpressure is implementation dependent.
 - Higher layer entities (e.g. spanning tree) have no direct interaction with the PFC entity. When higher layer entity frames are put in a PFC enabled queue it may be paused by PFC.
 - Most likely, higher layer entity frames are put into a high priority queue which does not apply PFC.
- Add informative text
 - Describe bridge internal backpressure which is important in PFC propagation, but implementation dependent.
 - Describe higher layer entity relationship with PFC entity.



Topic 1: PFC interface stack diagram (2/2)

- Redraw figure 36-1, still focus on PFC peering.
 - 802.1/802.3 boundary is between MACsec and MAC control.
 - Clearly distinct reception queue and transmission queue on each peer.
 - Add MACsec protection on PFC into the figure

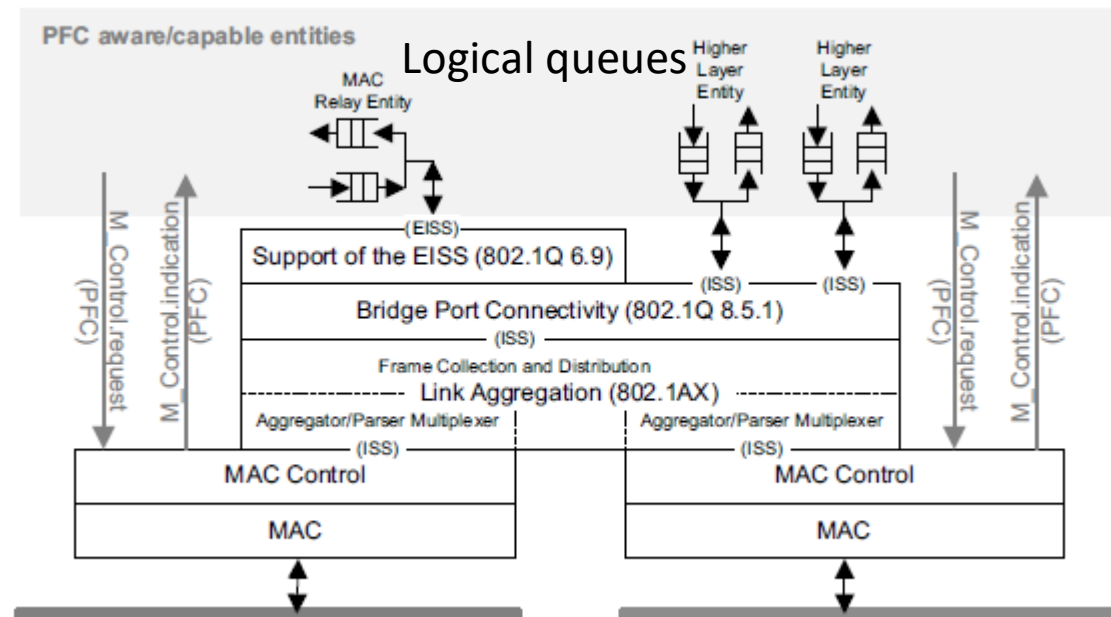


Topic 2: PFC and link aggregation

How does PFC function when the link is an aggregated link? Do we pause each physical queue independently?

Explanation:

- 802.1 has no clear description how PFC works together with link aggregation.
- Implementations typically assert PFC on a single physical link, not the logical link.
- .1Q clause 36.1 specifies “PFC is a function defined only for a pair of full duplex MACs (e.g., IEEE 802.3 MACs operating in point-to-point full-duplex mode) connected by one point-to-point link”
- Figure on the right implies the queue on the logical port, is not aware of PFC status of individual physical ports.



Topic 4: Where to specify PFC shim?

In previous contributions, the shim (used for mapping MAC control primitives to MAC service primitives) is proposed to be specified in .1Q clause 6.7 “Support of the MAC Service” . Perhaps this is not the proper place, otherwise most of 802.1Q (PBNs, PBBNs, CFM, ...) would have been in 6.7 together with 802.1AX, 802.1AE.

Explanation/Solution:

- CFM adds a new clause to specify the shim.
 - “CFM Entities (Clause 19) are specified as shims that make use of and provide the ISS or EISS (IEEE Std 802.1AC, 6.8, 6.17) at SAPs within the network. ”
 - **“19. CFM entity operation ”**
- For PFC shim, propose to add a new subclause under clause 36.