1588 and the 802.1 Model

Panagiotis Saltsidis
Glenn Parsons

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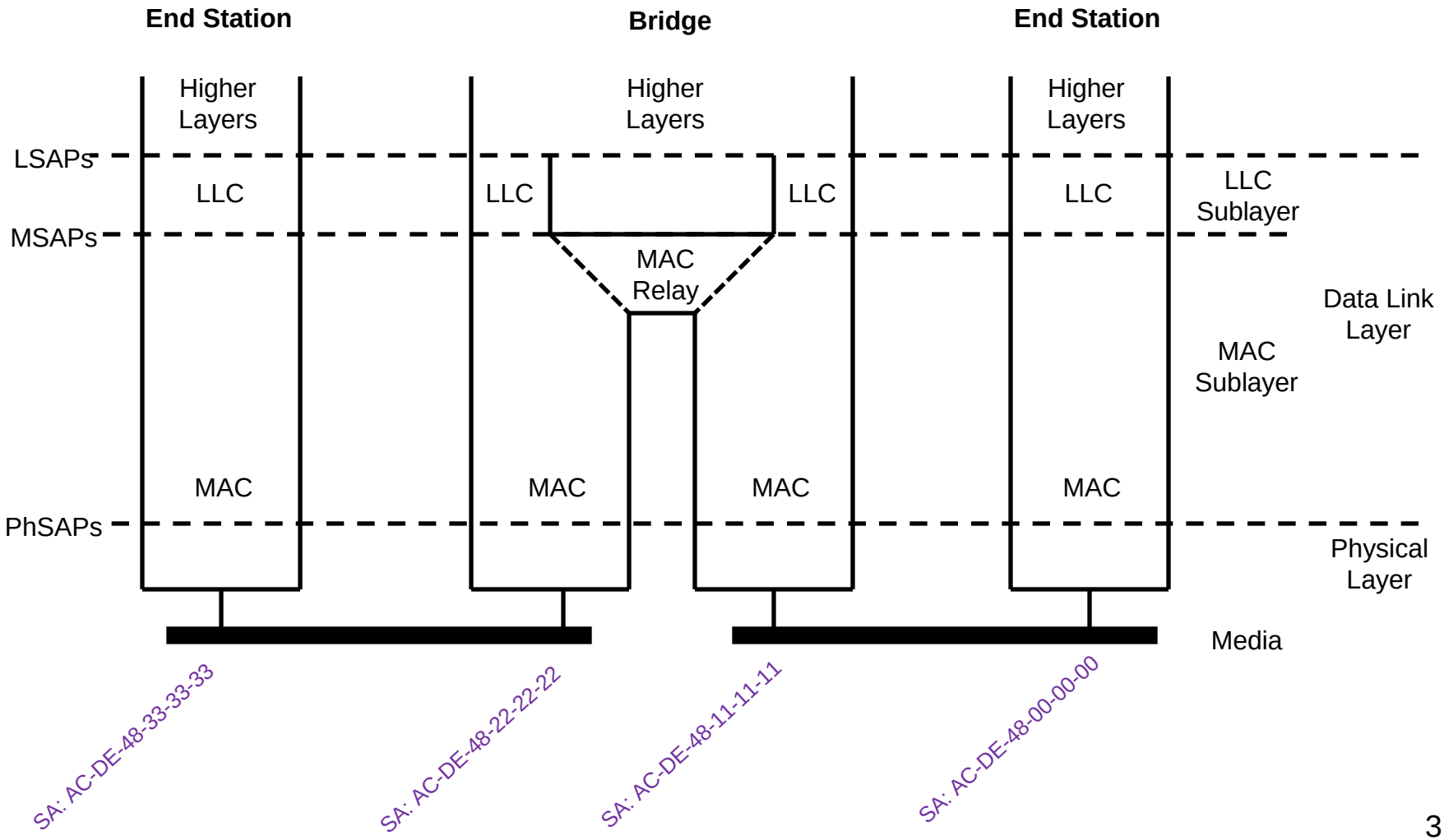
(based on L2CP slides by Steve Haddock – MEF 42033)

802.1 Handling of 1588 frames

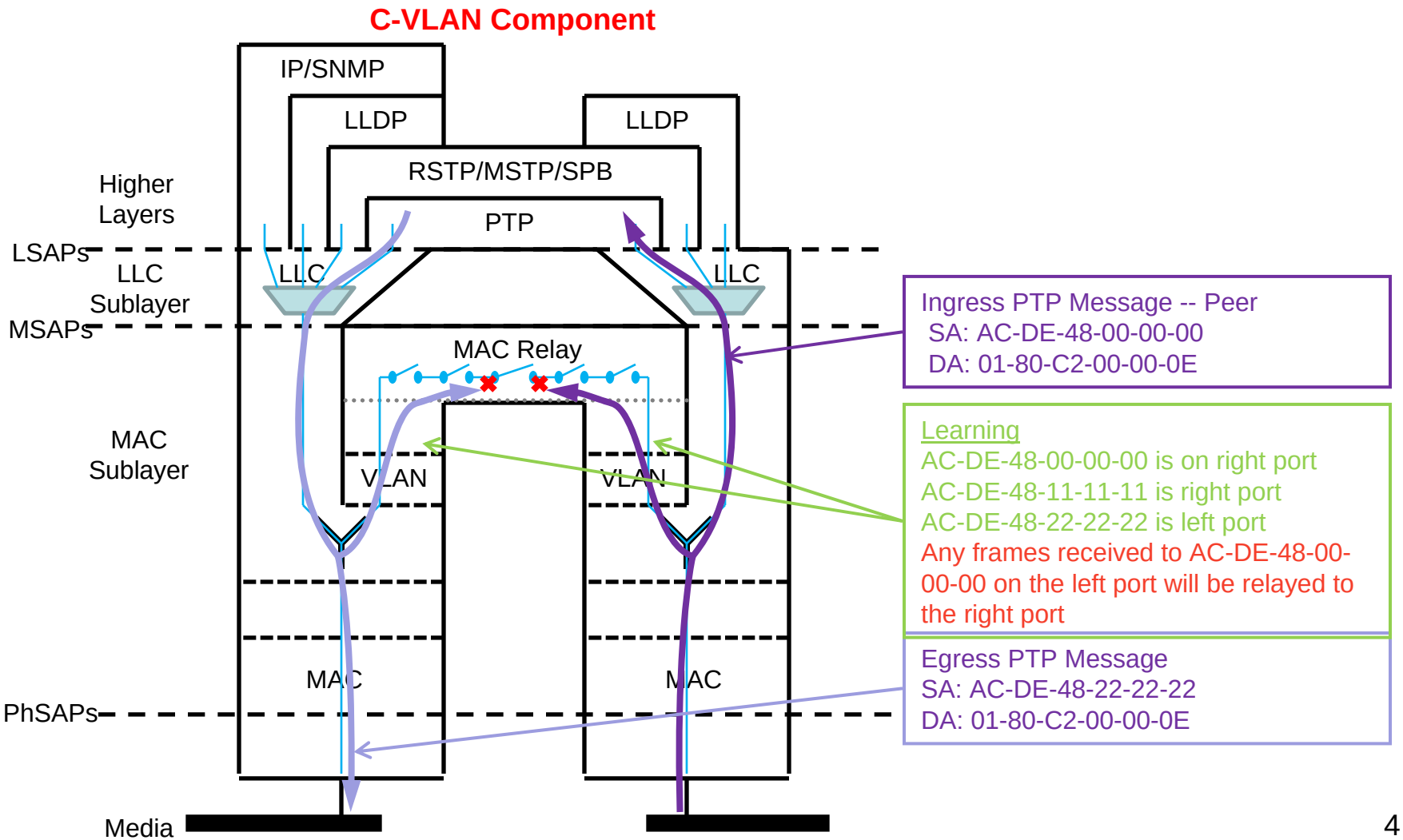
- 802.1 Bridges
  - Decide whether to filter or forward an 1588 frame based on the Destination Address and VID.
  - Decide whether to peer an 1588 frame based on the protocol identifier (and, in some cases, the DA and/or VID).
  - These are orthogonal decision points.

- PTP messages
  - Does not require the original SA (identifying the clock) to be maintained
  - Optional features (e.g., acceptable master table) require this

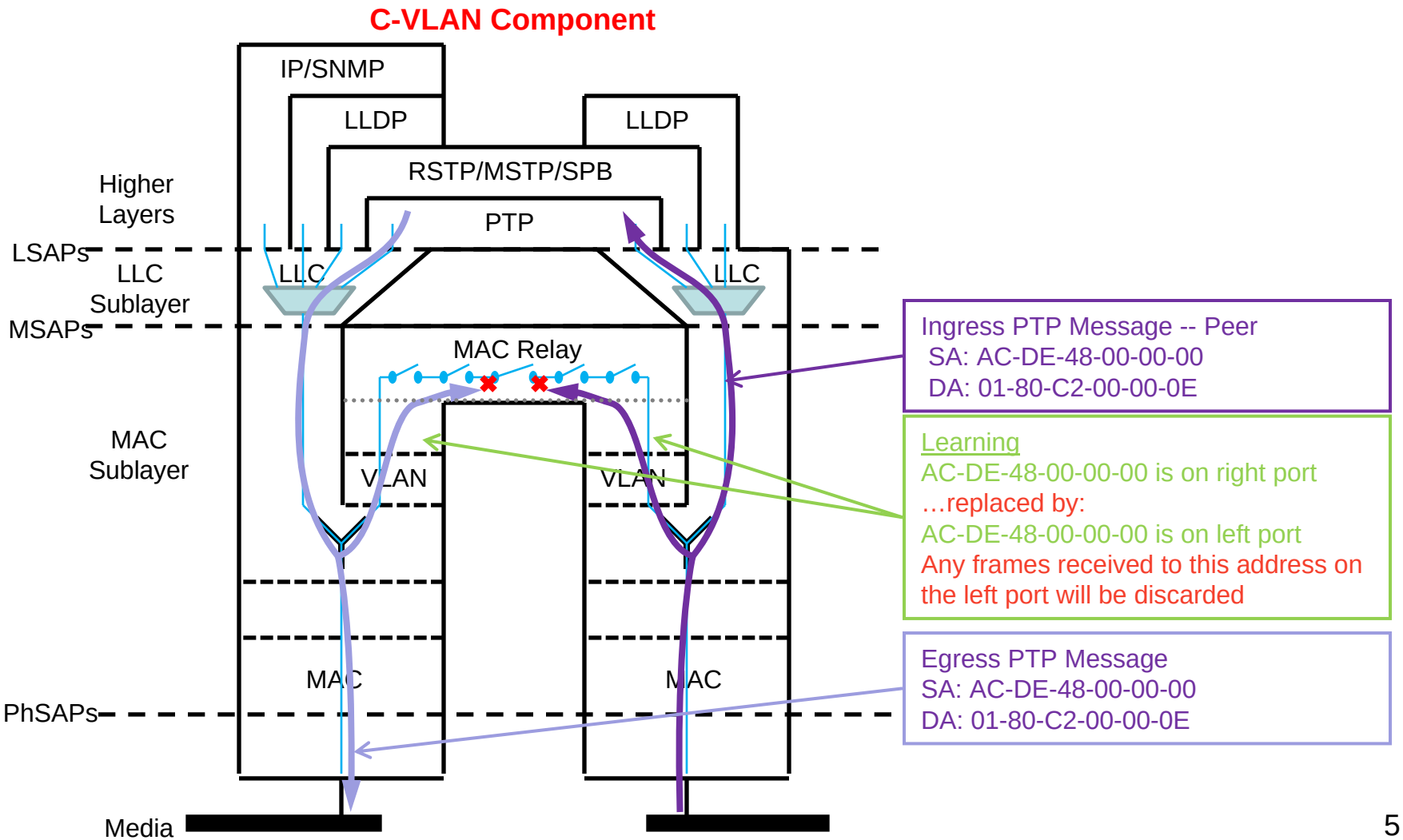
Bridge Model with Higher Layers



Customer Bridge – PTP mode A



Customer Bridge – PTP mode B

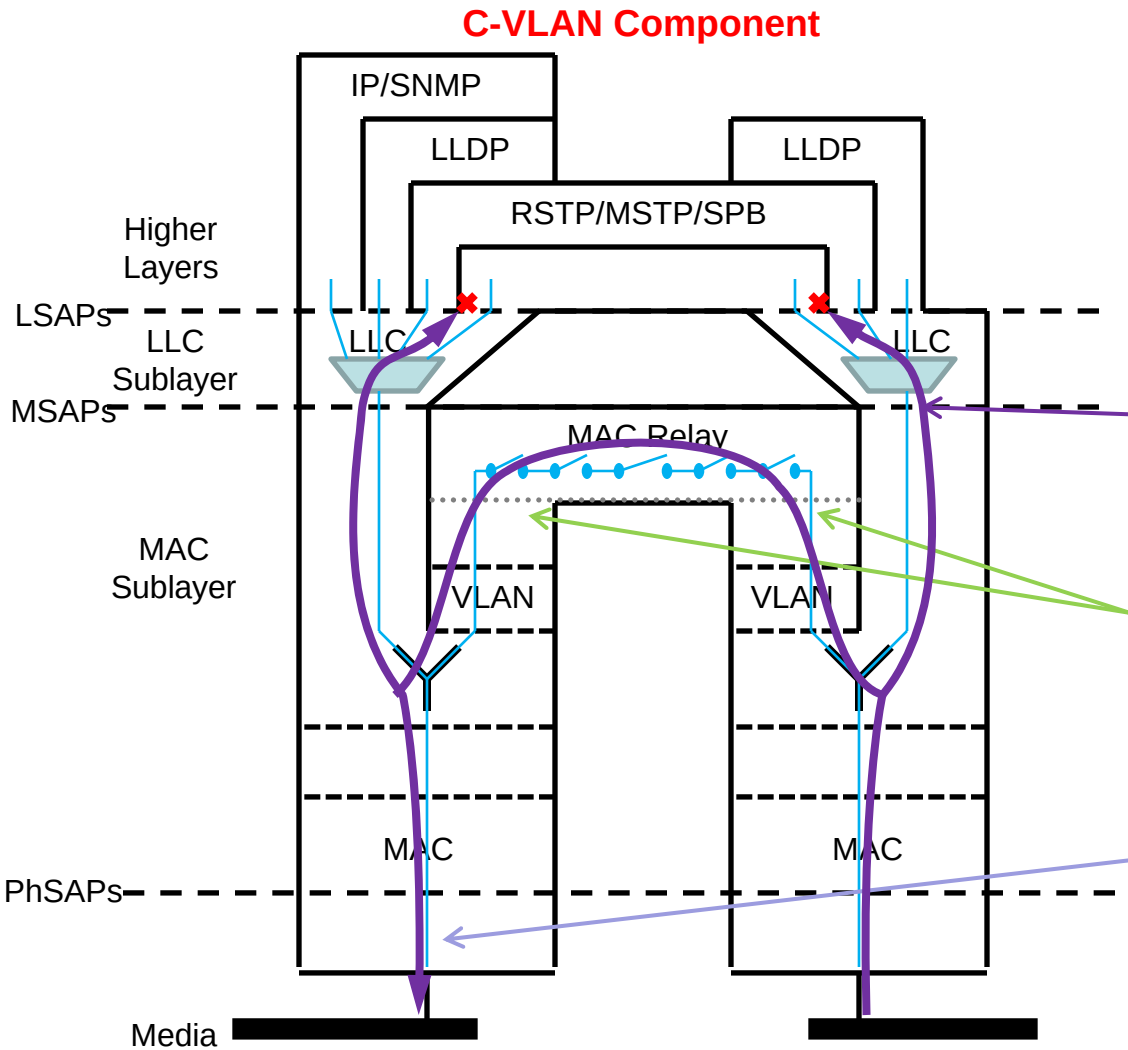


Possible solutions

1. Disable learning
   - PTP mode B will work with existing bridges only if learning is off
   - This requires the link and ports to be configured as point-to-point
2. Disable learning for reserved multicast DA
   - PTP mode B will work with bridges if learning is off for these PTP messages, or generally reserved multicast DA
   - Many vendors already support this, define this as an option in 802.1Q
3. Add a tag shim for correctionField
   - Use PTP mode B
   - Create a new tag with Ethertype in 802.1Q that is inserted before the PTP message and contains only the correctionField
4. Add a tag shim for PTP
   - Use PTP mode B.
   - Define the PTP Ethertype as a tag in 802.1Q
5. Move SA into PTP message
   - Use PTP mode A
   - Add a new TLV for the SA of the clock in 1588 or use clockIdentity for acceptable master clock
6. Abandon 1588 options
   - Use PTP mode A
   - Define an ITU-T alternative for acceptable master clock that does not depend on knowing the SA of the clock

Customer Bridge – PTP mode C

non-PTP aware Bridge



PTP aware Bridge behaviour for DA 01-1B-19-00-00-00 is identical to mode A

Ingress PTP Message -- Peer
SA: AC-DE-48-00-00-00
DA: 01-1B-19-00-00-00

Learning
AC-DE-48-00-00-00 is on right port
Any frames received to AC-DE-48-00-00-00 on the left port will be relayed to the right port

Egress PTP Message
SA: AC-DE-48-00-00-00
DA: 01-1B-19-00-00-00