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Stream identification for untagged Industrial Automation traffics

IEEE 802.1 TSN, March ‘17, Vancouver

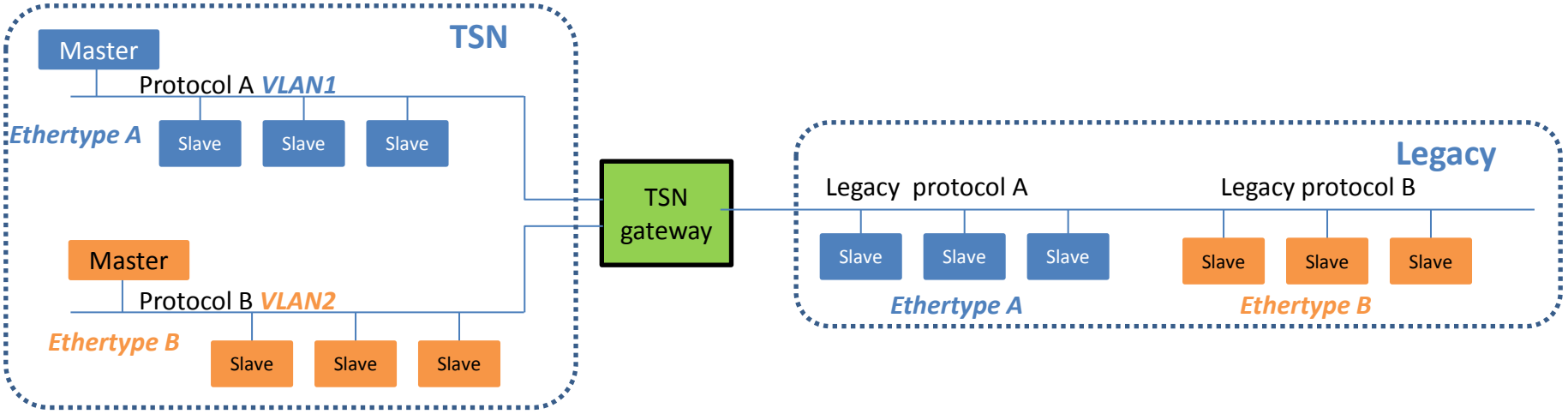
Problem statement

- How to provide a migration path to TSN in brown field networks based on legacy IA protocols ?
  - Branches of the network supporting native TSN protocols or "TSN encapsulated" legacy protocols
    - Making use of the TSN toolbox: VLANs, Traffic Classes, stream IDs based on VLAN + MAC @
  - Other branches of the network supporting legacy protocols
    - Ethernet IA protocols are plain Ethernet: untagged
- Need for a gateway function between both worlds
  - Mapping of legacy Layer 2 traffics onto TSN streams
    - Available legacy Layer 2 parameters to define a stream:
      - MAC adresses, **Ethertype**

Ethernet IA protocol	EtherType
EtherNet/IP(DLR)	0x80E1
PROFINET	0x8892
EtherCAT	0x88A4
POWERLINK	0x88AB
SERCOSIII	0x88CD
CC-Link IE	0x890F
…	…

Solution proposal

- Migration use case



  - Streams from Masters on TSN branches to Slaves on legacy branches can be identified by:
    - VLAN tag + Ethertype + DestMAC(Slave)
  - Streams from Slaves on legacy branches to Masters on TSN branches can be identified by:
    - Ethertype + DestMAC(Master)

Is that all ?

- This proposal is not necessarily limited to the scheme described here

- Other parameters could be added to define legacy protocol stream identification :
  - Source MAC address
    - The source MAC address of the Master (in line topology)
  - Particular fields of the frame payload
    - Ethernet IA protocols often distinguish traffic subtypes or subsets by specific fields in the frame payload.

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