

# P802.1CBdb Contribution



## Sequence Number Mapping between TSN and DetNet MPLS Data Plane (DetNet – TSN Data Plane Interactions)

IEEE 802.1 TSN TG  
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# Topics



- Proposal
  - Making TSN R-TAG Sequence Number based on DetNet flow related information
- Background
  - DetNet MPLS Data plane Sequence Information

# P802.1CBdb: Sequence number interaction

## DetNet Flow vs. TSN Stream



- MPLS nodes are Talker/Listener from TSN Stream perspective
- Sequence number exists in MPLS DetNet Control Word (d-CW)
- Proposal:
- If sequence number needed in the TSN domain, then re-use information from MPLS d-CW
  - Depending on the d-CW sequence number used in the DetNet flow:
    - 16-bit DetNet sequence number: copy to R-TAG sequence number
    - 28-bit DetNet sequence number : use the lowest 16 bits as R-TAG sequence number
    - DetNet does not use sequence number: create new R-TAG sequence number

Note: there is a Sequence number format mismatch between TSN and DetNet

# Mapping DetNet to/from TSN

## IETF MPLS data plane

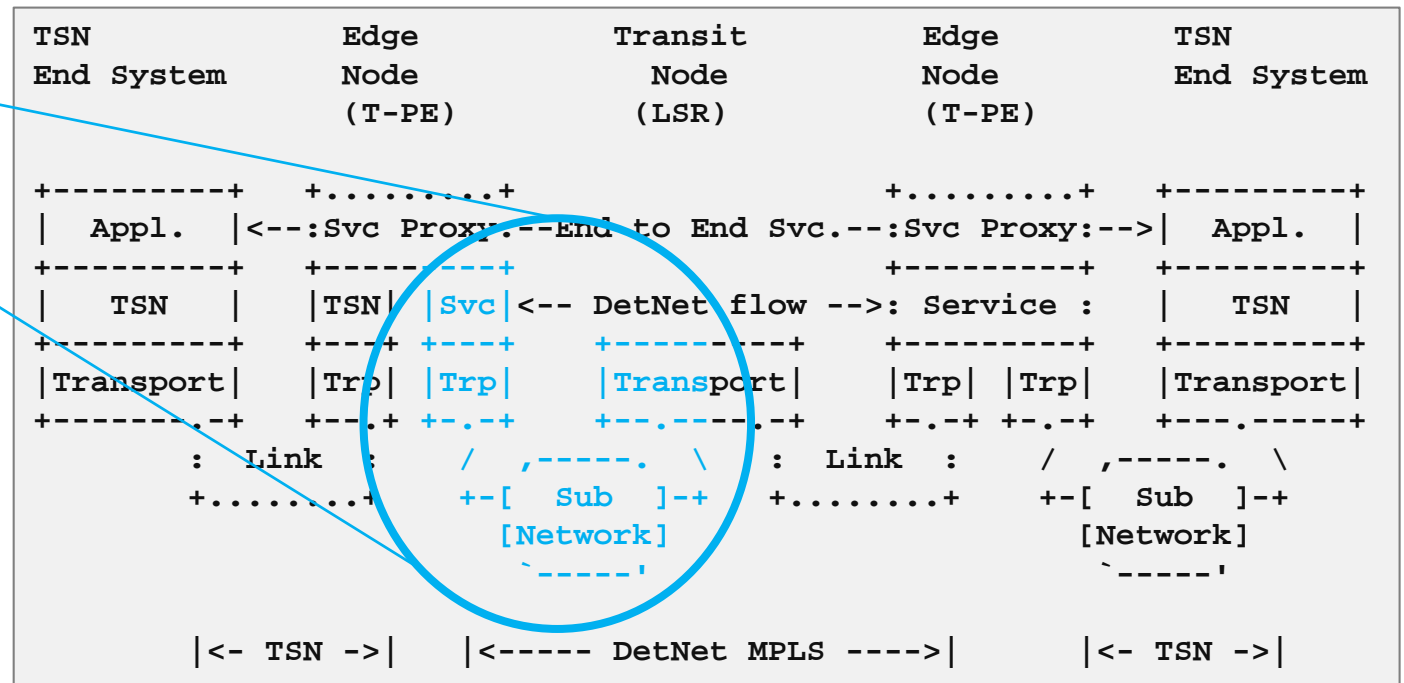


# Scenario: DetNet Node connected to TSN Node



- Mapping DetNet flow(s) to/from TSN stream(s)
  - What packets require TSN treatment ... ?
  - What sequence number to use if needed?

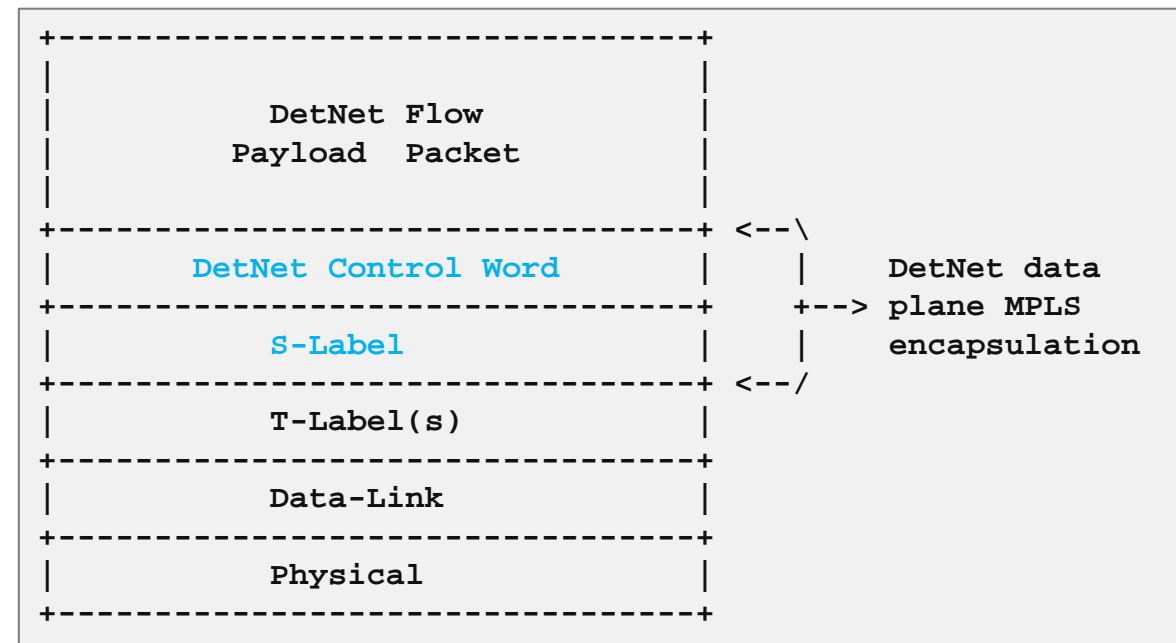
MPLS nodes are interconnected by a TSN domain



# MPLS data plane – Encapsulation

## DetNet PW

- MPLS-based DetNet data plane encapsulation:
  - **DetNet Control Word (d-CW)** contains sequencing information for packet replication and duplicate elimination purposes, and the OAM indicator.
  - **DetNet Service Label (S-label)** identifies a DetNet flow to the peer node that processes it.
  - Zero or more MPLS transport LSP label(s) (T-label) used to direct the packet along the label switched path (LSP) to the next peer node along the path.
  - The necessary data-link encapsulation is then applied prior to transmission over the physical media.



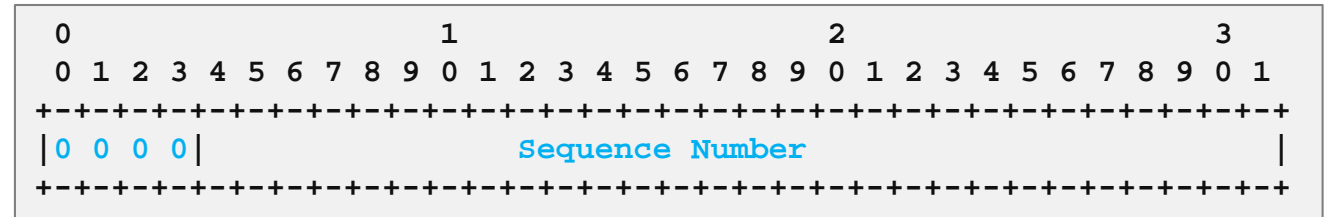
# MPLS data plane – Encapsulation



## DetNet control word

### — d-CW:

- d-CW **MUST always be present** in a packet (even if it is not used)
- A DetNet control word (d-CW) conforms
  - to the Generic PW MPLS Control Word (PWMCW) defined in [RFC4385]
- Two sequence number sizes are supported:
  - 16 bits and 28 bits.
- The sequence number size
  - in use for the d-CW associated with a DetNet flow (S-Label) is configured either by a controller plane or manually for each DetNet flow.
- Zero is an ordinary sequence number with no special meaning





# Questions ...