DetNet Data Plane Protocol and Solution Alternatives
draft-dt-detnet-dp-alt-01

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DetNet WG

Overview

- Design Team
- Current status
- Next steps

Disclaimer

- The I-D is work in progress and subject to undergo multiple changes.

Design team & activists

- Regular participants:
  - Jouni Korhonen (DT lead)
  - Norm Finn
  - Pascal Thubert
  - Janos Farkas
  - Greg Misrky
  - Olivier Marce
  - Yan Zhuang
  - Lou Berger
  - and Balazs Varga

- Work done over email and weekly calls

Changes since -00 (1/2)

- Substantial rewrite in many places.
- Summaries added.
- Data plane overview reworked with new and nice picture illustrations:
  - Example DetNet Service Scenarios using Multi-Segment PWE3 [RFC5254] reference model.
- Still keeping the DetNet Service Layer – Transport Layer separation.

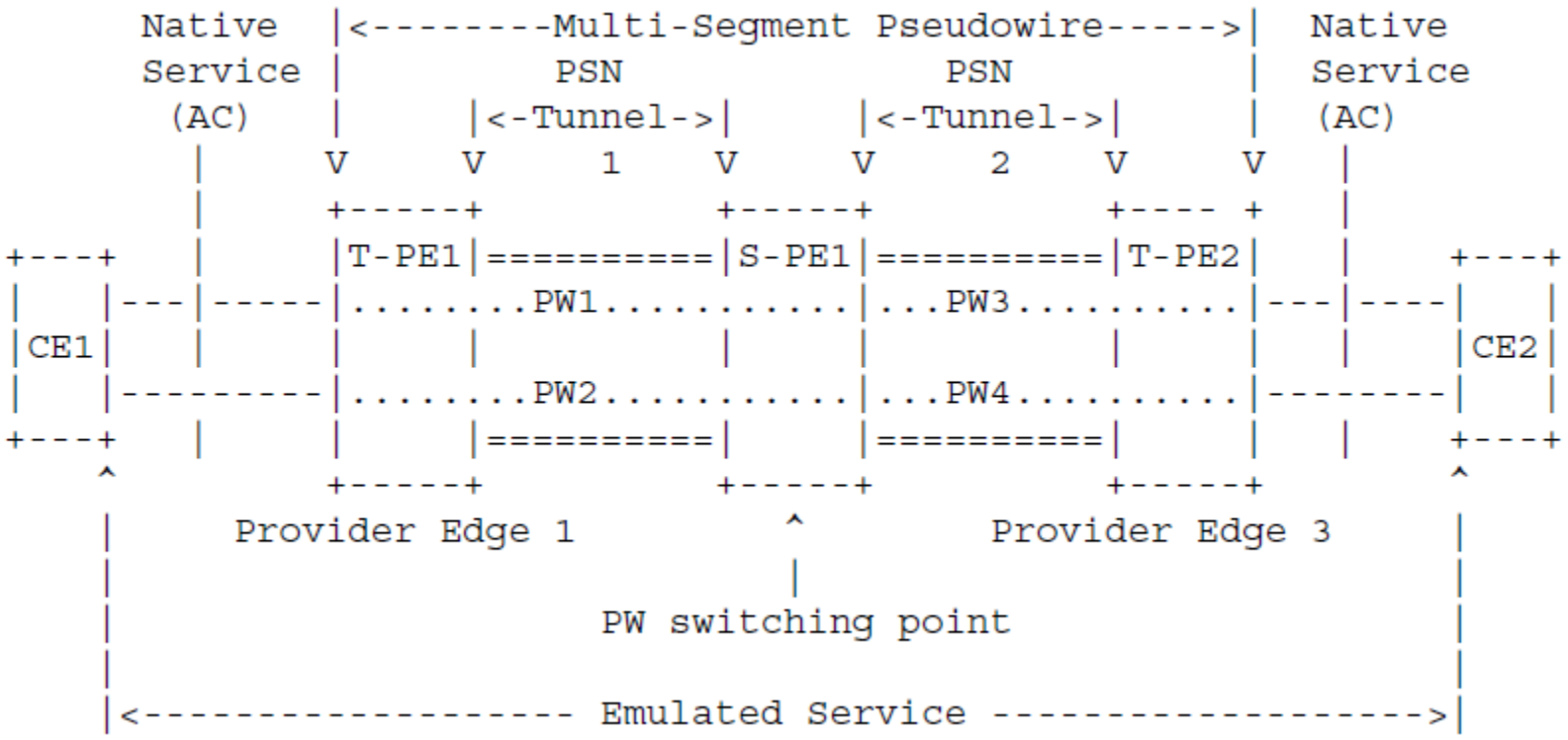
Changes since -00 (2/2)

- Data plane alternatives stabilized to :
  - Service Layer: PseudoWire RTP/UDP GRE
  - Transport Layer: IPv[46] MPLS LSPs BIER BIER-TE
- Criteria almost stabilised:
  - #7 (timesync) removed entirely – part of OAM when needed..
  - Not clear whether #8 (CoS / QoS) belongs to Service Layer.. subject to removal.

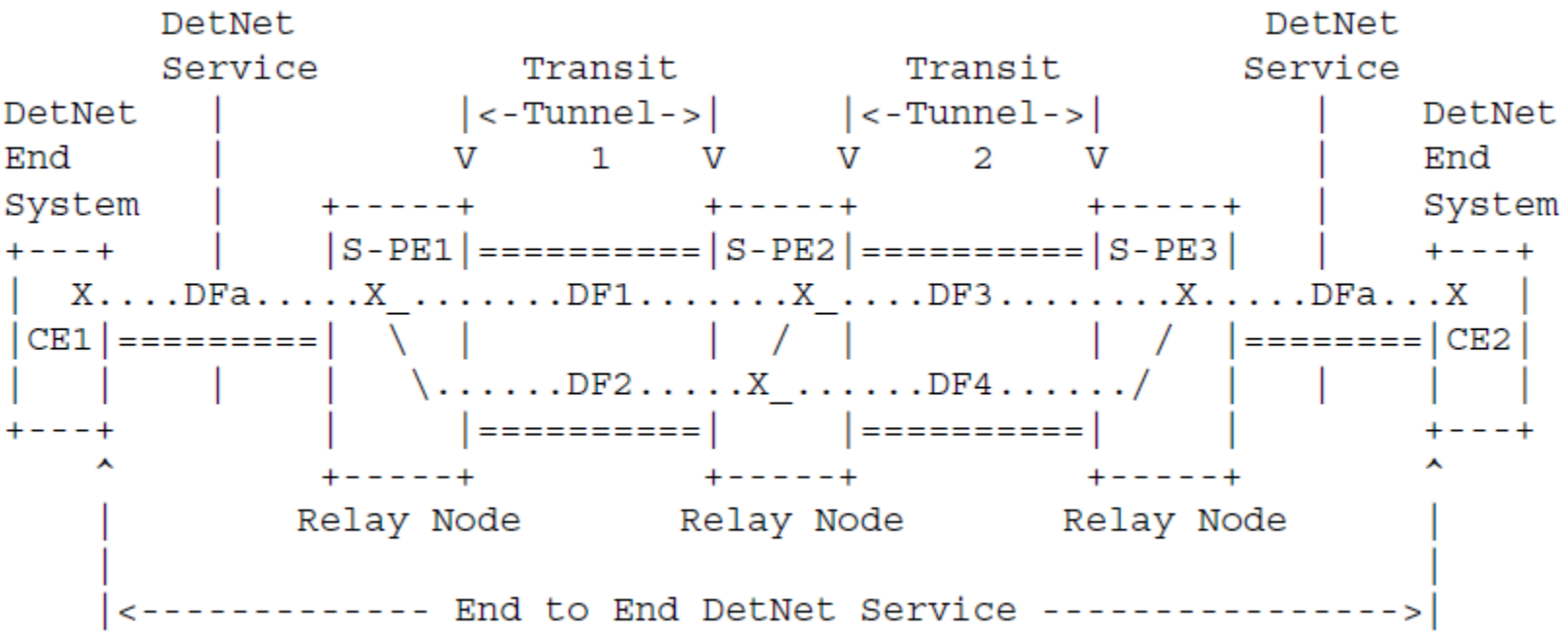
Major discussion points

- The Service Model:
  - Now partly removed from the data plane draft.
- Terminology:
  - Data plane view vs architecture.
  - Specifically concerns Relay, Edge and Transit definitions.
- DetNet reliability:
  - Concerns mainly criteria #5 and how responsibilityes are divided between the Service and Transport layers.

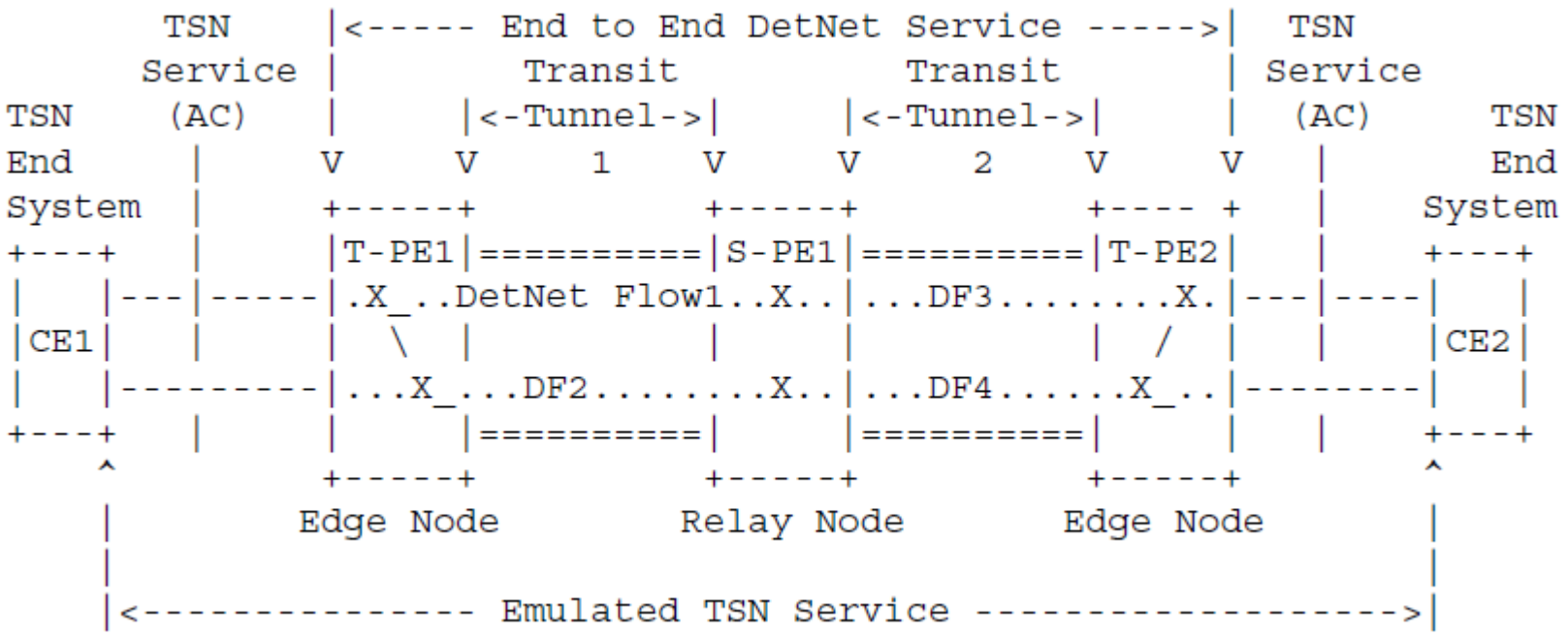
Examples Illustrated over a PWE3 Switching Reference Model (MS-PWE2)..



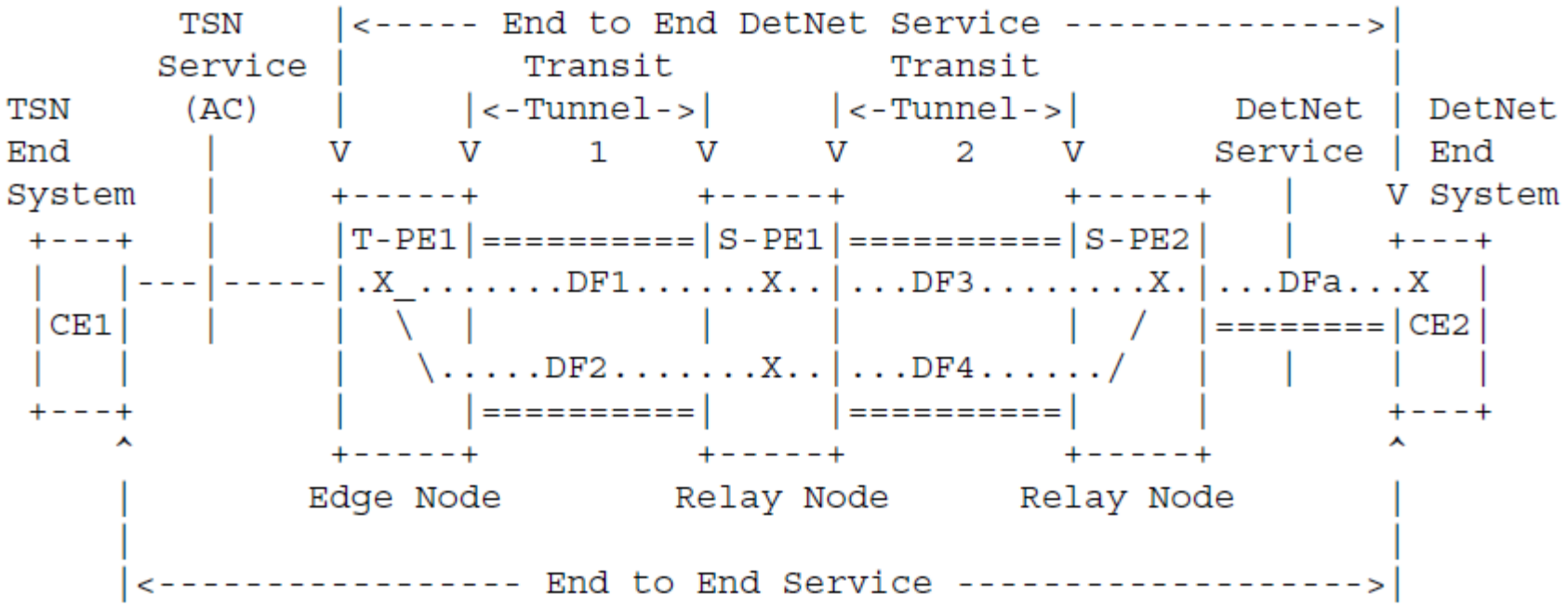
..Native DetNet..



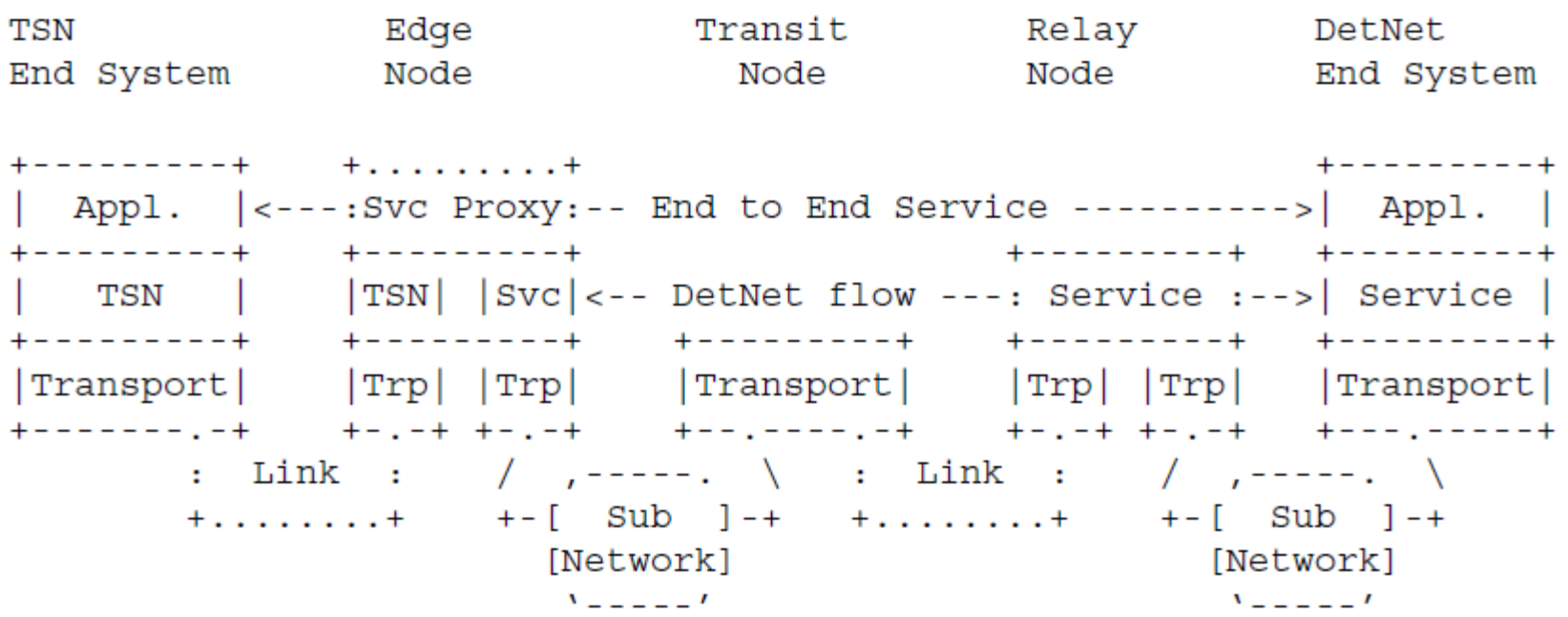
..IEEE 802.1TSN over DetNet..



.. from IEEE 802.1TSN to native DetNet..



..and Layers in a DetNet enabled network



Moving targets..

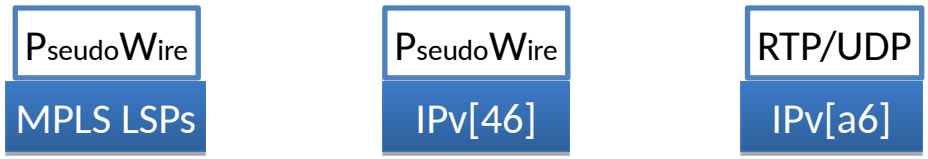
- Terminology (see previous presentation):
  - Data plane and architecture has to align properly.

- DetNet Service and Transport layer details when it comes to DetNet Reliability..
  - This is also the criteria #5 that deserves more clarifications and alignment with the architecture.

- Concluding summary..
  - Current summary text & tables are **initial** and **do not necessarily reflect the views** of all DT members.. yet.

Draft - Current concluding summary

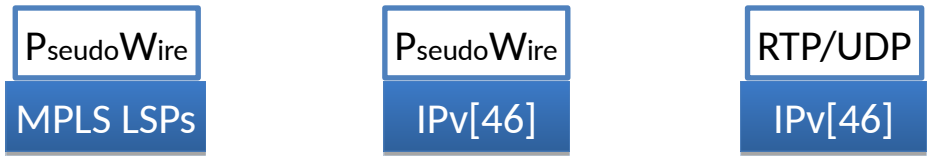
Options:



- PseudoWire is the technology that is mature and meets most of the criteria for the DetNet Service layer:
  - From **upper layer protocols PWs or RTP can be a candidate for non-MPLS PSNs**.
  - The identified work for PWs is to figure out how to implement duplicate detection for these protocols (e.g., based on [RFC3985]).
  - In a case of **RTP there is precedence of implementing packet duplication and duplicate elimination** [ST20227][RFC7198].
- **PWs can be carried over MPLS or IP:**
  - MPLS is the most common technology that is used as PSN for PseudoWires; furthermore**, MPLS is a mature technology** and meets most DetNet Transport layer criteria.
  - **IPv[46] can be also used as PSN and both are mature technologies**, although both generally only support CoS (DiffServ) in deployed networks.
- **RTP is independent of the underlying transport technology and network.**
  - **However, it is well suited for UDP/IP transport.**

For Discussion: Selecting a DP

Options:



- Currently outside the scope of the draft.
- Options:
  - Select 1
    - Pro: Only one solution to worry about
    - Con: May not be well suited to all use cases
  - Select 2 – One for L2 Interconnect (L2VPN)
    – One for DetNet End Stations (hosts)
    - Pro: Can optimize for routers and simple hosts
    - Con: More than one solution, complicates interworking
  - Select 3 or more

Next steps

- Adoption call to become a WG document…

- Then…
  - Commence Data Plane selection discussion