

Operation of Deterministic Networks over MPLS

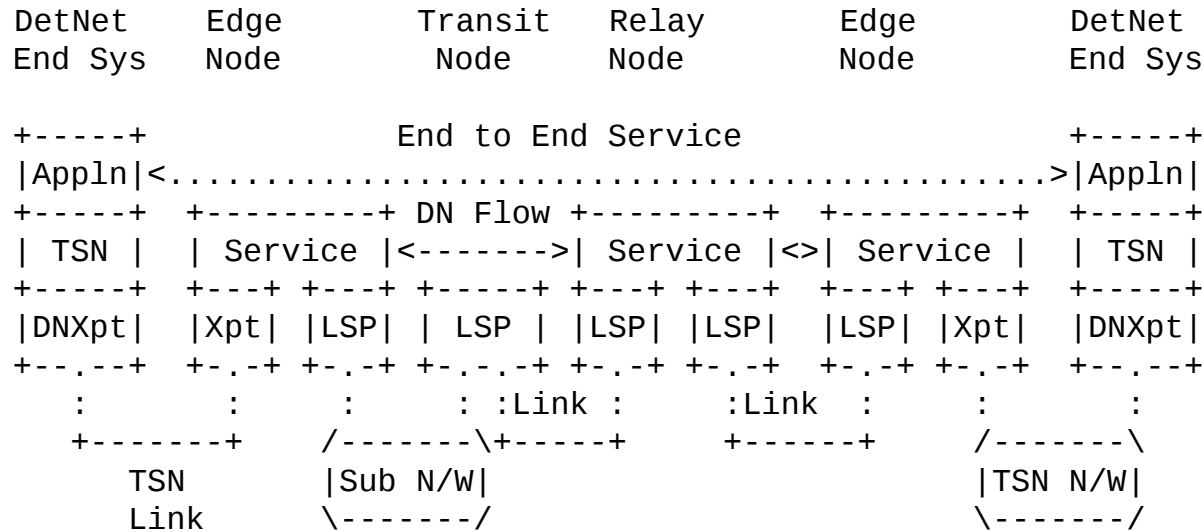
draft-bryant-detnet-mpls-dp-00

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Purpose

- Extract the MPLS design so that it can be reviewed by more readily reviewed by MPLS and PW experts.
- Ensure that the design and the description of the design is aligned with the language and methods used by the MPLS and PW community.
- Create a starting point for a standalone MPLS dataplane specification.
- Based on draft-ietf-detnet-dp-sol-01. draft-ietf-detnet-dp-sol-03 has only minor amendments for the purpose of this discussion.

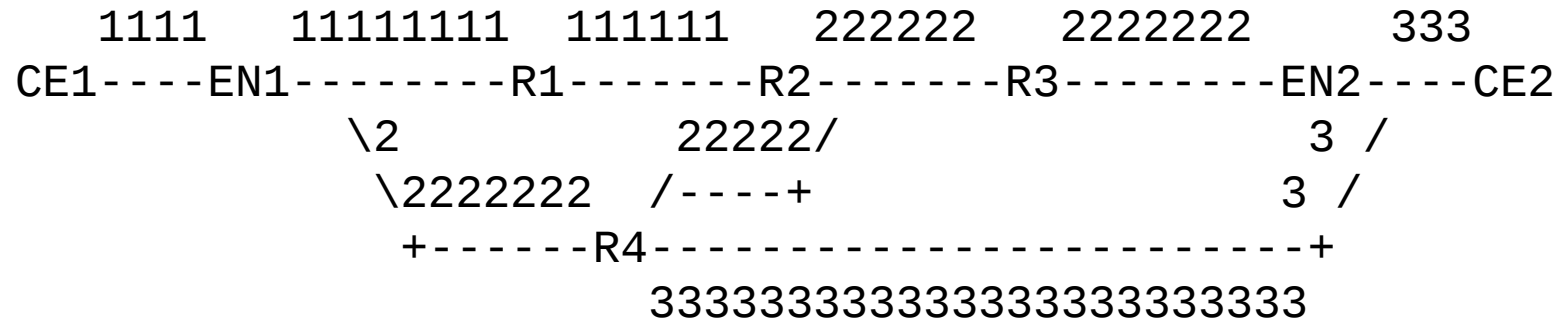
The Model



LSP = MPLS Transport
 DNXpt & Xpt = DetNet Transport

Overlay Model as agreed as priority at last virtual interim.
 This aligns with the standard MS-PW model.
 End to End MPLS model seems unlikely to gain traction.

PREF Model



Rep and Elim happens in Edge and Relay Nodes (i.e. T-PEs and S-PEs).

In the limiting case (with PHP) only visible label is the Service Label.

Scope of the S-Label is the receiving DetNet node.

Label is swapped at each DetNet node (just like MS-PW).

PR/EF action at a node is a parameter of the flow group.

Issue – How do we handle S/N?

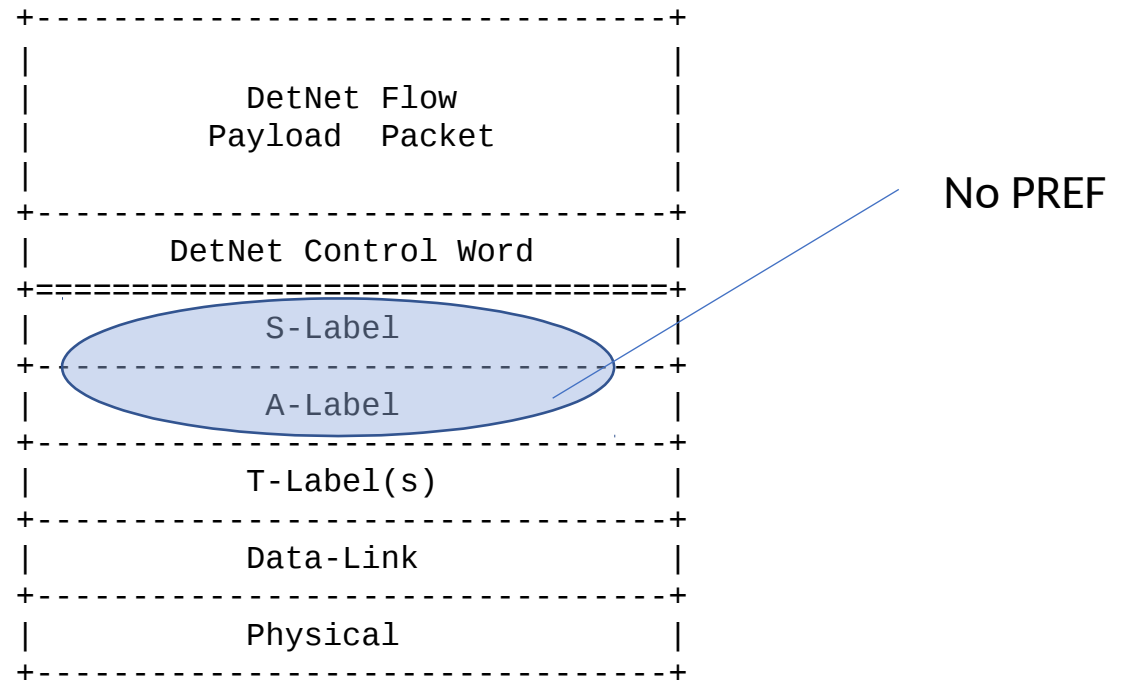
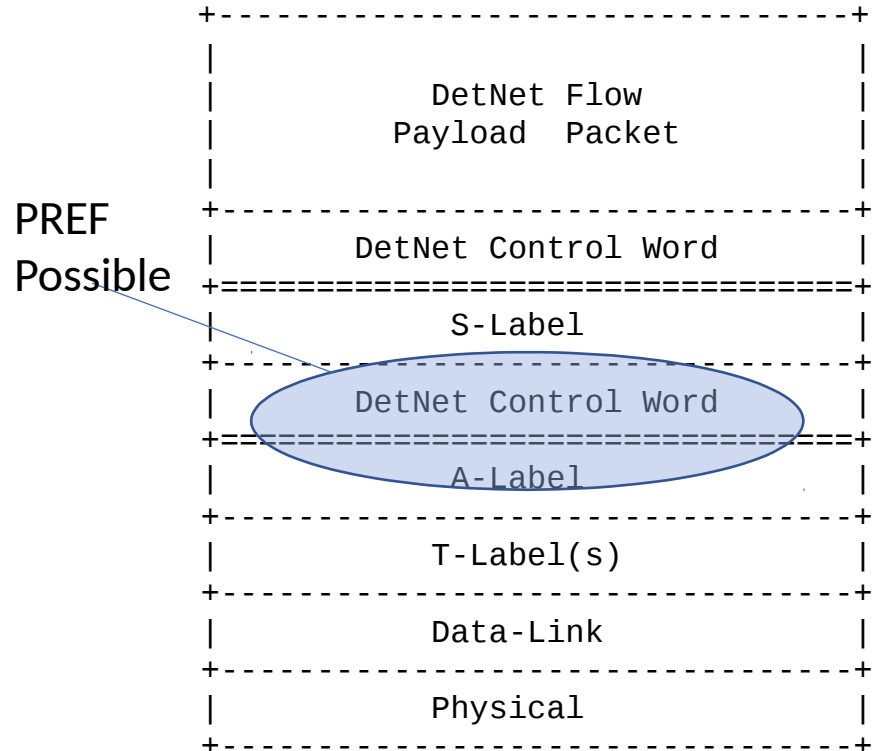
- Is it fixed at 28 bits?
- In this overlay model, can we live with 28 bits and 0 bits as only lengths?
- If it is to be less than 28 bits is this a parameter or an new DetNet type?

OAM

- We assume that the model in RFC5085 is used.
- Can we constrain it to ACH (VCCV Type 1) only or do we need to support the other VCCV modes?
- Do we need to support GAL as OAM marker in the DetNet layer?

Flow Aggregation

- Explored in more depth than ...sol-01
- We can aggregate at the LSP, as proposed, but we lose visibility of DetNet, and lose aggregation at Relay nodes.



Payload Type

- PWE3 just hovered up everything on an interface and shipped it across to the egress.
- DetNet only supports three types: Ethernet and IPv4 and IPv6
 - MPLS does not use the IP version field for IP type identification.
- Do we need to include a type identifier in the packet either in the CW or via RFC6658, or do we set up an end to end flow for each type?

Setting up a Path

- S-Label allocated by receiving DetNet Node (standard MPLS)
- We can use PW signalling protocols to exchange labels and DetNet parameters between DetNet Peers
- However we need to set up a graph not a linear path, and there is no precedence for this amongst the existing routing protocols.

Next Steps

- Verify that DetNet considers this an accurate reflection of the design.
- Review with MPLS and PW experts.
- Merge back into draft-ietf-detnet-dp-sol or continue as a separate draft, as the WG prefers.
- If the latter, adopt as a WG draft