

OAM for Deterministic Networks with MPLS Data Plane

draft-mirsky-detnet-mpls-oam

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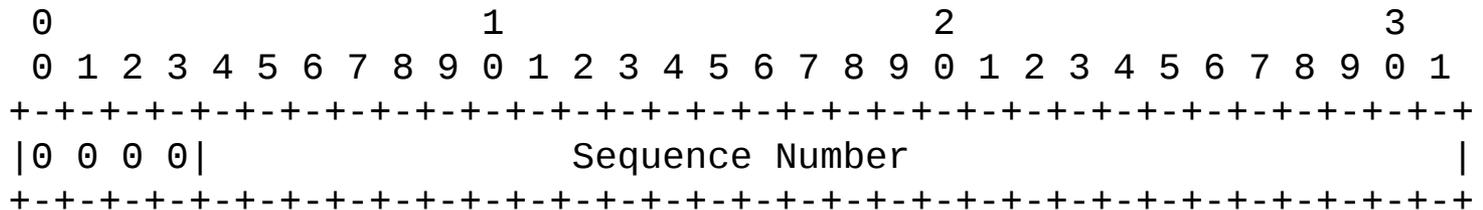
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Update

- Addressed comments from Pascal Thubert (IETF-103)
- Split draft-mirsky-detnet-oam:
 - draft-mirsky-detnet-mpls-oam
 - draft-mirsky-detnet-ip-oam
- Removed optional use of GAL/G-ACh

DetNet over MPLS data plane

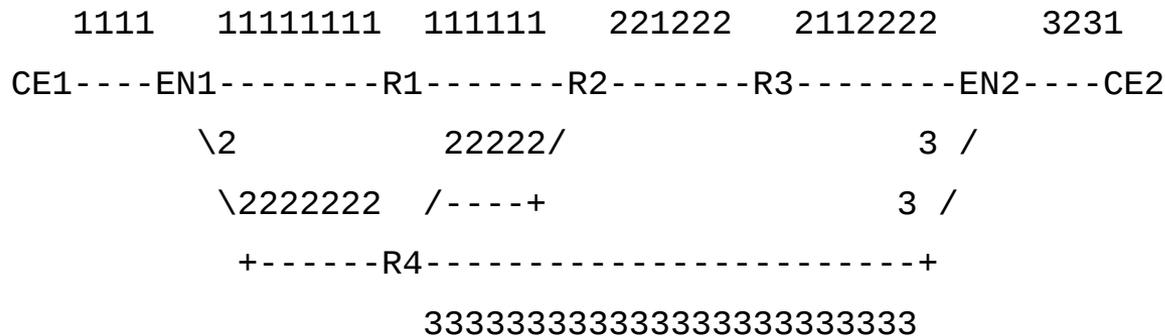
Solution, extracted from draft-ietf-detnet-dp-sol, draft-bryant-detnet-mpls-dp resembles PW with mandatory DetNet CW which is similar to PW CW:



Like PW label, DetNet service identified by S-label, which is BoS. DetNet service transport, T-labels, may be MPLS LSP or SR-MPLS.

DetNet' Packet Replication, Duplicate Elimination, and Order Preservation Function (PREOF)

PREOF egress is to use the Sequence Number information included in the DetNet Control Word (d-CW) when eliminating extra copies of the packet it already forwarded:

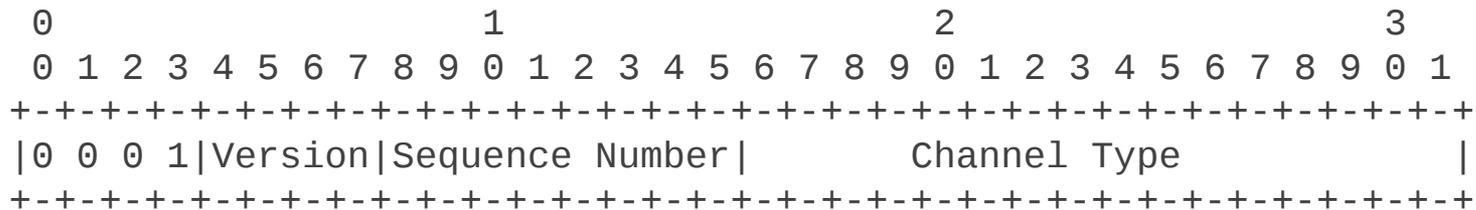


PREOF is composed of three sub-functions:

- replication;
- duplicate elimination;
- order preservation.

DetNet OAM over MPLS data plane

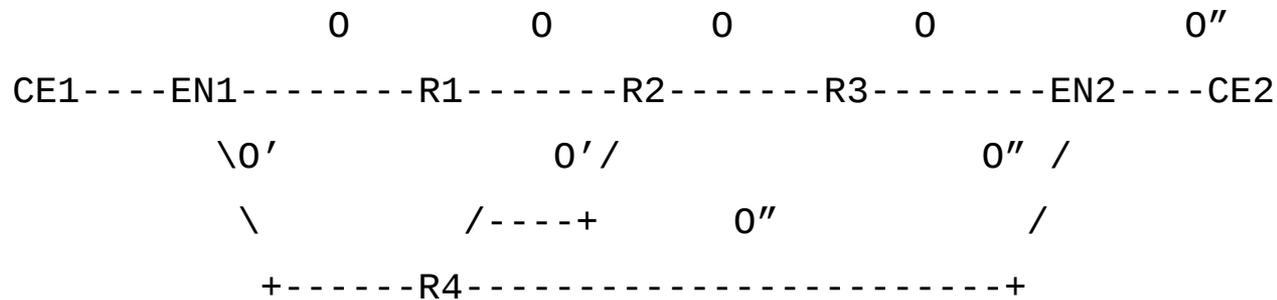
For DetNet OAM propose to use d-ACH that replaces DetNet CW in the encapsulation:



- Bits 0..3 MUST be 0b0001. This value of the first nibble allows the packet to be distinguished from an IP packet [RFC4928] and a DetNet data packet [I-D.ietf-detnet-dp-sol-mpls].
- Version: this is the version number of the d-ACH. This specification defines version 0.
- Sequence Number: this is unsigned eight bits-long field. The originating DetNet node MUST set the value of the Sequence Number field to a non-zero before packet being transmitted. The originating node MUST monotonically increase the value of the Sequence Number field for the every next active OAM packet.
- Channel Type: the value of DetNet Associated Channel Type is one of values defined in the IANA PW Associated Channel Type registry.

Active OAM and DetNet' PREF (cont.)

Consider an active OAM packet traversing DetNet domain if the replication sub-function uses S-label only:



The replication sub-function creates copies of the OAM packet at nodes EN1 and R4.

The elimination sub-function considers 28 higher order bits of d-ACH as the number. As result, node R2 will drop late packet O' and EN2 will drop late copy O.

Next steps

- DetNet MPLS OAM over:
 - DetNet IP/UDP tunnel
 - TSN domain
- Your comments, suggestions, questions always welcome and greatly appreciated
- WG adoption