

# MPLS Network Action for Deterministic Latency

draft-sxg-mpls-mna-deterministic-latency-01

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# Acknowledgement

- The co-authors would like to thank the comments from Adrian Farrel, Lou Berger, Gregory Mirsky, Loa Andersson, et al.
- The draft has been presented at IETF 116 and 118 meetings, thanks for your attentions.

# Updates

1. Modified draft name/title
2. Aligned with the latest MNA header
3. Simplified ancillary data encapsulation
4. Editorial updates

# Requirements

1. This document presents an MPLS MNA solution for Deterministic Latency to resolve DetNet scaling issues described in [I-D.ietf-detnet-scaling-requirements].
2. The use case Delay Budgets for Time Bound Applications described in MPLS MNA [I-D.ietf-mpls-mna-usecases].

# Terminology

- **Deterministic Latency (DL)**

**/Old/** The bound of network latency and delay variation between two DetNet endpoints.

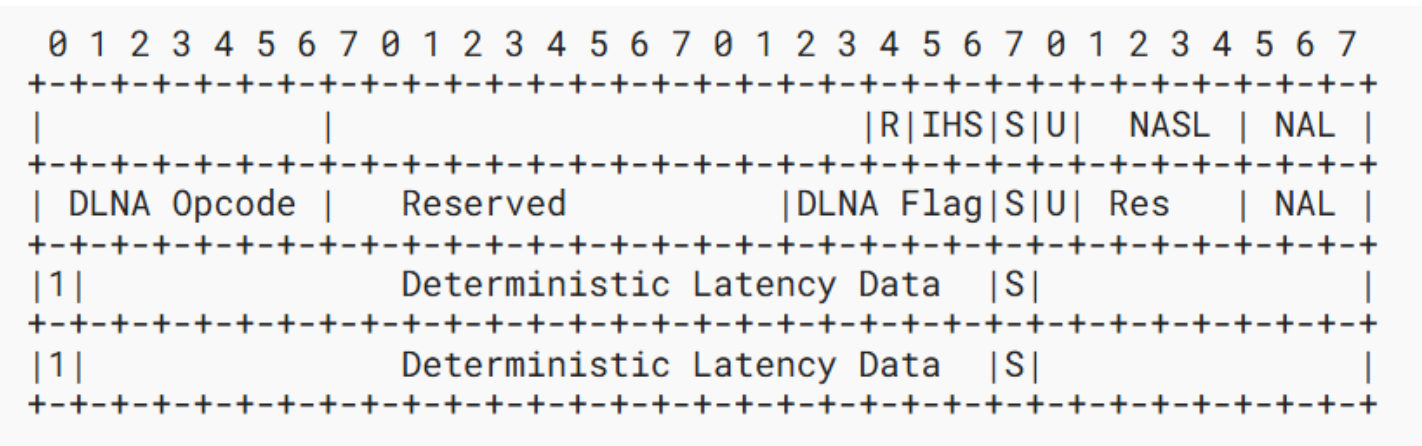
**/New/** The ability to precisely determine the delay in the network from source to destination(s). The delay is variable and depends on the queuing mechanisms used for network flows and the operations of the network nodes. The delay variation is acceptable but should be bounded and measurable.

- **Deterministic Latency Network Action (DLNA):** used to indicate deterministic latency network action for MPLS data plane.

# DLNA Sub-Stack

- DLNA Header Considerations

- Information used by functions ensuring Deterministic Latency for scaling topo and scaling flows
  - Queuing mechanism (e.g., TAS, CQF, etc.)
  - Delay data (e.g., latency, cycle, time budget, etc.)
- DetNet PREOF supported via sequence number and S-label
- Aggregated flow identification supported via MPLS A-label



- MNA Format for DLNA

- DLNA Opcode: DLNA network action
- DLNA Flags: DL type, Latency Bound or Queueing Delay Bound
- IHS (2 bits) : includes Ingress To Egress (I2E) (00) and Hop-By-Hop (HBH) (01) processing
- U (1 bit): Unknown, suggested 0 (ignore)
- NAL, DLNA action length, the number of AD LSEs
- AD LSE, Ancillary Data for specific DLNA latency information



# Open Issues

1. Whether there is necessity for this work
  - a) Requirements for Scaling Deterministic Networks introduced in [I-D.ietf-detnet-scaling-requirements] has been adopted as WG draft.
  - b) Enhanced DetNet Data Plane solution to address the scaling requirements are in the scope of DetNet charter.
2. Whether MPLS MNA solution is in the right way
  - a) DetNet MPLS data plane solution specified in [RFC8964], supporting DetNet PREOF functionalities and flow aggregation.
  - b) [I-D.ietf-mpls-mna-hdr] defines the MNA solution for carrying Network Actions with Sub-Stack Data and associated Ancillary Data (AD)
  - c) This draft provides an enhanced DetNet MPLS data plane solution to support scaling requirements for deterministic network through carrying necessary queuing and delay information in data plane.
3. Whether Ancillary Data information encoded in MNA sub-stack is enough
  - a) The current design follows simplicity, carrying the minimum parameters (i.e., `queuing_method`, `hop_count`, `timestamp`).



Feedback and Suggestions are Welcome

Thank You!