MPLS Open DT Summary and Status

Stewart Bryant

sb@stewartbryant.com

This report is presented on behalf of the MPLS ODT

MPLS Open Design Team

- First met 8 April 2021
- Met weekly 15 times
- Meetings are open to anyone who wishes to participate.
- All minutes, meeting recordings, decisions and some design work recorded on an IETF wiki:

  https://trac.ietf.org/trac/mpls/wiki/MPLSOpenDT

Background

- The MPLS WG received a number of technology proposals for in-stack function indicators, ancillary data indicators, and ancillary data structures to be carried below the BoS.
- A summary of the operation of MPLS and the proposals initially received can be found at:
  - https://datatracker.ietf.org/doc/html/draft-bryant-mpls-dev-primer-00.txt
- In order to work out how to satisfy the underlying needs in a way that enhances the capabilities of MPLS without limiting it in the future the MPLS and PALS chairs formed the MPLS Open Design Team
- PALS is involved because it was the first WG to carry ancillary data below BoS.

Work Items

- The following work items have been identified
  - Label Stack Proposals
    - Repurpose the TC and TTL Fields
    - Use (almost) the entire label as a data field
    - Forwarding action indicator
    - Reuse ELI as an FAI
  - DataAfterBOS Proposals
    - MPLS Extension Header
    - Generic Delivery Function
    - iOAM
    - Is it a requirement to have multiple Ancillary Data (AD) items after BoS?
    - Can the AD change size at a P router?
    - Should action headers be end-to-end persistent?
    - How do we instruct some nodes to take action along a path but not others?

Work Items - 1

- The following additional work items have been identified:
  - Understand the use cases / applications for this work
    - In-Situ OAM
    - Network Slicing
    - Networking that is time sensitive/time critical
    - MPLS network programming

The Design Team Agreements So Far 1

See:
https://trac.ietf.org/trac/mpls/wiki/2021-07-22-agenda

- We want to limit the number of new assignments of base special purpose labels (bSPLs) as much as possible.
- We have a standardized associated channel, the GAL/GACH. We are not going to change the associated channel in anyway that breaks existing implementations. The ACH is found immediately after the label carrying the Bottom of Stack (BoS) bit. Currently, there is no defined method to carry multiple ACHs in the same MPLS packet. GAL/GACH will only be an OAM or instrumentation tool and will not be used to carry meta-data with user-traffic.

The Design Team Agreements 2

- Any new mechanism to carry meta-data needs to have a well-defined method of handling types/versions that are not understood or supported by a receiving router.
- We need a mechanism to indicate presence of meta-data or actions on an MPLS packet. We therefore need an in-stack method to serve this purpose. Any in-stack method is in scope.
- One proposal is to "re-purpose" an existing bSPL to serve this purpose. However, in order to do this it must be shown that there is no potential interference with the current role of the bSPL.
- If we can't demonstrate the non-interference then we should assign specific forwarding action indicator base special purpose label.

The Design Team Agreements 3

- Multiple actions may need to be indicated by the same bSPL.
- The coexistence of OAM mechanisms and ancillary data encodings needs to be designed in the new mechanism.

The Work Continues

- We will discuss these issues in more detail in this session.
- We seek input from the WGs on this work.
- The work will continue in the DT and we encourage all those interested to participate.
- Questions?