USE CASES FOR MPLS FUNCTION INDICATORS AND ANCILLARY DATA

draft-saad-mpls-miad-usecases-01

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OVERVIEW

- MPLS Function Indicators and Ancillary Data (MIAD) attempt to address requirements from some new MPLS applications that require
  - inclusion of an indicator in the MPLS packet to allow specific function(s) to be invoked on the MPLS packet on hops along the LSP path
  - Ancillary data may also be included to supplement the invocation of specific functions/actions
- Ancillary data:
  - Is added by the ingress LER along with the user traffic
  - May be updated by transit LSR(s) as packet traverses the LSP
  - Is removed/disposed-of by the LER

USE-CASES (1/3)

1. No Further Reroute (NFRR) - draft-kompella-mpls-nffrr
   - undesirable (and detrimental) to second fast reroute packets already impacted by a 1st FRR event
     - Example occurs in multi-homed usecase when multiple CE-PE links fail
     - PE detecting failure can reroute protected traffic between them in a loop
   - Packets may be marked with ***NFRR Function Indicator*** to avoid a second fast reroute
2. Insitu-OAM - draft.gandhi-mpls-ioam-sr
   - IOAM records operational and telemetry information in data packets while they traverses an MPLS LSP path
   - Packets may be marked with an ***IOAM Function Indicator*** and carry IOAM data that is updated by LSR(s) and/or LERs

USE-CASES (3/3)

3. Network Slicing - ietf-teas-ietf-network-slices
   - Network Slice Services can be mapped to specific Network Resource Partitions (NRPs)
     - Packets steered over NRP may carry a selector (FAS) to distinguish them
   - Packets may be marked with ***Resource Selector Function Indicator*** and carry the FAS to enable LSRs to use identify them
4. Time Sensitive Networking (Under Investigation)
   - MPLS packets may carry timestamps or time budget that enable routers to make queuing decisions for time sensitive packets
   - Packets may be marked with a ***Time Function Indicator*** and carry time-stamp data to allow LSR(s) to use it when prioritizing/scheduling packets

USE-CASES (3/3)

5. Network Programming - RFC8986 (Under Investigation)
   - Allows an operator or an application to specify a packet processing program encoded a sequence of instructions in the packet header
   - The MPLS packets may carry such program instruction as a Function Indicator and have the function arguments as associated Ancillary Data
6. Service Function Chaining (Under Investigation)
   - Further investigation needed on carrying the Network Services Header (NSH) in MPLS Extended Header in the form of Ancillary Data

NEXT STEPS

- Some of the documented use-cases are driven by application requirements
- Others require may require further investigation/validation
- Welcome further input from the WG and addition or updates to documented use-cases