#### Directed BFD Return Path draft-mirsky-mpls-bfd-directed-00

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- Node S wants to monitor the Path{71, 10000, 70}
- Node R would use the best route R-B-A-S for BFD session reverse direction
- If link R-B fails, e.g. overloaded or high error rate, S will detect failure and may treat it as bi-directional defect. Hence we get false positive that may trigger unnecessary actions on the tunnel, e.g. protection switchover.

## **Problem Statement**

- Ability to interpret uni-directional defect as by-directional failure depends on co-routedness of OAM flows
- BFD implicitly uses co-routedness of IP:
  - single hop IP links presumed bi-directional corouted;
  - multi-hop IP best route model creates bi-directional and mostly (ECMP is the exception) co-routed BFD sessions
- Directing reverse direction of an BFD session is useful, e.g. when forward direction uses explicitly routed path
- MPLS data plane primary interest
- IPv6 data plane considered

## **Proposed solution**

- LSP Ping is used to bootstrap a BFD session in IP/MPLS environment [RFC 5884]
- Introduce BFD Reverse Path TLV
  - sub-TLV would characterize the return path
  - can re-use sub-TLVs defined in IANA registry MPLS
    LSP Ping TLVs sub-registry sub-TLVs for TLV Type 1
  - introduce two new sub-TLVs:
    - Segment Routing MPLS Tunnel
    - Segment Routing IPv6 Tunnel
  - New sub-TLVs may be used in Return Path TLV [RFC 7110]

## **BFD Reverse Path TLV**

BFD Reverse Path TLV Type	Length	
Reverse Path sub-TLV		

#### Segment Routing MPLS Tunnel sub-TLV

SR MPLS Tunnel sub-TLV Type	Length	
Label Stack Element		

### Segment Routing IPv6Tunnel sub-TLV

SR IPv6 Tunnel sub-TLV Type	Length	
IPv6 Prefix		
IPv6 Prefix		

# Control reverse direction of BFD session



- Node S wants to monitor the Path{71, 10000, 70}
- Node R would use the best route R-B-A-S for BFD session reverse direction
- Node R must be instructed to use Path{75, 20000, 73} to maintain BFD session over bi-directional co-routed associated OAM channel

## Next steps

Solicit comments & feedback from the WG