

Directed BFD Return Path

draft-mirsky-mpls-bfd-directed-00

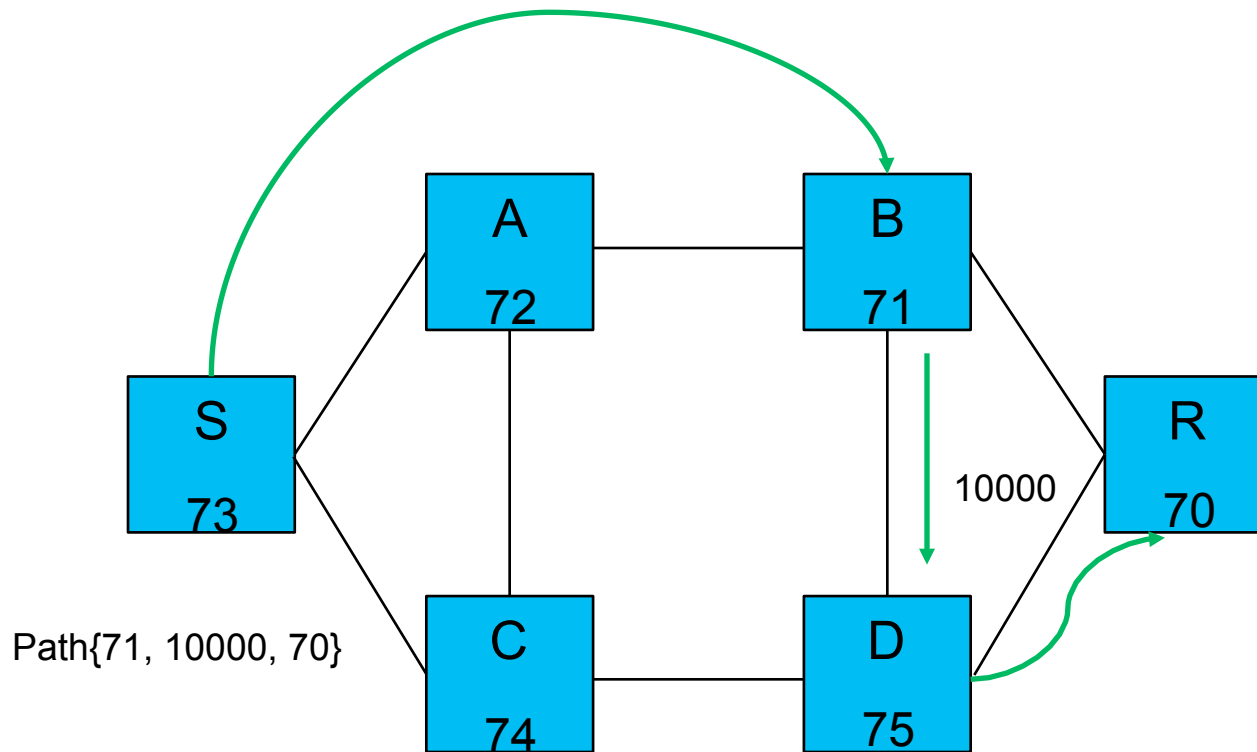
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Problem Statement



- 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 bi-directional failure depends on co-routedness of OAM flows
- BFD implicitly uses co-routedness of IP:
 - single hop – IP links presumed bi-directional co-routed;
 - 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	

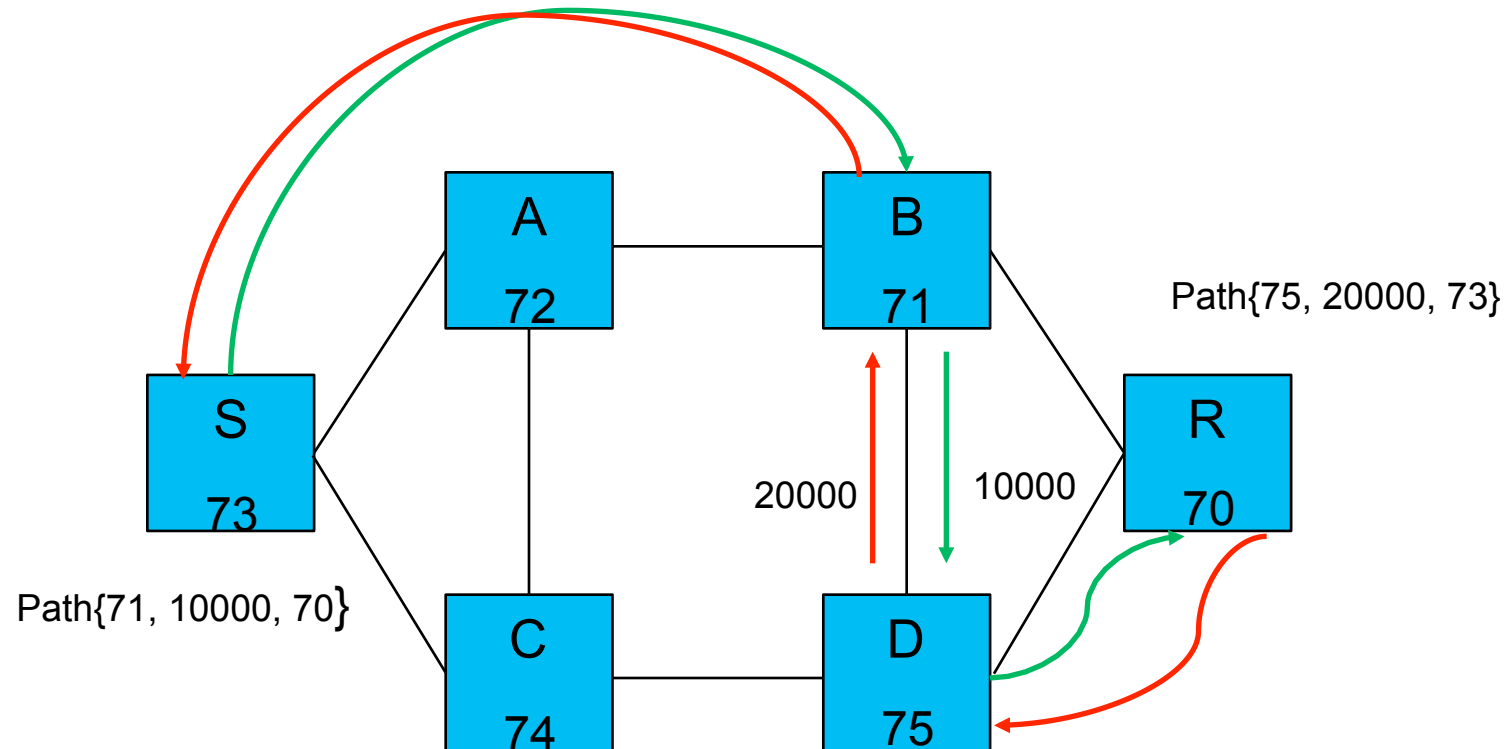
Segment Routing MPLS Tunnel sub-TLV

SR MPLS Tunnel sub-TLV Type	Length
Label Stack Element	
Label Stack Element	
Label Stack Element	
Label Stack Element	

Segment Routing IPv6 Tunnel 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