SRv6 OAM

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Reference Topology

1 2 3 4

SRv6 Capable
classic IPv6 Node
classic IPv4 Node
Message Processing Node
History of the Draft

- draft-ali-6man-srv6-oam-00 was published in July 2017.
  - Main draft describing use-cases including classic ping and traceroute in SRv6 networks.

- draft-ali-6man-srv6-oam-01 was published in October 2017.
  - Revision with editorial changes.

- draft-ali-spring-srv6-oam-00.txt was published in Feb 2018.
  - Added SRv6 ping and traceroute.
  - Added SRv6 segment-by-segment ping and overlay traceroute.

- draft-ali-spring-srv6-oam-01.txt was published in July 2018.
  - Moved O-bit flag from draft-ietf-6man-segment-routing-header-14
  - Moved OAM SIDs from draft-filsfils-srv6-network-programming-05
OAM Building Blocks

• OAM SIDs
  – END.OP
    > OAM Endpoint with Punt.
  – END.OTP
    > OAM Endpoint with Timestamp and Punt.

• SRH.Flags.O-flag
  – O-flag processing
    > Punt a timestamped copy of the packet and forward
    > Forward and punt a timestamped copy of the packet

```
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
+--+--+--+--+--+--+--+--+
O
+--+--+--+--+--+--+--+--+
```
Use Cases (I-D illustrations)

• Classic Ping
• Classic Traceroute
• Use of the existing ICMP mechanisms.
  – ICMPv6 related processing remains unchanged.
  – Works seamlessly with the classic IPv6 nodes.
  – Adds a new ICMPv6 message type for SRv6 OAM.
ICMPv6 Ping
Via a SID list

• The originator node constructs an SRH using the segment list specified by the user and adds it to IPv6 packet.
• All other ICMPv6 related processing remains unchanged.
• No changes are required at the transit node.
• No changes are required at the destination node.
Traceroute
Via a SID list

• The originator node constructs an SRH using the segment list specified by the user and adds it to traceroute probe packet.
• All other IPv6 traceroute related processing remains unchanged.
• No changes are required at the transit node.
• No changes are required at the destination node.
Use Cases (I-D illustrations – cont’ed)

• SRv6 Ping
  – End-to-end
  – Segment-by-segment

• SRv6 Traceroute
  – Hop-by-hop
  – Segment-by-Segment (Overlay Traceroute)

• SRv6 Paths Monitoring
  – Applicability of draft-ietf-spring-oam-usecase-10 to SRv6 Networks

• In-situ OAM
  – Applicability of ietf-ippm-ioam-data to SRv6 Networks
Pinging a SID Function

- An:OTP:: SID is instructed in front of the target SID where punt behavior needs to be programmed. E.g., A4::C45 in this example.
SRv6 Overlay Traceroute

As Hop Limit is set to 64, all classic transit and SRv6 pure transit nodes are skipped in the overlay traceroute.

- O-bit is set and hop limit is set to 64.
- As Hop Limit is set to 64, the classic and SRv6 transit nodes do not respond.
- At each segment node, SRH.Flags.O=1 causes a copy of the packet punted and processed.
- Rest of the ICMPv6 message processing remains unchanged.
Next Steps

• The draft has been stable for quite sometime.
• The authors request WG adoption.