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 from SRH draft to this draft.
  – Presented in 6man at IETF102.

• draft-ali-spring-srv6-oam-02.txt was published in October 2018.
  – Presented at IETF103 (6man and Spring).

• draft-ali-6man-spring-srv6-oam-00.txt
  – Added IOAM Support.
Deployment Status

- Deployed in a nation-wide network at Softbank.
- Deployed in a multi-city network at China Telecom.
- Additional deployments are in preparation.
Implementation and Interoperability Status

• Supported by at least 10 platforms with shipping implementation:
  – Cisco ASR 9000 running IOS XR shipping code
  – Cisco NCS 5500 running IOS XR shipping code
  – Cisco NCS 540 running IOS XR shipping code
  – Cisco ASR 1000 running IOS XE engineering code
  – Huawei ATN with VRPV8 shipping code
  – Huawei CX600 with VRPV8 shipping code
  – Huawei NE40E with VRPV8 shipping code
  – Huawei ME60 with VRPV8 shipping code
  – Huawei NE5000E with VRPV8 shipping code
  – Huawei NE9000 with VRPV8 shipping code
  – Huawei NG-OLT MA5800 with VRPV8 shipping code

• Results for Multi-vendor Interoperability Testing will be showcased at MPLS World congress in April 2019.
Draft Summary

• The document describes how existing ICMP mechanisms can be used in SRv6 Network.

• The document defines SRH.Flags.O-bit
  – The O-bit is used to implement “timestamp, punt and forward” behavior.
  – SRH.Flags.O-bit was originally defined in SRH draft.

• The document defines two OAM SIDs for programmable OAM:
  – END.OP (OAM Endpoint with Punt)
  – END.OTP (OAM Endpoint with Timestamp and Punt)

• The document describes procedure for In-situ OAM (IOAM) in SRv6 network.
Use Cases (I-D illustrations)

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

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

• SRv6 IOAM

• SRv6 Paths Monitoring
  – Applicability of RFC8403 to SRv6 Networks
OAM Data Piggybacked in Data traffic (SRv6 IOAM)

- IOAM data is encapsulated using encoding defined in [I-D.ietf-ippm-ioam-data].
- IOAM data is carried in SRH TLV.
- If IOAM data is in the SRH, only segment capable of adding IOAM data needs to modify the TLV and write the IOAM data.
Next Steps

• Draft has been deployed in multiple production networks.
• Multiple interoperable implementations exist.
• The authors like to request 6man WG for adoption of this work.