Export of Segment Routing IPv6 Information in IPFIX
draft-tgraf-opsawg-ipfix-srv6-srh

Enabling insights in SRv6 forwarding plane
by adding Segment Routing dimensions
SRv6 @ IPFIX

Data-Plane visibility is missing in SRv6

• SRv6 is already deployed at network operators (draft-matsushima-spring-srv6-deployment-status). If you know any other network operator which migrated from MPLS to SRv6 yet.

  -> Feedback welcome

• Data-Plane visibility is missing in SRv6. Unable to see how much traffic is being forwarded or dropped with which SID. **Network operators flying blind.**

• Segment Routing Header is defined in Section 2 of RFC 8754.
**SRv6 @ IPFIX**

IPFIX entities in context of the SRH (1)

- **srhSegmentIPv6sLeft**
  8-bit unsigned integer defining the number of route segments remaining to reach the end of the segment list.

- **srhTagIPv6**
  16-bit tag field defined in the SRH that marks a packet as part of a class or group of packets sharing the same set of properties.

- **srhFlagsIPv6**
  8-bit flags defined in the SRH.

- **srhActiveSegmentIPv6Type**
  Name of the routing protocol or PCEP extension from where the active SRv6 segment has been learned from.

- **srhSegmentLocatorLength**
  The number of significant bits. Together with srhSegmentIPv6 it enables the calculation of the SRv6 Locator.

- **srhSegmentEndpointBehavior**
  16-bit unsigned integer that represents a SRv6 Endpoint behavior.
SRv6 @ IPFIX

IPFIX entities in context of the SRH (2)

- **srhSectionIPv6**
  Exposes the SRH and its TLV's as defined in section 2 of [RFC8754] as series of n octets.

- **srhSegmentIPv6ListSection**
  Exposes the SRH Segment List as defined in section 2 of [RFC8754] as series of n octets.

- **srhSegmentIPv6**
  128-bit IPv6 address that represents an SRv6 segment.

- **srhActiveSegmentIPv6**
  128-bit IPv6 address that represents the active SRv6 segment.

- **srhSegmentIPv6BasicList**
  Ordered basicList [RFC6313] of zero or more 128-bit IPv6 addresses in the SRH that represents the SRv6 segment list. The Segment List is encoded starting from the active segment of the SR Policy.
SRv6 @ IPFIX
Draft Status

• Received comments from SPRING, OPSAWG and other network operators.
• **Addressed all open issues** and double-checked the IANA consideration section with the IPFIX doctors.
• Added "Compressed SRv6 Segment List Decomposition" in operational consideration section
• `srhSegmentLocatorLength` and `srhSegmentEndpointBehavior` has been added and included in the use case and operational section description
• Aligned IE naming according to [https://datatracker.ietf.org/doc/html/rfc7012#section-2.3](https://datatracker.ietf.org/doc/html/rfc7012#section-2.3)
• Updated srhFlagsIPv6 registry
• Added data-template and data-record examples for `srhSegmentIPv6ListSection` and `srhSectionIPv6` in example section
SRv6 @ IPFIX

Next Steps

• Missing SRv6 data-plane visibility is a recognized problem.
• 2 vendors validated technical feasibility and working on implementations.
• INSA Lyon working on running open-source code in FD.io VPP. **Will be shown at IETF 115 hackathon.**
• The authors believe that document should progress quickly through IETF to avoid private enterprise code points being used in SRv6 deployments.
• **The authors would like to go call for adoption in OPSAWG (was already requested at IETF 113)**