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

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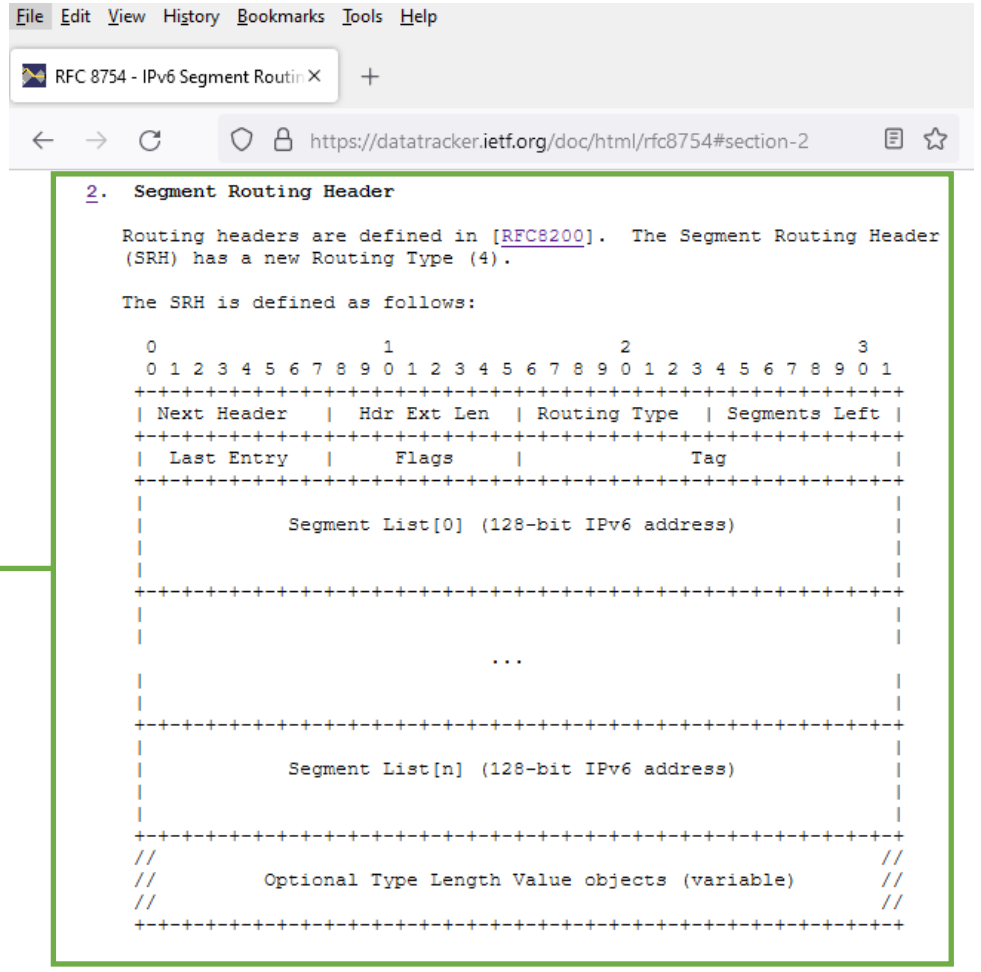
SRv6 @ IPFIX

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**

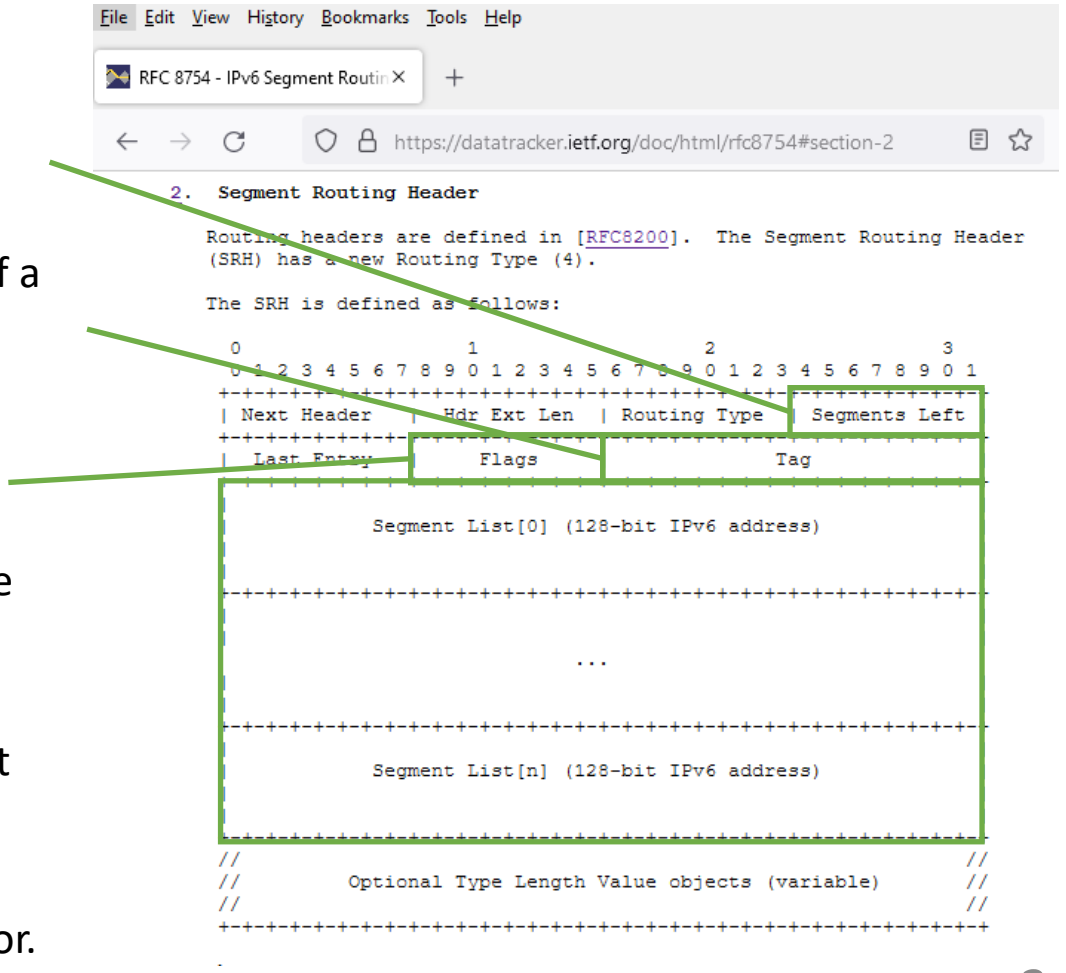
  Name of the routing protocol or PCEP extension from where the active SRv6 segment has been learned from.

- **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**

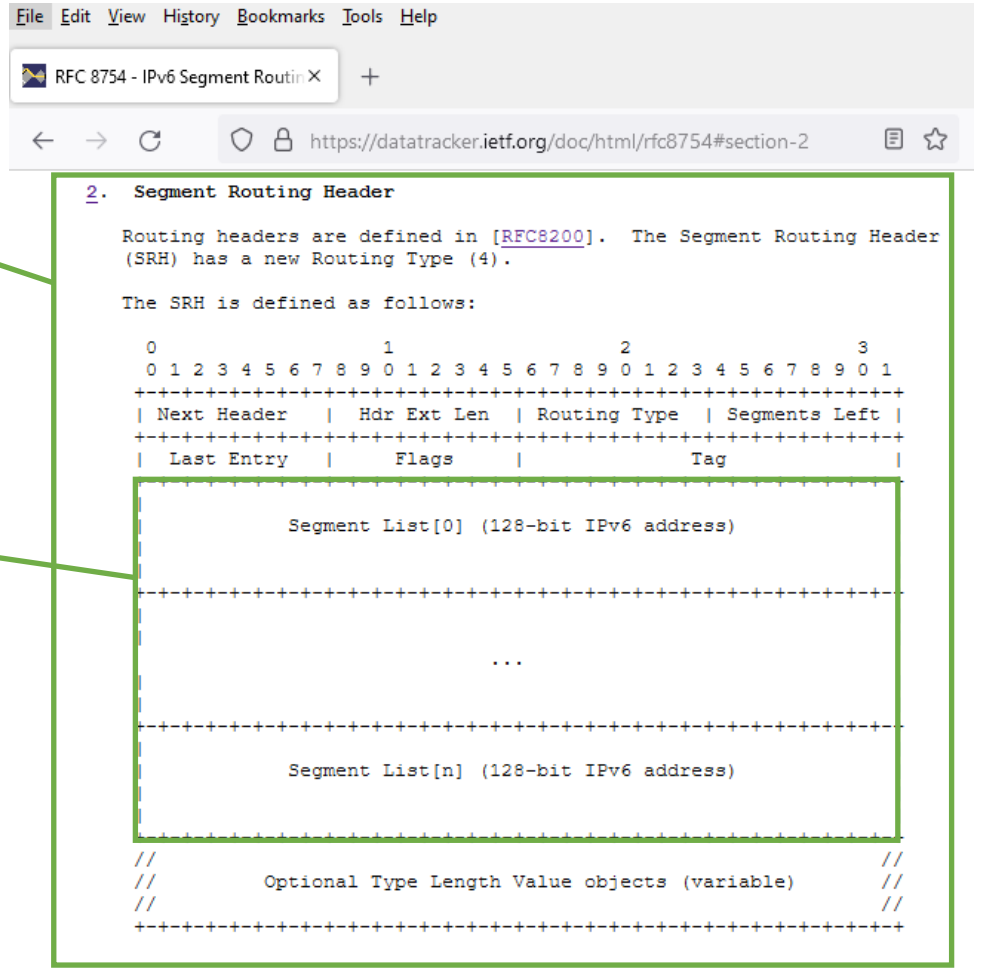
  128-bit IPv6 address that represents an SRv6 segment.

- **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
- 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 (was already requested at IETF 113)**

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