

SRv6 BGP based overlay services

draft-dawra-bess-srv6-services-00

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High Level Updates

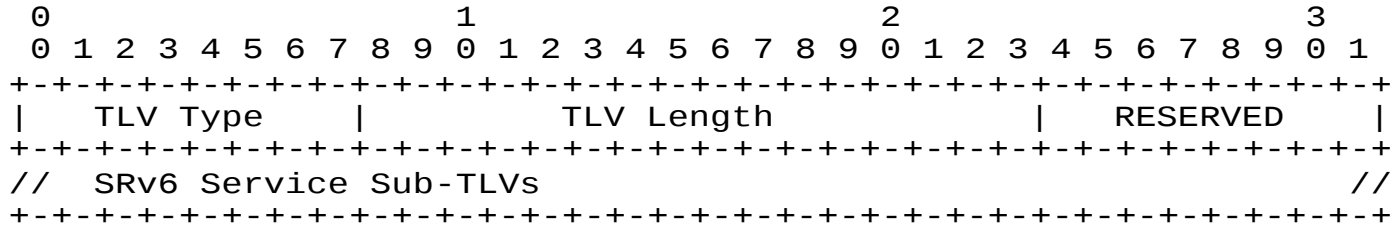
- Presented L3VPNoSRv6 in IDR at IETF98
- Presented EVPNoSRv6/Global AFs in IDR at IETF101
- SRv6 Services document have matured significantly:
 - Multiple deployments and implementations across multiple vendors
 - Relevant documents progressing in individual WGs
- Minor updates to this document to cover SRv6 BGP Services:
 - Slight modification of SRv6 SID TLV(s) to be more flexible
 - Optional SRv6 Service data sub-sub-TLV
 - No other major changes in the document

What we want to do

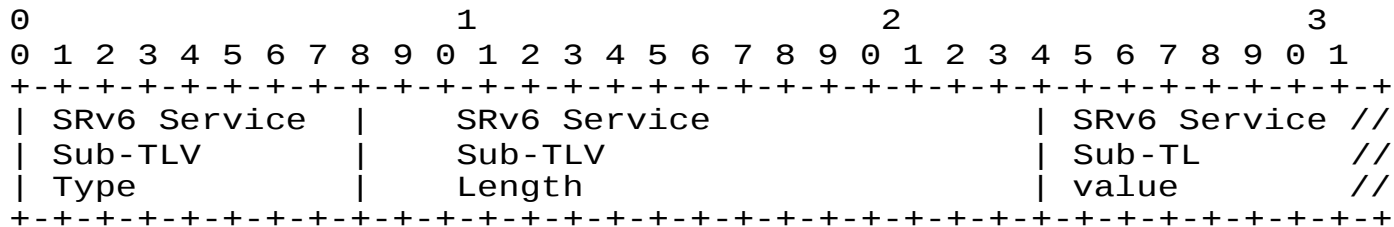
- Enable segment routing over IPv6 Dataplane
- Advertise segments IDs (SIDs) and associated functions for VPN(s)/Global AF(s)
- Reduce overhead in migration of brownfield deployments.



SRv6 Services TLV

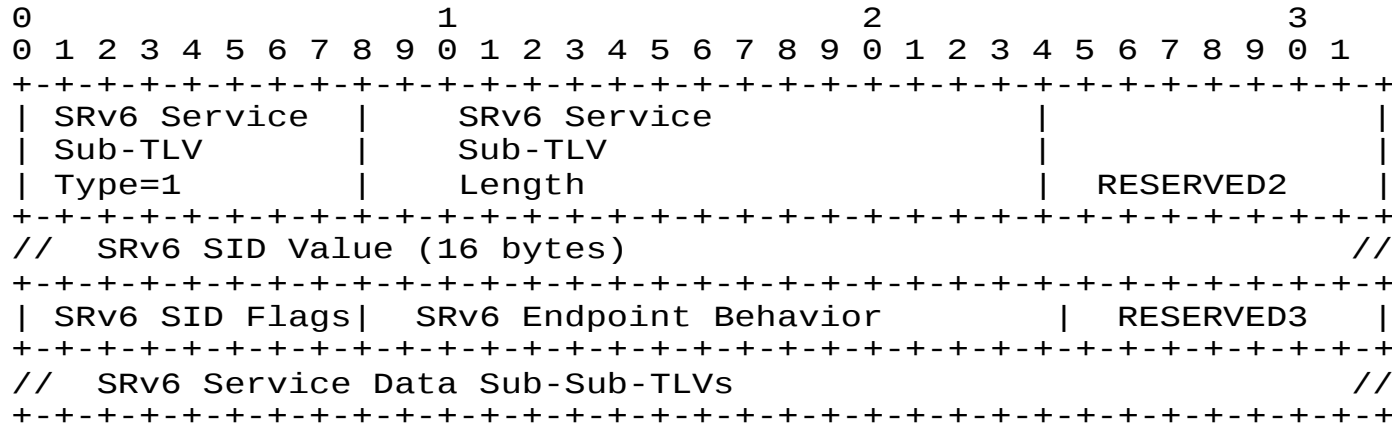


SRv6 Service Sub-TLVs



- **TLV Type:** **TBD1** for SRv6 L3 Service TLV, **TBD2** for SRv6 L2 Service TLV
- **TLV Length:** 16bit field. The total length of the value portion of the TLV.
- **RESERVED:** 8 bit field. SHOULD be 0 on transmission and MUST be ignored on reception.

SRv6 SID Information Sub-TLV



- Type: 1** for SRv6 SID Information Sub-TLV
- SRv6 SID Value:** Encodes an SRv6 SID as defined in [I-D.filsfils-spring-srv6-network-programming]. For instance:
 - L3 SIDs:** End.DX4 / DT4, End.DX6 / DT6
 - L2 SIDs:** End.DX2, End.DX2V, End.DT2U, End.DT2M / Arg.FE2
- SRv6 Service Data Sub-Sub-TLV** (variable): This field contains optional properties of the SRv6 SID



SRv6 Service SID Information



- An SRv6 SID is a 128-bit IPv6 address structured in 3 parts
 - Locator: Node IPv6 address will be encoded
 - Function: VPN Label or L2VPN / EVPN or Global functions are encoded
 - Argument: Optional
 - Flexible bit-length allocation between the three parts

SRv6 EVPN Services

- RFC7432 baseline procedures were not modified
- SRv6-VPN SID corresponding to EVPN (L2/L3) is attached to EVPN NLRIs
- Reduce overhead in migration of brownfield deployments.



EVPN L3 Services Encoding

BGP RT-5	value
ESI	ZERO
IP address	IP address
GW IP address	ZERO
Label	MPLS L3VPN label



BGP RT-5	value
ESI	ZERO
IP address	IP address
GW IP address	ZERO
Label	IMPLICIT NULL label



SRv6 SID Info Sub-TLV
Type-1
SID → End.DT6 / DT4 / DX6 / DX4

SRv6 Global Services Encoding

- MP_REACH_NLRI for IPv4/IPv6 is Encoded with AFI/SAFI with IPv6 NH
- Motivation to achieve BGP free core with Global SIDs
- Function END.DX6/END.DX4 (or END.DT6/END.DT4) are encoded using SRv6 Global SID



Implementation Status

- Three Cisco Hardware-forwarding platforms: ASR 1K, ASR 9k and NCS 5500
- Two Cisco network operating systems: IOS XE and IOS XR
- Huawei Hardware-forwarding platforms: ATN, CX, ME, NE5000E, NE9000, NG-OLT
- Huawei network operating systems: VRPv8
- Barefoot Networks Tofino on OCP Wedge-100BF
- Linux Kernel officially up streamed in 4.10
- fd.io



Draft: Next Steps

- Seeking WG adoption!
- Suggestions/comments are welcome!

