BGP extensions for SRv6-VPN

draft-dawra-idr-srv6-vpn-03

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Agenda

- Problem
- Solution

MUST READ !!!!!!

draft-filsfils-spring-srv6-network-programming

Also Read

draft-ietf-6man-segment-routing-header

draft-ietf-idr-bgp-prefix-sid

Agenda

- Problem
- Solution

What we want to do

- Enable segment routing over IPv6 Dataplane
- Advertise segments IDs (SIDs) and associated functions for VPN/Global AF(s)
- Reduce overhead in migration of brownfield deployments.
- Note: Presented L3VPNoSRv6 in IETF98

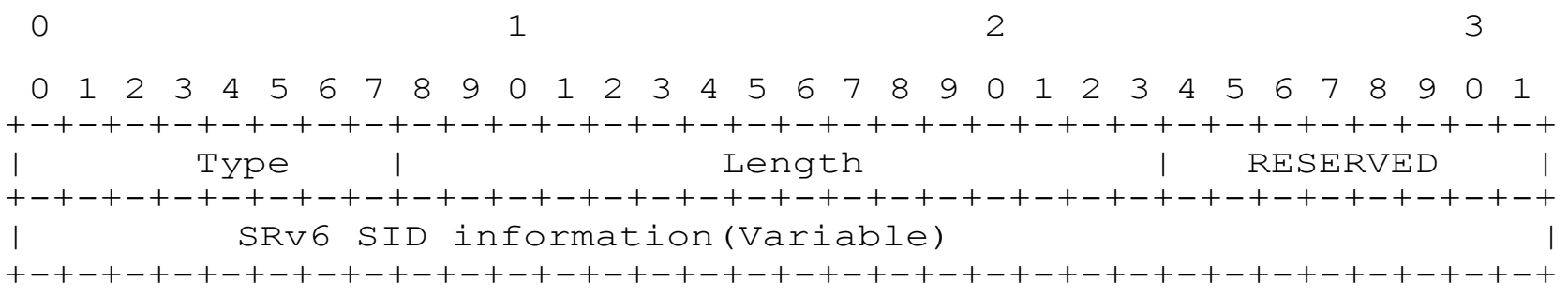
Agenda

- Problem
- Solution

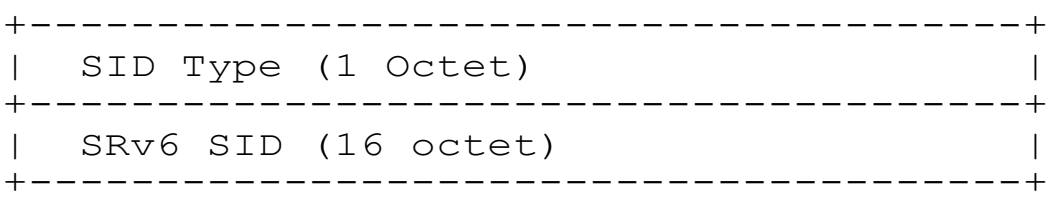
Proposed BGP Extensions

- Extend Prefix-SID Attribute with new SRv6-VPN TLV

SRv6-VPN TLV



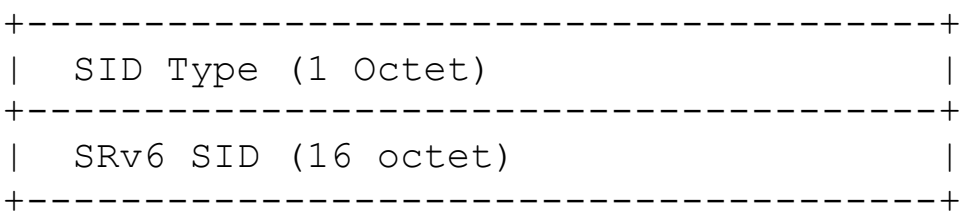
SRv6 SID information is encoded as follows:



- Type is **TBD**
- Length: 16bit field. The total length of the value portion of theTLV.
- RESERVED: 8 bit field. SHOULD be 0 on transmission and MUST be ignored on reception.

VPN SID encoding in SRv6-EVPN TLV

SRv6 SID information is encoded as follows:



- **Type-1** - corresponds to the equivalent functionality provided by an L3VPN Label attribute.
- **Type-2** - corresponds to the equivalent functionality provided by an L2VPN / EVPN Label attribute.

Type-1: End.DX4 / DT4, End.DX6 / DT6
Type-2: End.DX2, End.DX2V, End.DT2U, End.DT2M / Arg.FE2

Details are in SRv6 network programming document

SRv6-EVPN Encoding

- 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 functions will be encoded
  - Argument: Optional
  - Flexible bit-length allocation between the three parts

SRv6 EVPN

- 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.

Example EVPN L3 Encoding

BGP RT-5	value
ESI	ZERO
IP address	IPv4 address
GW IP address	ZERO
Label	MPLS L3VPN label

BGP RT-5	value
ESI	ZERO
IP address	**IPv6** address
GW IP address	ZERO
Label	**IMPLICIT NULL label**

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

Global IPv4/IPv6 SRv6 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

Draft: Next Steps

- Seeking WG input and feedback
- Suggestions/comments are welcome!!