

Applying BGP-LS Segment Routing Extensions to BGP-LS SPF

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Introduction

- BGP-LS-SPF leverages the **mechanisms of both BGP protocol and BGP-LS protocol extensions**, with the **extensions to BGP-LS attribute and new NLRI selection rules** defined in *draft-ietf-lsvr-bgp-spf*.
- RFC9085 defines extensions to the BGP-LS address family in order to **carry SR-MPLS information via BGP**.
- RFC9514 t defines extensions to BGP - Link State (BGP-LS) **to advertise SRv6 segments** along with their behaviors and other attributes via BGP.
- In networks where BGP-LS-SPF is used as the underlay routing protocol, it may be **useful to enable SR based source routing mechanism** for traffic engineering and optimization.
- This document proposes to **introduce the BGP Link-State (BGP-LS) extensions for segment routing to the BGP-LS-SPF SAFI**.

SR-MPLS TLVs applicable to BGP-LS SPF

- BGP-LS-SPF should support the following TLVs with **Green color**:

	Type	Description	Reference	Note
Node Attribute TLVs for SR-MPLS	1161	SID/Label	RFC9085	
	1034	SR Capabilities	RFC9085	
	1035	SR Algorithm	RFC9085	
	1036	SR Local Block	RFC9085	
	1037	SRMS Preference	RFC9085	
Link Attribute TLVs for SR-MPLS	1099	Adjacency SID TLV	RFC9085	
	1100	LAN Adjacency SID TLV	RFC9085	LAN Interface is not considered in BGP-LS-SPF
	1172	L2 Bundle Member Attributes TLV	RFC9085	
Prefix Attribute TLVs for SR-MPLS	1158	Prefix-SID	RFC9085	
	1159	Range	RFC9085	
	1170	Prefix Attribute Flags	RFC9085	
	1171	Source Router Identifier	RFC9085	
	1174	Source OSPF Router-ID	RFC9085	

SRv6 Extensions Applicable to BGP-LS SPF

- BGP-LS-SPF should support the following TLVs with **Green color**:

	Type	Description	Reference	Note
Node Attribute TLVs for SRv6	1138	SRv6 Capabilities TLV	RFC9514	
	266	Node MSD TLV	RFC8814	
Link Attribute TLVs for SRv6	1106	SRv6 End.X SID TLV	RFC9514	
	1107	SRv6 LAN End.X SID TLV	RFC9514	LAN Interface is not considered in BGP-LS-SPF
	276	SRv6 Link MSD TLV	RFC8814	
Prefix Attribute TLVs for SRv6	1162	SRv6 Locator TLV	RFC9514	
Attribute TLVs for SRv6 SID NLRI	6	SRv6 SID NLRI type	RFC9514	
	518	SRv6 SID Information TLV	RFC9514	
	1250	SRv6 Endpoint Behavior TLV	RFC9514	
	1251	SRv6 PeerNode SID TLV	RFC9514	
	1252	SRv6 SID Structure TLV	RFC9514	

Next Steps

- For some TLVs, the values applicable to BGP-LS SPF may need to be specified?
- Welcome for comments and suggestions!
- Consider WG adoption of this straightforward draft?

Thank You