

# Advertisement of Remote Interface Identifiers for Layer 2 Bundle Members

**draft-ietf-lsr-l2-bundle-member-remote-id-02**

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# Overview

- This document describes how OSPF and IS-IS would advertise the remote interface identifiers for Layer 2 bundle members. The corresponding extension of BGP-LS is also specified
- Became a WG document since March, 2025
- Updated version-00 during WG adoption, based on the discussion from the maillist
- Updated version-02, reduce the number of authors to 5

# Update (1/2)

## More precise use case description

- Clarified TE and bidirectional path computation requirements

Abstract

In networks where Layer 2 (L2) interface bundles (such as a Link Aggregation Group (LAG) [IEEE802.1AX]) are deployed, a controller may need to collect the connectivity relationships between bundle members for traffic engineering (TE) purposes. For example, when performing topology management and bidirectional path computation for TE, it is essential to know the connectivity relationships among bundle members.

This document describes how OSPF and IS-IS would advertise the remote interface identifiers for Layer 2 bundle members. The corresponding extension of BGP-LS is also specified.

## Improved BGP-LS NLRI specification

- Explicitly references Peer Adj Link (RFC9086) for clarity

In BGP-LS, the remote interface identifiers of L2 bundle members are advertised as follows.

BGP-LS Link NLRI: Peer Adj Link for R1->R2(as described in Section 5.2 of [RFC9086])

Link Attributes:

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #1

L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional - as defined in Section 6)

## Security Considerations completed

- Added comprehensive security text, including OSPF/ISIS/BGP-LS

### 8. Security Considerations

This document describes how OSPF, IS-IS and BGP-LS would advertise the remote interface identifiers for Layer 2 bundle members. There are no new security issues introduced by the extensions in this document. The security considerations of [RFC8668], [RFC9356], [RFC9552], [RFC9085] and [RFC9086] are applicable to this document.

As always, if the IS-IS protocol is used in an environment where unauthorized access to the physical links on which IS-IS Protocol Data Units (PDUs) are sent occurs, then attacks are possible. The use of authentication as defined in [RFC5304] and [RFC5310] is recommended to prevent such attacks.

As always, if the OSPF protocol is used in an environment where unauthorized access to the physical links on which OSPF packets are sent occurs, then attacks are possible. The use of authentication as defined in [RFC5709], [RFC7474], [RFC4552], and [RFC7166] is recommended for preventing such attacks.

The isolation of BGP-LS peering sessions is recommended to ensure that BGP-LS topology information (including the newly added remote interface identifiers information) is not advertised to an external BGP peering session outside the trusted domain [RFC8402].

# Update(2/2)

## How Remote ID is Acquired

IGPs have no direct way to exchange L2 bundle member link identifiers since the Layer 3 protocol is not operating directly on the bundle members.

Some L2 protocols may be used to get the remote interface identifiers for bundle members:

- Discovered via [IEEE802.1AX] when used to form the LAG bundle.
- Run LLDP [802.1AB] on the bundle members to exchange interface identifiers by using Port ID TLV.  
(corrected from Management Address TLV)

## IANA Considerations

- Aligned the new IS-IS sub-TLV with protocol specifications by adding the MP field

Type	Description	22	23	25	141	222	223	MP
TBA	L2 Bundle Member	n	n	y	n	n	n	n
	Interface Remote Identifier							

# Next Steps

- Welcome your comments and suggestions
- Ready to WG Last Call

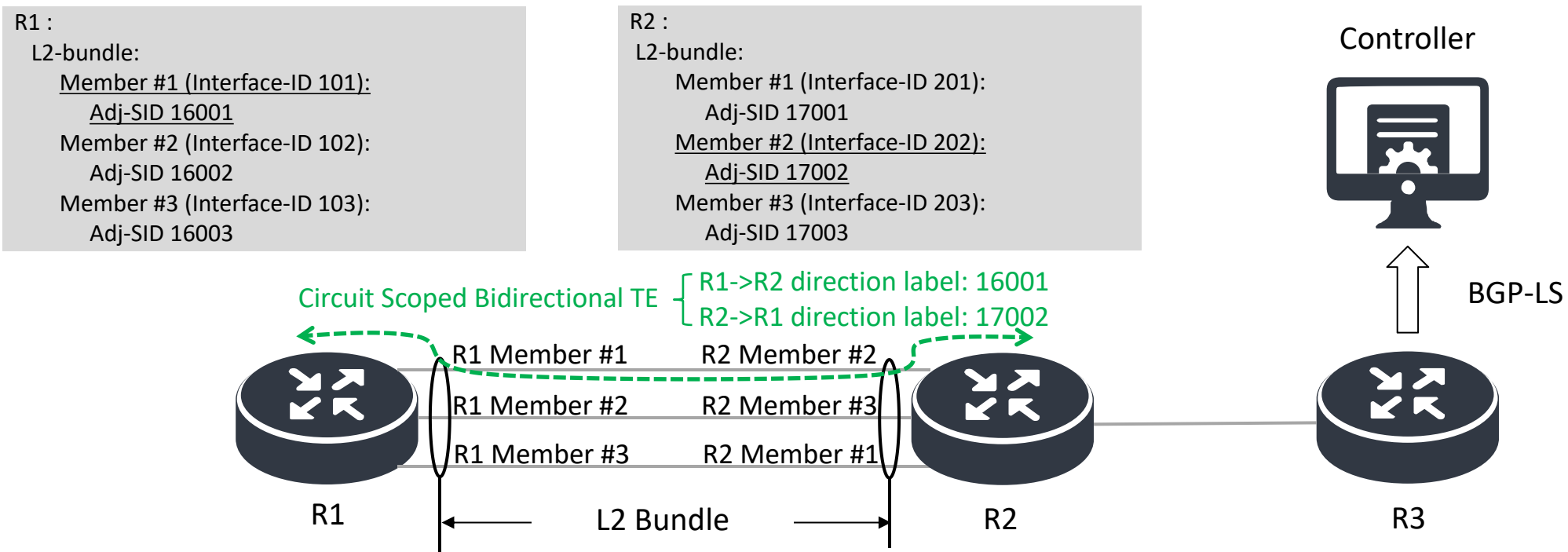
**Thanks**

# Background

Network operator may want to control bidirectional traffic flows on the individual member links of the Layer 2 bundle for TE purposes.

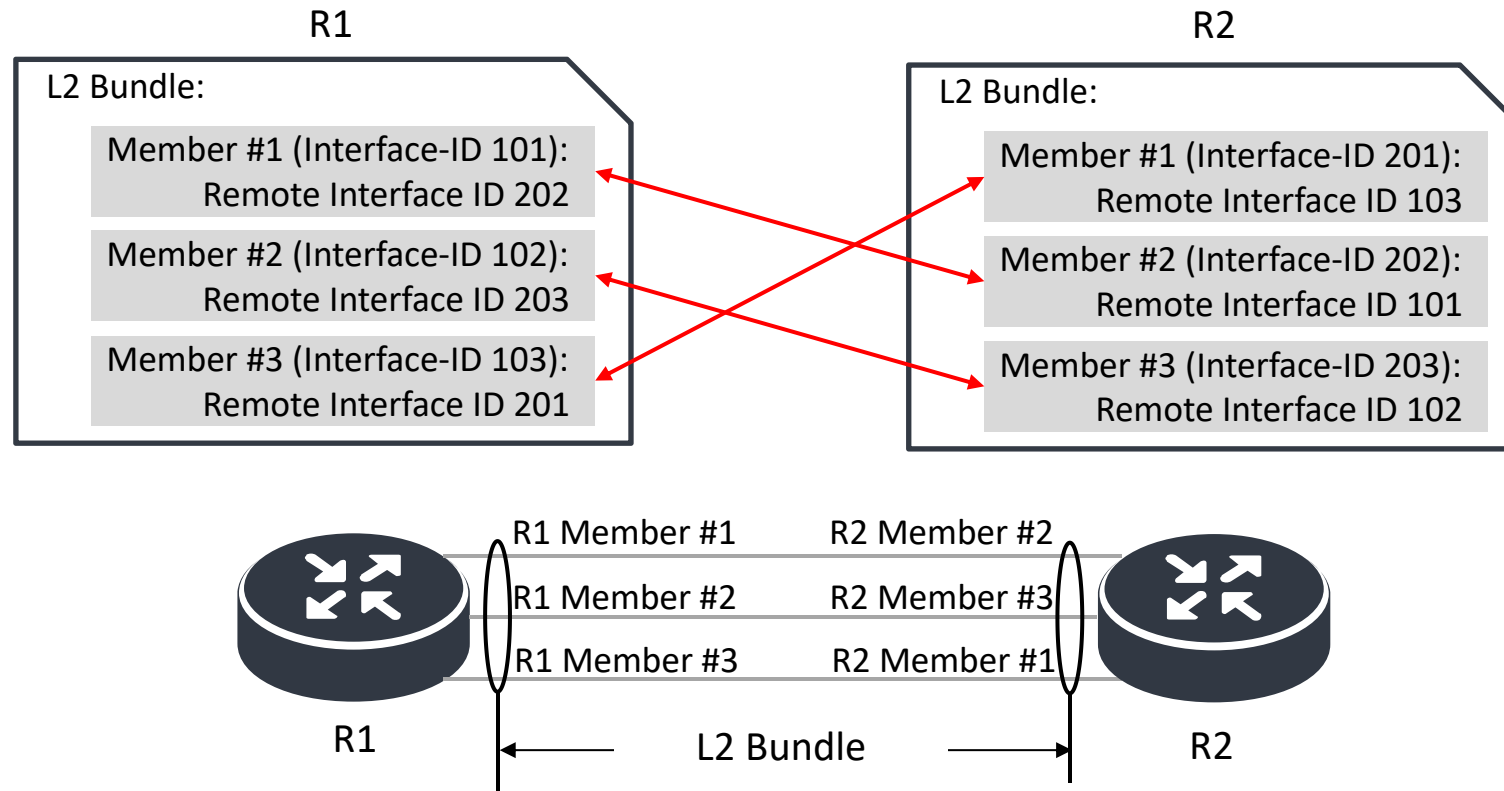
- The real-time bandwidth, delay, and link loss might be measured for each bundle member at both ends.
- Labels or SIDs might be allocated for each bundle member at both ends.

There would be requirements for the controller to figure out the connectivity relationships between bundle members.



# Solution Overview

Advertising the remote interface identifier for each L2 bundle member:



# OSPF Extension

A new L2 Bundle Member Interface Remote Identifier Sub-TLV is defined in both OSPFv2 and OSPFv3. It can be carried as a sub-TLV of the OSPF L2 Bundle Member Attributes TLV [RFC9356].

OSPFv2 Extended Link TLV, or OSPFv3 Router-Link TLV, for L3 Link:

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #1

L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional)

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #2

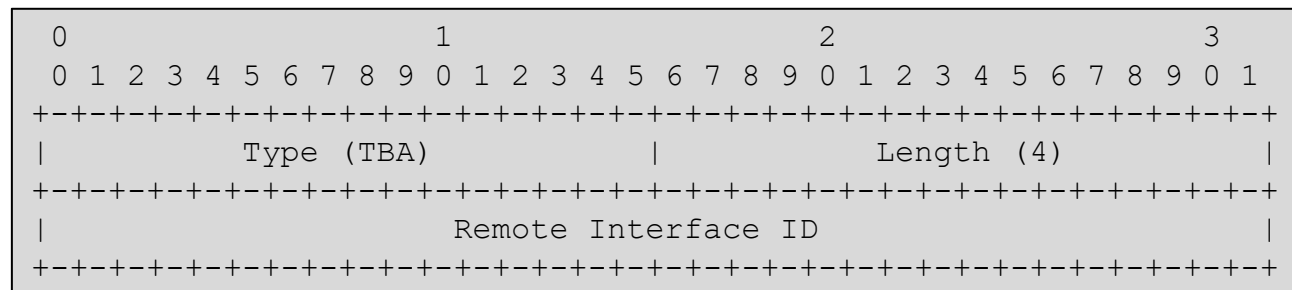
L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional)

...

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #n

L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional)



A remote interface ID with value of zero is not valid and MUST be ignored and handled as if the sub-TLV was not present.

# IS-IS Extension

A new L2 Bundle Member Interface Remote Identifier Sub-TLV is defined in IS-IS. It can be carried as a sub-TLV of the IS-IS L2 Bundle Member Attributes TLV [RFC8668].

L2 Bundle Member Attributes TLV:

Parent L3 Neighbor Descriptor

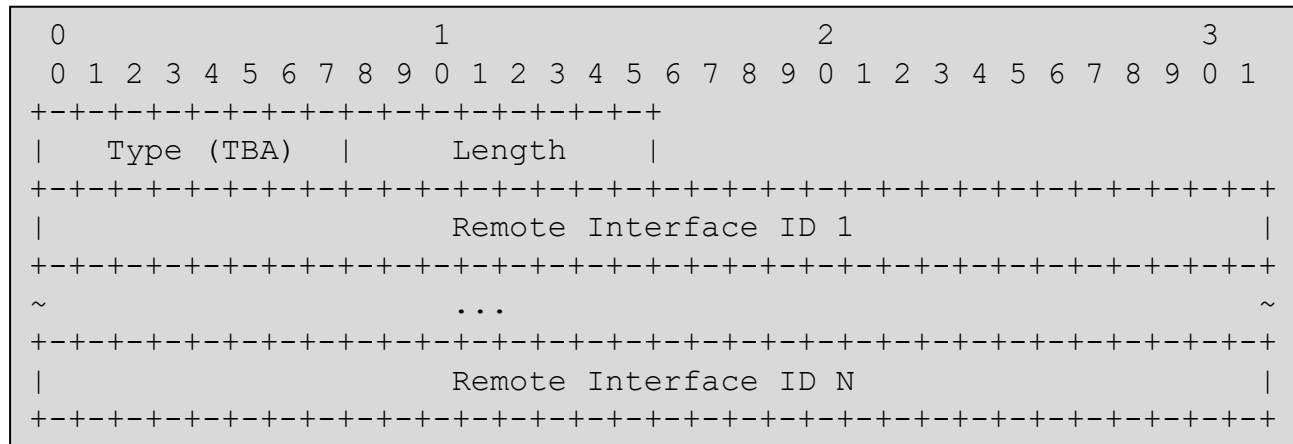
Length of L2 Bundle Attribute Descriptor

Number of L2 Bundle Member Descriptors

L2 Bundle Member Link Local Identifiers of Member #1,#2,...,#n

Sub-TLV(s)

L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional) for Member #1,#2,...,#n



There MUST be one Remote Interface ID for each of the L2 Bundle Members advertised under the associated L2 Bundle Member Attribute Descriptor. A remote interface ID with value of zero MUST be ignored and handled as if the value was unknown.

# BGP-LS Extension

A new L2 Bundle Member Interface Remote Identifier Sub-TLV is defined in BGP-LS. It can be carried as a sub-TLV of the BGP-LS L2 Bundle Member Attributes TLV [RFC9085].

NLRI for L3 Link R1->R2

Attributes:

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #1

L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional)

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #2

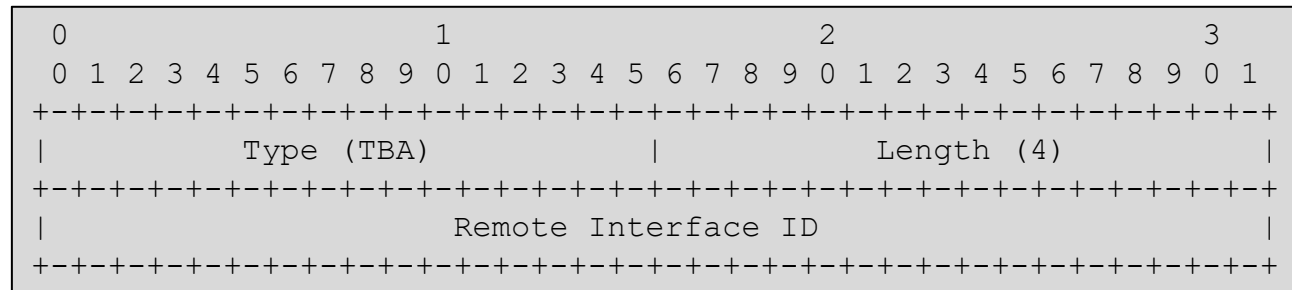
L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional)

...

L2 Bundle Member Attributes TLV:

L2 Bundle Member Descriptor of Member #n

L2 Bundle Member Interface Remote Identifier Sub-TLV (Optional)



A remote interface ID with value of zero is not valid and MUST be ignored and handled as if the sub-TLV was not present.