

# IS-IS TE attributes per application

## draft-ginsberg-isis-te-app-00

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# Motivation

**TE Link Attribute Advertisements presume enablement of RSVP-TE on a link**

**When multiple TE applications are in use:**

- **no way to indicate what applications are using attribute values on a given link**
- **no way to advertise application specific values**

**Inspired by and functionally equivalent to**  
***draft-ppsenak-ospf-te-link-attr-reuse***

# Variable Length Application Bit Mask

**Bit Mask Length: Non-zero (1 octet)**

**0 1 2 3 4 5 6 7**

**+ - + - + - + - + - + - + - +**

**L-bit:** Applications listed **MUST** use the legacy advertisements for the corresponding link found in TLVs 22, 23, 141, 222, and 223 or TLV 138 or TLV 139 as appropriate. (Avoids duplicate advertisements)

**R-bit:** RSVP-TE

**S-bit:** Segment Routing TE

**F-bit:** Loop Free Alternate

(more applications can be defined in the future)

# New sub-TLV for TLV 22,23,141,222,223

Application Bit Mask (variable)

Link Attribute sub-sub-TLVs – one for each of:

3 Administrative group (color)	34 Min/Max Unidirectional Link Delay
9 Max link bandwidth	35 Unidirectional Delay Variation
10 Max reservable link bandwidth	36 Unidirectional Link Loss
11 Unreserved bandwidth	37 Unidirectional Residual Bandwidth
14 Extended Administrative Group	38 Unidirectional Available Bandwidth
33 Unidirectional Link Delay	39 Unidirectional Utilized Bandwidth

Only one new sub-TLV required

Sub-sub-TLVs match corresponding sub-TLV code point/format

# New TLV for Application Specific SRLG

Neighbor System-ID + pseudo-node id (7 octets)

Application Bit Mask (variable)

Length of sub-TLVs (1 octet)

Link Identifier sub-TLVs (variable)

0 or more SRLG values (4 octets/SRLG)

Unlike existing SRLG (TLVs 138 and 139) this supports IPv4, IPv6, and unnumbered Link Identifiers:

Type	Description
4	Link Local/Remote Identifiers (see [RFC5307])
6	IPv4 interface address (see [RFC5305])
8	IPv4 neighbor address (see [RFC5305])
12	IPv6 Interface Address (see [RFC6119])
13	IPv6 Neighbor Address (see [RFC6119])

# Deployment Cases:

## 1)RSVP-TE only

Use Legacy advertisements

# Deployment Cases:

## 2) Multiple Apps – one of which is RSVP-TE

### Common Attributes

Use Legacy advertisements

Advertise new sub-TLV once/link w L-bit set

Backwards compatible

No advertisement duplication

3 extra bytes/link independent of how many attributes are advertised

# Deployment Cases:

## 3) Multiple Apps – All Attributes NOT shared w RSVP-TE

Use Legacy advertisements for RSVP-TE

Use new advertisements w L-bit clear

Backwards compatible

Advertisement duplication in cases where some attributes  
are shared w RSVP-TE



# Some Use Cases for Application Specific Attributes

- Using TE metric/bandwidth to influence LFA selection.
- Use different attributes for SR-TE vs RSVP-TE engineered paths.
- Defining a separate set of SRLGs in support of rerouting around a non-local catastrophic event e.g. a natural disaster affecting all traffic through a particular geographic area.

# Alternative Proposal

- draft-hegde-isis-advertising-te-protocols-02
- draft-hegde-ospf-advertising-te-protocols-00
- At IETF 97 it was agreed that one proposal needs to be selected by the WG
- Both OSPF and IS-IS should select functionally equivalent proposals

# TE Attributes and Application Requirements

Requirement	ppsenak-ospf-te-link-attr-reuse  ginsberg-isis-te-app	hegde-ospf-advertising-te-protocols  hegde-isis-advertising-te-protocols
Per link application indication	Supported	Supported
Per application attribute value	Supported	Not supported
Backwards Compatibility	Supported (uses duplicate advertisements)	Not supported
Partial Deployment	Supported (uses duplicate advertisements)	Supported w config changes on legacy routers
Extensible to new applications	Yes	Yes

# Next Steps

**Request WG Adoption**