

# draft-ppsenak-ospf-te-link-attr-reuse-00

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# OSPF Link Attributes

- Many link attributes have been defined in OSPF in the context of the MPLS TE and GMPLS
- [RFC3630](#), [RFC6827](#), [RFC4203](#), [RFC6827](#), [RFC4203](#), [RFC4124](#), [RFC5329](#), [RFC5330](#), [RFC5392](#), [RFC6001](#), [RFC7308](#), [RFC7471](#)
- All these link attributes are advertised in sub-TLVs of the TE Link TLV advertised in the Traffic Engineering LSA (RFC3630)



# TE Opaque LSA

- RFC 3630
  - “The extensions provide a way of describing the traffic engineering topology (including bandwidth and administrative constraints) and distributing this information within a given OSPF area. This topology does not necessarily match the regular routed topology”
- A link described in a TE Opaque LSA becomes part of the TE topology



# Extended Link LSA

- draft-ietf-ospf-prefix-link-attr-13.txt
  - “OSPFv2 Extended Link Opaque LSA - allows advertisement of additional attributes for links advertised in Router-LSAs.”
- Generic container for advertising link specific attributes
- Advertisement does not make the link part of IGP or TE topology



# Link Attributes Usage

- Some of the link attributes defined for MPLS TE and GMPLS are useful outside of TE/GMPLS
- Examples:
  - Remote interface IP address, Link Local/Remote Identifiers
    - Improved two way connectivity check
    - SR traffic engineering
  - Shared Risk Link Group
    - LFA
  - Unidirectional Link Delay, Unidirectional Available Bandwidth
    - Path Computation



# Link Attributes Advertisement

- How do we advertise link attributes originally defined for TE/GMPLS if the usage is outside of TE/GMPLS?
- Option 1:
  - Use TE Opaque LSA
- Option 2:
  - Use the Extended Link LSA and define new code-points for the existing link attributes



# Option 1 – TE Opaque LSA

- Problems:
  - Link becomes part of the TE topology, even though TE may not be enabled on the link
    - Problem with backward compatibility (RFC3630)
  - TE Opaque LSA could carry data that is not advertised by TE. There is no mechanism to indicate which link attributes in the TE Opaque LSA are to be passed to TE and which ones to be excluded
  - Link attributes used for non-TE purposes are spread across multiple LSAs (i.e., Adj-SID is advertised in Extended Link LSA)



## Option 2 – Extended Link LSA

- Use existing format of the TE link attributes
- Allocate code points from the OSPF Extended Link TLV Sub-TLV Registry
  - <http://www.iana.org/assignments/ospfv2-parameters/ospfv2-parameters.xhtml#extended-link-tlv-sub-tlvs>
- Code points allocated on a case by case basis dependent on the use-case

# Option 2 – Extended Link LSA (cont.)



- Advantages:
  - Advertisement does not make the link part of the TE topology
  - TE Opaque LSA remains to be used to describe TE topology according to RFC3630.
  - Clear distinction between TE and non-TE data. It avoids any conflicts and is fully compatible with the RFC3630.
  - All non-TE link attributes are advertised inside a single LSA (OSPF Extended Link LSA)



# Proposal

- Proposal is to use Option 2
- For those link attributes originally defined for TE that are useful for non-TE applications
  - Keep the existing format
  - Allocate new code-point from the OSPF Extended Link Opaque LSA TLV IANA registry



# Next Steps

- Three vendors contributed to the draft
- Draft solves a real problem
- Adopt draft-ppsenak-ospf-te-link-attr-reuse-00 as OSPF WG document