

OSPF Extensions for Broadcast Inter-AS TE Link

draft-chen-ospf-ias-lk-00

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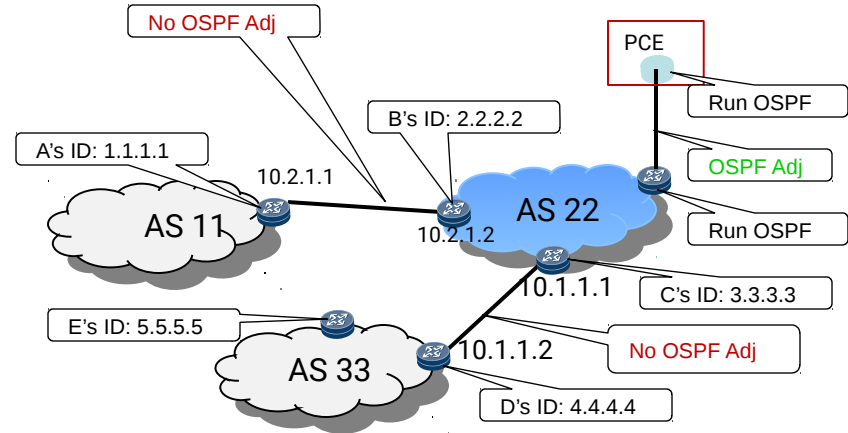
Introduction

Inter-AS Link (no OSPF running over it):

➤ OSPF-TE (RFC 5392) for P2P inter-AS TE links

1. Configure remote AS number
2. Configure remote router ID
 - E.g., P2P link between C and D
 - ✓ On C, configure D's AS and ID
 - ✓ On D, configure C's AS and ID
3. A TE link is advertised in Inter-AS-TE LSA with link TLV containing sub-TLVs for
 - 1). Link-Type: P2P
 - 2). ~~Link-ID~~ Remote AS and ASBR ID
 - 3). Local IP Address
 - 4). Remote IP Address
 - 5). TE Metric

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➤ No extensions for broadcast inter-AS TE links

Information on Broadcast Inter-AS TE Link

Information on a Broadcast Inter-AS TE Link:

- 1). Link-Type: Multi-access
- 2). ~~Link-ID DR's Interface IP~~
- 3). Local IP Address with Network Mask, Local AS
- 4). ~~Remote IP Address~~
- 5). TE Metric

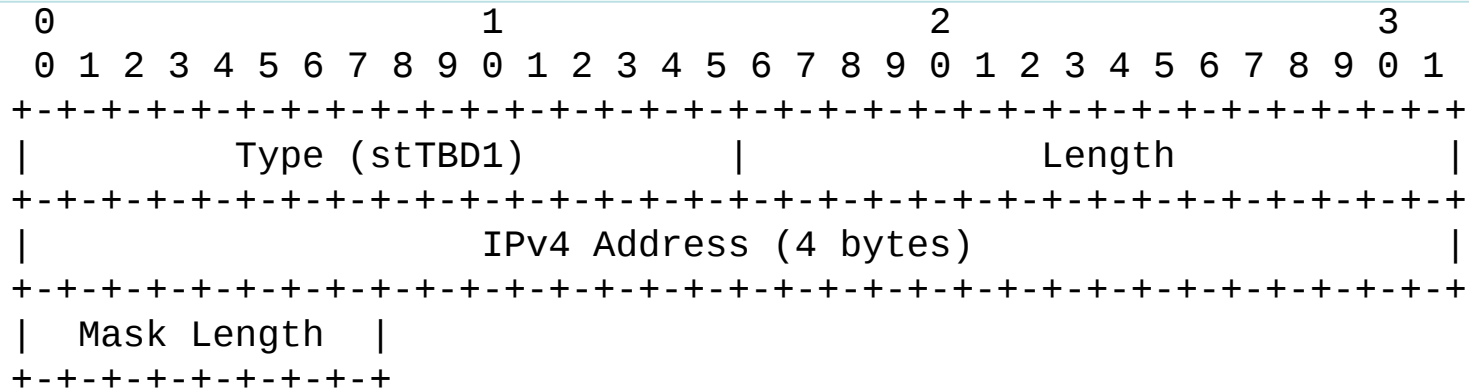
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i.e.,

- 1). Link-Type: Multi-access
- 2). Local IP Address with Network Mask, Local AS
- 3). TE Metric
- 4). Maximum bandwidth
- 5). Maximum reservable bandwidth
- 6). Unreserved bandwidth
- 7). Administrative group
- 8). SRLG

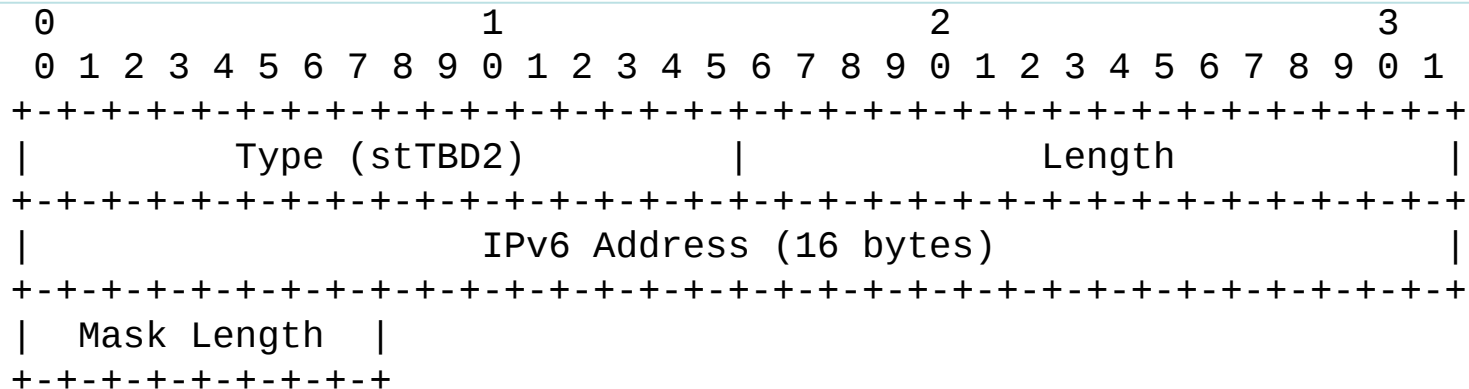
Extensions to OSPF: New sub-TLVs (1/2)

➤ **sub-TLV** for local IPv4 address with mask



- o IPv4 Address: Local IPv4 address of connection to broadcast link
- o Mask Length: Length of the IPv4 address mask

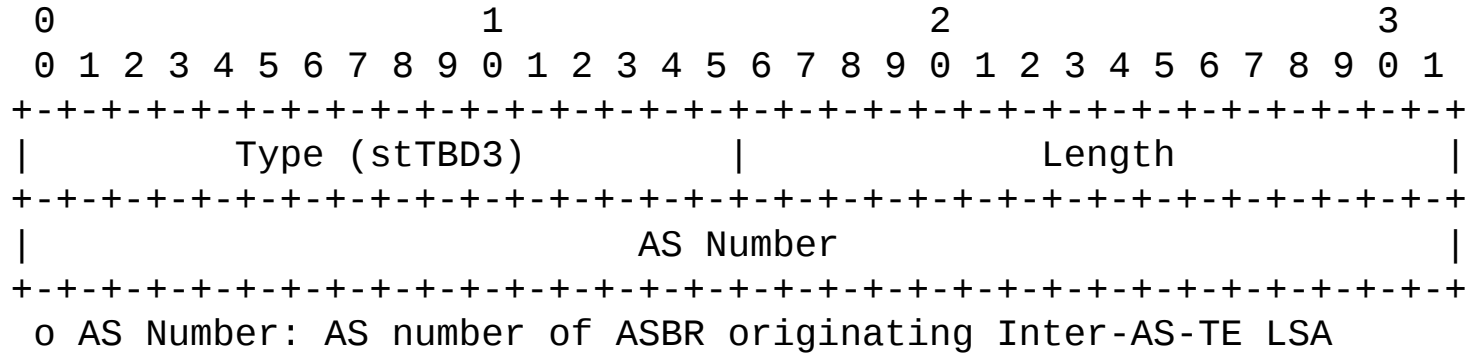
➤ **sub-TLV** for local IPv6 address with mask



- o IPv6 Address: Local IPv6 address of connection to broadcast link
- o Mask Length: Length of the IPv6 address mask

Extensions to OSPF: New sub-TLVs (2/2)

➤ **sub-TLV** for local AS



Procedures

➤ OSPF Router (as ASBR attached to broadcast link)

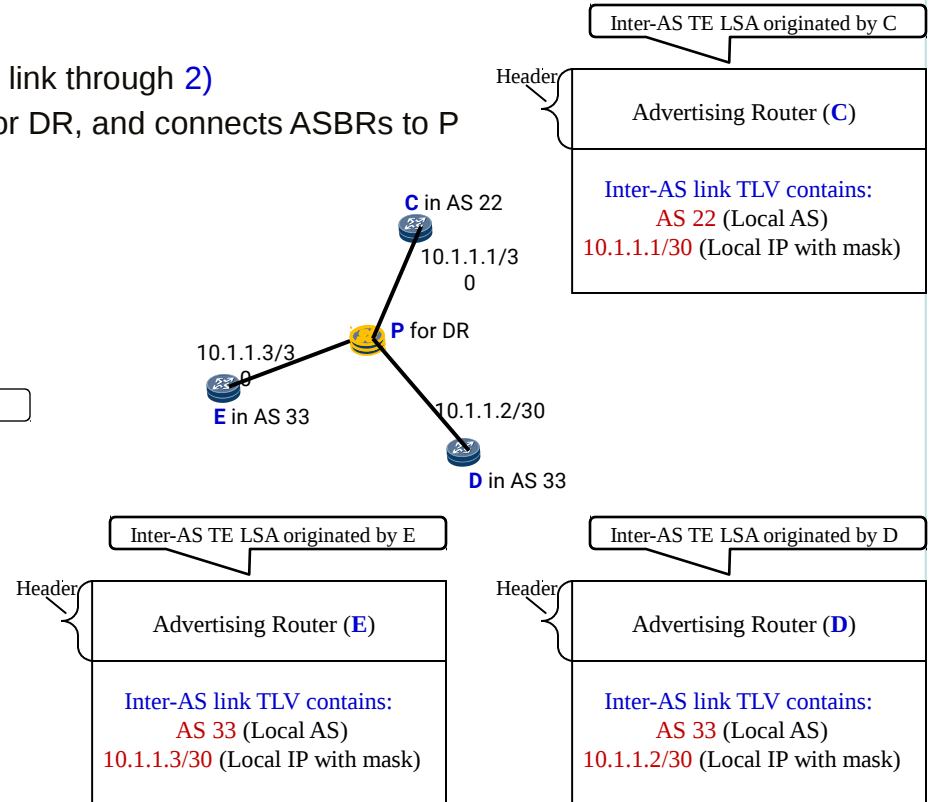
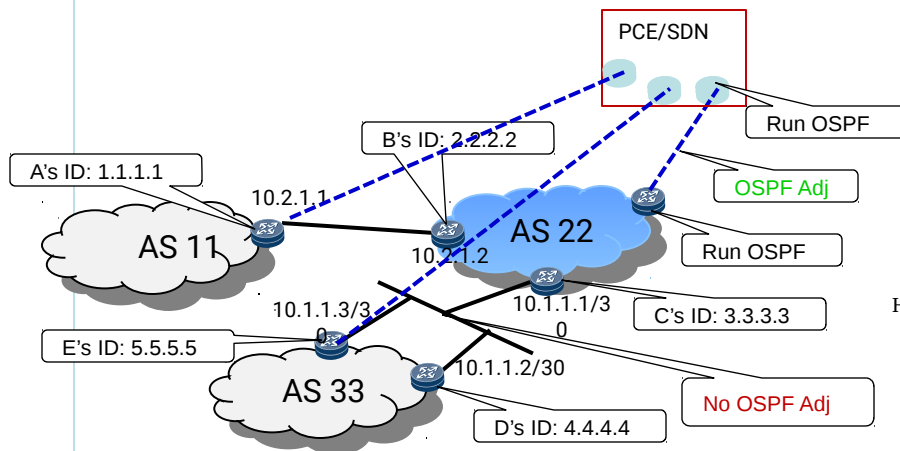
Originates/advertises Inter-AS TE LSA containing

- 1). Link-Type: Multi-access
- 2). Local IP Address with Network Mask, Local AS
- 3). TE Metric

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➤ Super Node (as PCE/SDN)

1. Receives Inter-AS TE LSAs from ASes
2. Figures out ASBRs attached to a broadcast link through 2)
3. Selects DR/BDR, creates Pseudo node P for DR, and connects ASBRs to P
4. Promotes BDR to DR when DR is down



Summary

Presented

- ✓ Information on Broadcast Inter-AS TE Link
- ✓ Extensions to OSPF: 3 New sub-TLVs
- ✓ Procedures
 - ❖ OSPF Router
 - ❖ Super Node

Next Step

- Request for comments and suggestions