PCEP Extensions for Topology Filter

draft-xpbs-pce-topology-filter-03

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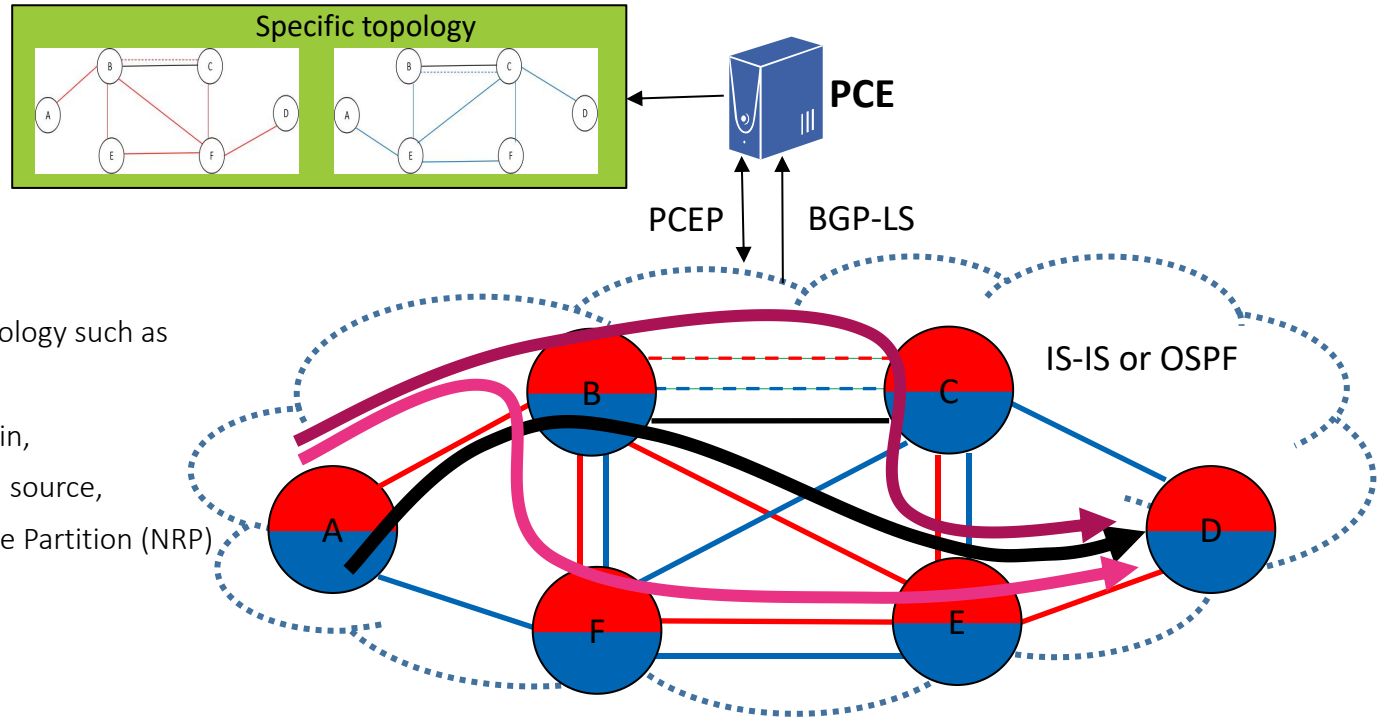
Updates from last version

- Presented at IETF#112 , and comments at meetings and on the mailing list are appreciated from :
  - Dhruv Dhody/Jie Dong

- The updates from last version is like following:
  - align with the data model as per [draft-ietf-teas-yang-topology-filter] and TE information [RFC9552];
  - change TOPOLOGY Object to TOPOLOGY-FILTER Object;
  - change the TLV name and format to IGP Domain Identifier TLV and TE Topology Identifier TLV;
  - add a new Filtering Rules TLV and put the sub-TLVs under it.

Overview of Topology Filter

- A topology filter is a data construct that can be applied on either a native topology or a user specified topology, and it can be viewed as a set of filtering rules to construct the specific topology.
- This document proposes a set of extensions for PCEP to support the topology filter as the topology constraints during path computation.



E.g a path may be computed within a network topology such as

- a specified topology defined by the application,
- a topology associated with a specific IGP domain,
- a topology learnt from a specific TE information source,
- a topology associated with an Network Resource Partition (NRP)
- so on.

TOPOLOGY-FILTER Object

- This document defines a new TOPOLOGY-FILTER object to carry the topology filter. The following TLVs can be carried in TOPOLOGY-FILTER object.
  - IGP Domain Identifier TLV
  - TE Topology Identifier TLV
  - Filtering Rules TLV

TOPOLOGY-FILTER Object-Class is TBD1.

TOPOLOGY-FILTER Object-Type is TBD2.

The format of the TOPOLOGY-FILTER object body is:

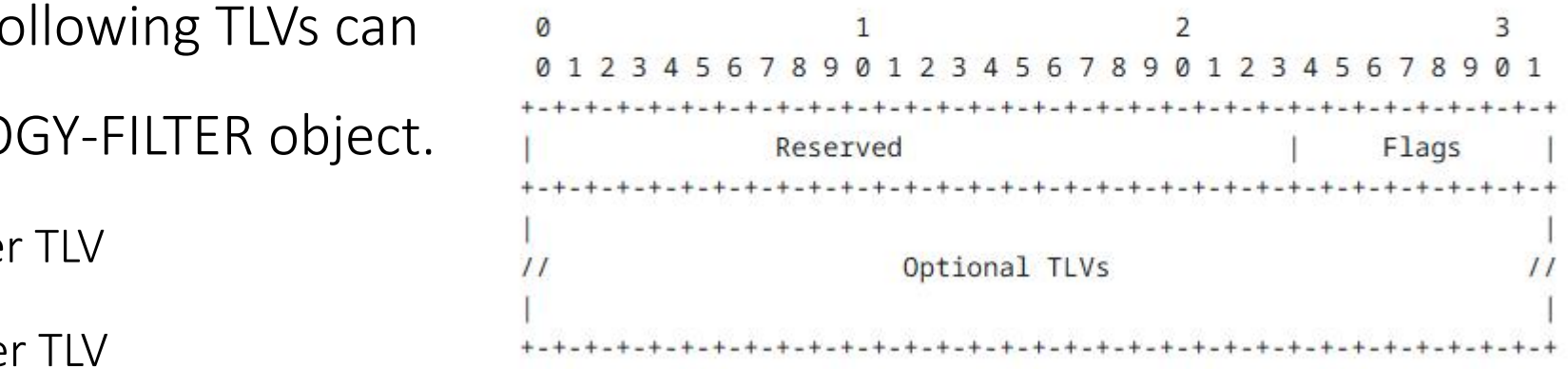


Figure 1: TOPOLOGY-FILTER Body Object Format

TLVs for TOPOLOGY-FILTER Object

- IGP Domain Identifier TLV
  - identify a IGP domain within a referenced topology.
  - Protocol-ID, Instance-ID, OSPF Area-ID and Multi-Topology-ID are as defined in [RFC9552].
  - Algorithm-ID is as defined in [I-D.ietf-pce-sid-algo].
- TE Topology Identifier TLV
  - identify a predefined TE topology within a referenced topology.
  - Provider ID, Client ID, Topology ID are as defined in [RFC9552].

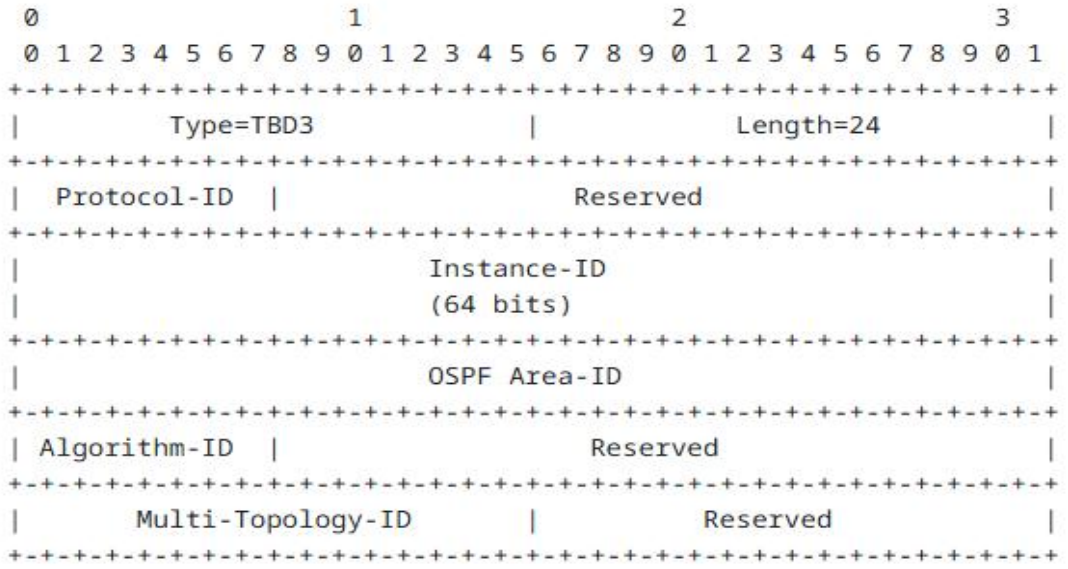


Figure 2: IGP Domain Identifier TLV

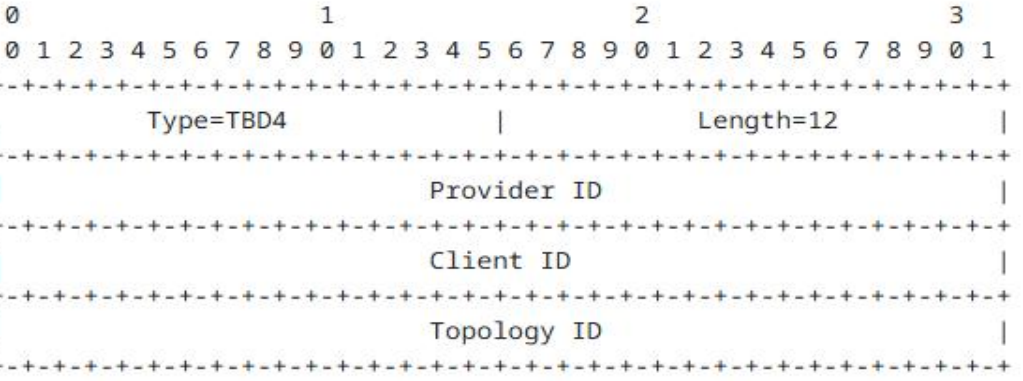


Figure 3: TE Topology Identifier TLV

TLVs for TOPOLOGY-FILTER Object (cont)

- Filtering Rules TLV
  - carry a set of constrains on the topology by include-any, include-all and exclude rules.
  - The following sub-TLVs carry the attributes that can be used as rules to filter the topology.
    - Link ID sub-TLV
    - Admin Group sub-TLV
    - Source Protocol sub-TLV

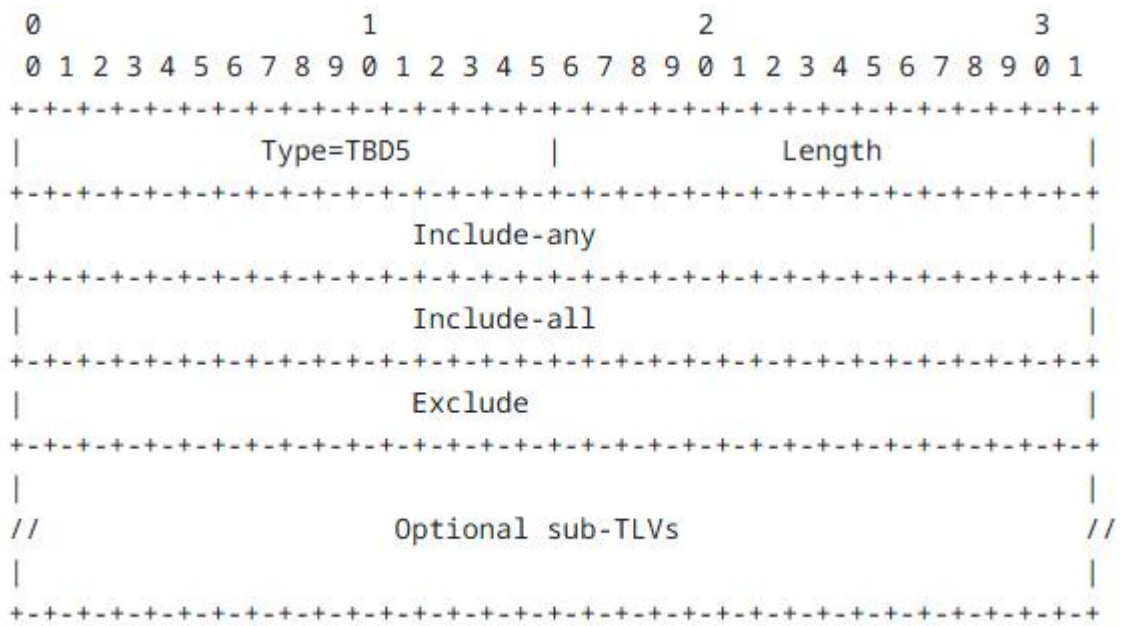


Figure 4: Filtering Rules TLV

Include-any, include-all and exclude filtering rules

- The filtering rules specify a set of constraints on the topology including include-any, include-all and exclude. A set of attributes that can be used as rules to filter the topology.
  - Link ID sub-TLV
    - identify the link that is used during the path calculation as defined in IS-IS RFC5307 and OSPF RFC3630.
  - Admin Group sub-TLV
    - include the links that is used during the path calculation.
    - Extended Administrative Group isdefined in [RFC7308].
  - Source Protocol sub-TLV
    - Protocol-ID and Instance-ID are defined as IS-IS [RFC8202], OSPF [RFC6549], BGP-LS [RFC9552].

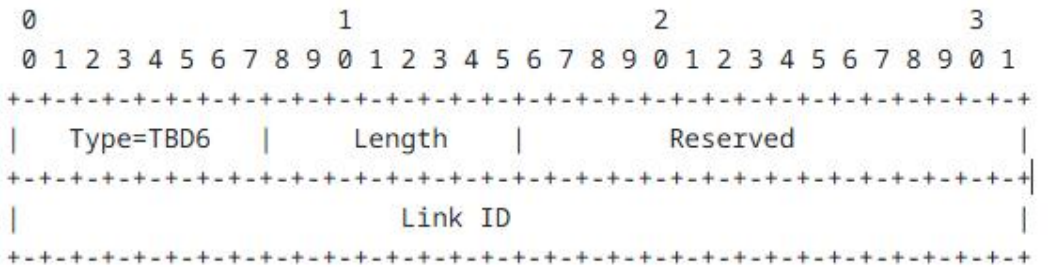


Figure 5: Link ID sub-TLV

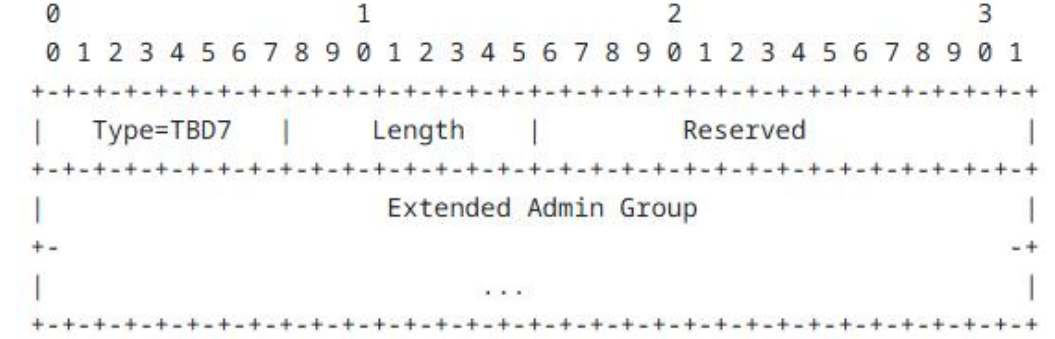


Figure 6: Admin Group sub-TLV

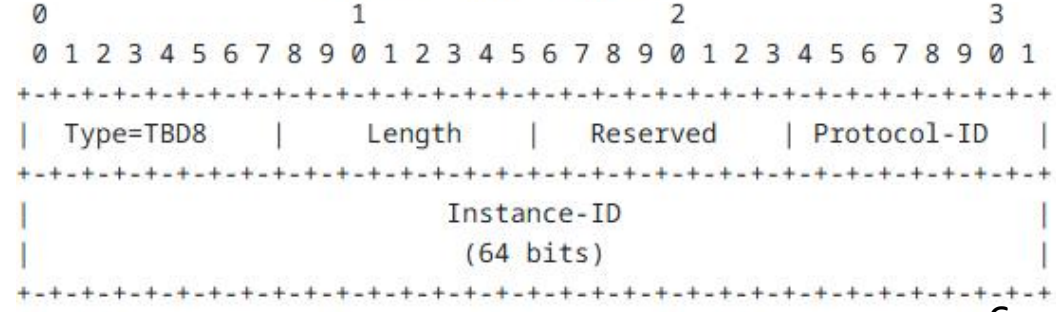


Figure 7: Source Protocol sub-TLV

Next Step

- Comments and discussions are very welcome!

Thank you!