YANG DATA MODEL
FOR TOPOLOGY FILTER

draft-bestbar-teas-yang-topology-filter-04

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INTRODUCTION

- A topology filter is a data construct that is used to filter network topologies [RFC8345].
  - Applied on either a native topology or a customized topology [RFC8795] to produce a filtered set of topological elements.
- A topology filter-set is a union of multiple topology filters that can be applied in tandem on a topology.
- This document defines a YANG data model for the management of topology filters/filter-sets on network elements and controllers.
- **Note:** An implementation may maintain network topologies that are learnt via routing protocols in a Routing Information Base (RIB) [RFC8431] and use routing policies [RFC9067] to filter the entries in the RIB.
  - Such an implementation is not the target of this document.
USE-CASES

- Specification of topology related constraints for TE Path Computation -
  - Examples:
    - Compute a path within a specified topology.
    - Compute a path within the topology associated with a specific IGP domain.
    - Compute a path within the topology learnt from a specific TE Information Source.
    - Compute a path within the topology defined by the application of one or more topology filters:
      - Use a topology with elements learnt via ISIS Level-2 and include resource-affinity "RED"
      - Use a topology with elements associated with ISIS Flexible Algorithm 128 and exclude resource-affinity "BLUE"

- Specification of topology associated with an Network Resource Partition (NRP) -
  - Examples:
    - All the elements in the specified topology are part of the NRP topology.
    - All the topological elements associated with a specific IGP domain are part of the NRP topology.
    - All the topological elements that include resource-affinity "RED" and exclude resource-affinity "BLUE" are part of the NRP topology.
- The top-level 'networks' container [RFC8435] is augmented with a set of topology filters and a set of topology filter-sets

module: ietf-topology-filter
augment /nw:networks:
  +--rw topology-filters:
     |  +--rw topology-filter* [name]
     |     +--rw name string
     |     +--rw topology-ref
     |          ...........
     |  +--rw include-any
     |          ...........
     |  +--rw include-all
     |          ...........
     |  +--rw exclude
     |          ...........
  +--rw topology-filter-sets!
     +--rw topology-filter-set* [name]
        +--rw name string
        +          ...........
The 'topology-filters' container carries a list of topology filters.

Each topology-filter entry specifies a set of include-any, include-all and exclude filtering rules that can be applied on either the native topology or a user specified topology.
The 'topology-reference' container indicates the topology on which the filtering rules need to be applied. The referenced topology could be a predefined TE topology and/or a specific IGP domain. The absence of the 'topology-reference' indicates that the filtering rules are to be applied on the native topology.

```yml
+--rw topology-ref
   +--rw igp-domain-identifier
   |   +--rw protocol-id?  igp-protocol
   |   +--rw instance-id?  uint32
   |   +--rw division-id?  uint32
   |   +--rw algo-id?      uint8
   |   +--rw mt-id?        uint16
   +--rw te-topology-identifier
       +--rw provider-id?  te-global-id
       +--rw client-id?    te-global-id
       +--rw topology-id?  te-topology-id
```
The 'include-any', 'include-all' and 'exclude' containers carry a varied set of attributes that can be used as rules to filter the topology.

If the topology-filter entry carries no filtering rules and only references a specific topology, then the set of filtered topological elements produced is the same as the one defined by the referenced topology.
The 'topology-filter-sets' container carries a list of topology filter-sets.
Each topology-filter-set entry constitutes a list of topology-filter references.
This is used when there is a need to create a union of multiple topology filters.

```yaml
+-rw topology-filter-sets!
    +-rw topology-filter-set* [name]
        +-rw name string
    +-rw topology-filter*
        -> ../../../topology-filters/topology-filter/name
```
NEXT STEP

Request review and feedback
THANK YOU

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