



YANG DATA MODEL FOR TOPOLOGY FILTER

draft-bestbar-teas-yang-topology-filter-05

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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.
- Used in draft-ietf-teas-nrp-yang

MODEL STRUCTURE

- 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
      + .....

```

TOPOLOGY FILTERS

- 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.

TOPOLOGY REFERENCE

- 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.

```
+--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
```

FILTERS

- 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.

```
+--rw include-any
| +--rw link-affinity*   string
| +--rw link-name*      string
| +--rw node-prefix*    inet:ip-prefix
| +--rw as*              inet:as-number
| +--rw info-source* [source-id instance-id division-id]
|   +--rw source-id     tet:te-info-source
|   +--rw instance-id   uint32
|   +--rw division-id   uint32
+--rw include-all
| +--rw link-affinity*   string
| +--rw link-name*      string
| +--rw node-prefix*    inet:ip-prefix
| +--rw as*              inet:as-number
| +--rw info-source* [source-id instance-id division-id]
|   +--rw source-id     tet:te-info-source
|   +--rw instance-id   uint32
|   +--rw division-id   uint32
+--rw exclude
  +--rw link-affinity*   string
  +--rw link-name*      string
  +--rw node-prefix*    inet:ip-prefix
  +--rw as*              inet:as-number
  +--rw info-source* [source-id instance-id division-id]
    +--rw source-id     tet:te-info-source
    +--rw instance-id   uint32
    +--rw division-id   uint32
```

TOPOLOGY FILTER-SETS

- 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.

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


NEXT STEP

Request WG Adoption



THANK YOU

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