A Yang Data Model for ACTN VN Operation
draft-ietf-teas-actn-vn-yang-01

Young Lee, Dhruv Dhody, Daniele Ceccarelli
Igor Bryskin, Bin Yeong Yoon, Qin Wu, Peter Park
Status

• Adopted as WG draft after IETF 101.

• Integrated/consolidated with draft-wu-opsawg-network-overlay-resource-model-00 with this draft (new co-authors)!

• Clarified the relationship of the draft with other service models and TE-topology:
  • The VN model defined in this document can also work together with other customer service models such as L3SM [RFC8299], L2SM and L1CSM to provide a complete life-cycle service management and operations.
  • The actual VN instantiation and computation is performed with “Connectivity Matrices” sub-module of TE-Topology Model which provides TE network topology abstraction and management operation.
  • Once TE-topology Model is used in triggering VN instantiation over the networks, TE-tunnel Model will inevitably interact with TE-Topology model for setting up actual tunnels and LSPs under the tunnels.
Next Step

- Work on Security and IANA Sections in the next revision.
- Refine the draft to make it ready for WG LC.
BACKUP!
Overview

- For both VN Type 1 or Type 2 VN Yang model rely on a single node in the abstract TE Topology
- The abstract node has
  - connectivity-matrices
  - connectivity-matrix [id]
  - The attributes directly under container connectivity-matrices are the default attributes for all connectivity-matrix entries when the per entry corresponding attribute is not specified. When a per entry attribute is specified, it overrides the corresponding attribute directly under the container connectivity-matrices.
How: Reference to TE Topology Yang Model

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>• AP/ VNAP -&gt; LTP</td>
</tr>
<tr>
<td></td>
<td>• Ltp of type te-types:te-tp-id</td>
</tr>
<tr>
<td>Customer’s Virtual Network</td>
<td>• VN -&gt; Abstract Node</td>
</tr>
<tr>
<td></td>
<td>• vn-topology-id of type te-types:te-topology-id</td>
</tr>
<tr>
<td></td>
<td>• abstract-node -&gt; /nw:networks/network/node/tet:te-node-id (reference)</td>
</tr>
<tr>
<td>Customer Site to Site connection</td>
<td>• VN-Member -&gt; Entry in the connectivity matrix of the abstract node</td>
</tr>
</tbody>
</table>

All parameters which are can be set as global attributes to VN are set in the connectivity-matrices (such as bandwidth) and an attribute for a particular VN-member is set in the connectivity-matrix [id] (such as explicit path)! Duplicate parameters in ACTN VN Yang model are removed!
VN Type 1

- VN 1
  - VN-Member 1: L1-L4
  - VN-Member 2: L1-L7
  - VN-Member 3: L2-L4
  - VN-Member 4: L3-L8

- This VN has following properties
  - Bandwidth 500
  - Optimize by delay

- VN is seen as edge to edge links (VN-members) setup as tunnels across underlying networks!

Abstract Topology with a Single Node

These properties are set in TE Topo

Connectivity Matrix

<table>
<thead>
<tr>
<th>Connectivity-matrices</th>
</tr>
</thead>
<tbody>
<tr>
<td>14: L1-L4</td>
</tr>
<tr>
<td>17: L1-L7</td>
</tr>
<tr>
<td>24: L2-L4</td>
</tr>
<tr>
<td>38: L3-L8</td>
</tr>
</tbody>
</table>
VN Type 2

• VN is seems as a topology of virtual nodes and links

• To ease mapping between VN Yang Model and TE models, an abstract single node topology is created with VN topology as the underlay!

• The same mapping as VN Type 1 is reused.

• VN 2
  • VN-Member 1: L1-L8 via S3, S67110, S11
    • Set via the underlay path in connectivity-matrix[id]