ACTN/VN YANG Models

draft-ietf-teas-actn-vn-yang-11
draft-ietf-teas-actn-pm-telemetry-autonomics-05
draft-ietf-teas-te-service-mapping-yang-07

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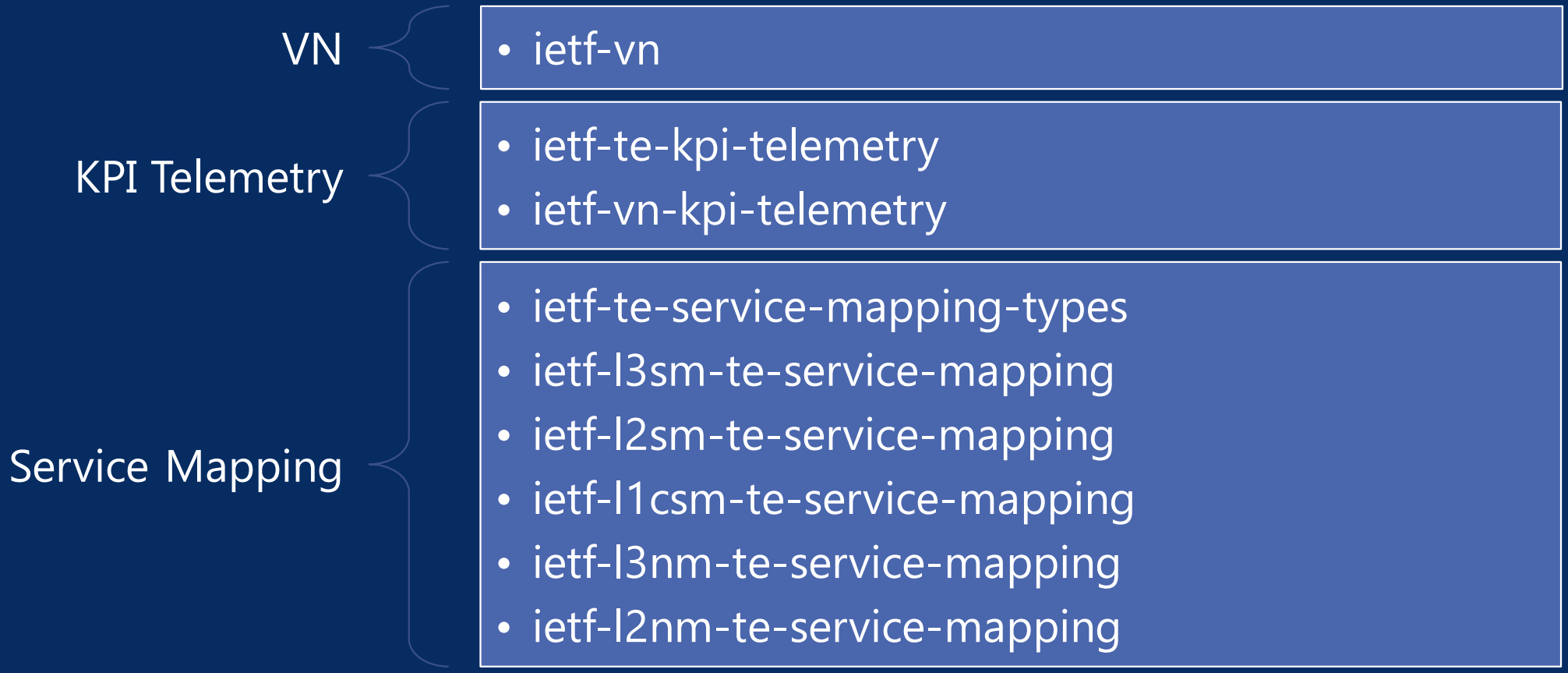
YANG model overview

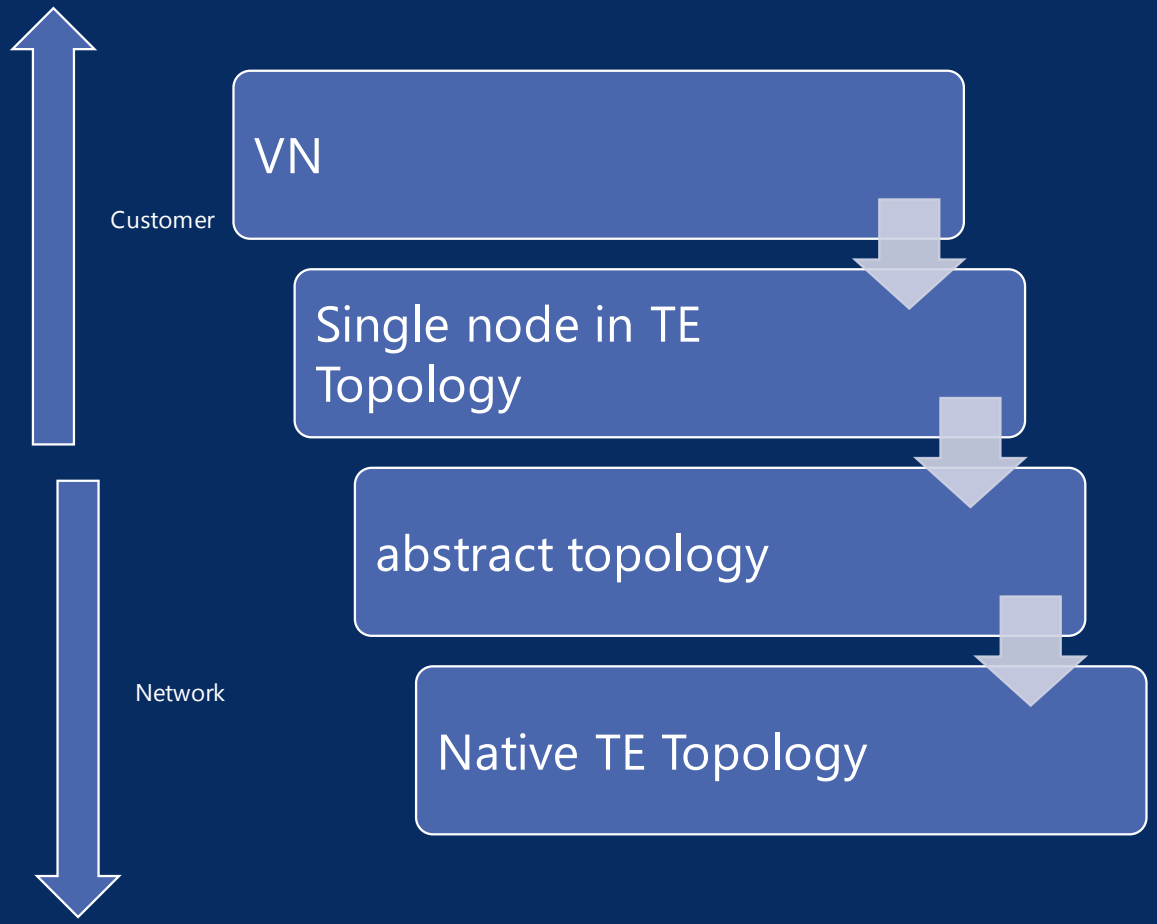


VN YANG

draft-ietf-teas-actn-vn-yang-11

ietf-vn

VN Yang



Yang model for Virtual Network (VN) operations

- From the point of view of Customer

An abstraction over the TE-Topo and TE-Tunnel

- These models are from the point of view of Network

VN is a higher level of abstraction

- VN model depends tightly on the topology model!
- Use Connectivity Matrices

Recent Changes

Yang Doctor Review by Andy Bierman

- Added text to describe the handling of vn-compute rpc
  - Described error handling
- Removed redefinition of various status etc

Comments from Tom Petch

Suggested changes from Kenichi Ogaki incorporated for VN-Compute RPC

- Added figures to describe the interaction!

Open Issue

Naming Issue

- Was: /ap/access-point-list/access-point-id
- Current: /ap/ap/ap-id
- Proposal: /aps/ap/ap-id or /access-point/ap/ap-id ?
- Similar change at other places!

Reusing te-types:te-common-status

- Proposal:
  - Add text description in the VN Yang model to state that some values (maintaince) may not be applicable for VN-compute and should be considered as unknown status.

Discuss: VN, Topology, and SR Policy

- Requirement: Setting up a VN with a VN-member realized by SR paths (SR Policy)
- Currently, VN uses the TE-Topology model based on the abstract node concept and connectivity matrix which can identify underlay TE tunnel
- Query: Can the TE Topology underlay mapped to SR paths (or SR Policy)? Does SR topology play any role?
- What is the best approach here?

KPI Telemetry Yang

draft-ietf-teas-actn-pm-telemetry-autonomics-05

ietf-te-kpi-telemetry

ietf-vn-kpi-telemetry

YANG models for VN/TE Telemetry & Network Autonomics

YANG data models that support: Performance Monitoring (PM) Telemetry and scaling intent mechanism for TE-Tunnels and VNs to allow customers to subscribe to certain KPI PM.

- ietf-te-kpi-telemetry
- ietf-vn-te-kpi-telemetry

Customer to subscribe and monitor KPI of interest on a particular TE tunnel or a VN.

Customer could also program autonomic scaling intent

Recent Changes

Scaling

- Added operation: the scaling operation to be performed when the scaling condition is met (bandwidth capacity up or down)
  - As an identity
- Added scale: value by which scaling operation is performed
  - Generic value to be interpreted as per the operation

Open Issue

- Name of the model, suggestions welcome!

TE Service mapping YANG

draft-ietf-teas-te-service-mapping-yang-07

ietf-te-service-mapping-types

ietf-l3sm-te-service-mapping

ietf-l2sm-te-service-mapping

ietf-l1csm-te-service-mapping

ietf-l3nm-te-service-mapping

ietf-l2nm-te-service-mapping

TE Service Mapping Model

The role of TE-service Mapping model is to create a mapping relationship between

- Services
  - L3SM, L2SM, L1CSM, etc.
- Or, Network
  - L3NM, L2NM, with
- TE topo, TE tunnel, or VN

This mapping facilitates a seamless service operation with underlay-TE network visibility and control

Allow monitoring and diagnostics on how the service request are mapped to underlying TE resources

Support for various map-types

Recent Changes

Requirement from Kenichi	• Allow mapping the LxSM site and site-network-access per QoS profile to VNAP
	  • Discussed at 109
	  • *Further need some text description for this!*

Comments from Tom	• Thank You!
Modeling Changes	• Site and site-network-access mapped to VNAP • Te-mapping-templates moved outside of choice
TE Policy	• A new container to group various policy requirements such as color, protection, availability while mapping!

Some Examples

Example 1: An L3VPN service with an optimization criteria for the underlying TE as delay can be set in the mapping template and then augmented to the L3SM service.

```
{
  "te-mapping-template":[
    {
      "id": "delay",
      "map-type": "select",
      "optimizations":
        {
          "algorithm":{
            "optimization-metric": [
              {
                "metric-type":"path-metric-delay-average"
              }
            ]
          }
        }
    }
  ]
}
```

Example 2: An L2VPN service with a bandwidth constraint and a hop-limit criteria for the underlying TE can be set in the mapping template and then augmented to the L2SM service.

```
{
  "te-mapping-template":[
    {
      "id": "bw-hop",
      "map-type": "new",
      "path-constraints":{
        "te-bandwidth":{
          "generic":10000
        },
        "path-metric-bounds":{
          "path-metric-bound":[
            {
              "metric-type":"path-metric-hop",
              "upper-bound":10
            }
          ]
        }
      }
    }
  ]
}
```

The L2SM service can map it to a new TE resources in form of a VN or TE-tunnels.

Some Examples

```
Example 3: A VN (VN1) could be created before hand and then
explicitly mapped to the L2VPN service as shown below.

<?xml version="1.0"?>
<l2vpn-svc xmlns="urn:ietf:params:xml:ns:yang:ietf-l2vpn-svc">
<vpn-services>
     <vpn-service>
      <vpn-id>VPN1</vpn-id>
      <te-service-mapping>
        <te-mapping>
          <map-type>select</map-type>
          <te>
            <vn>VN1</vn>
          </te>
        </te-mapping>
      </te-service-mapping>
     </vpn-service>
</vpn-services>
</l2vpn-svc>
```

Example 4: A VPN service may want different optimization criteria for some of its sites.

The template does not allow for such a case but it can be achieved by creating the TE resources separately and then mapping them to the service.

Further Discussion

- While the support to bind a tunnel to the VPN is supported. We do not have a mechanism to map traffic to a path. The input can come from the user.
  - E.g. the enterprise customer can tell, the traffic from source X on port Y should go with delay less than Z.
- Support for Calendaring and scheduling TE resources.

- Further discussion is required on how and where to model these.

Thank You!

Backup

```
augment /l3vpn-svc:l3vpn-svc/l3vpn-svc:sites/l3vpn-svc:site
          /l3vpn-svc:service/l3vpn-svc:qos/l3vpn-svc:qos-profile
          /l3vpn-svc:qos-profile/l3vpn-svc:custom/l3vpn-svc:classes
          /l3vpn-svc:class:
  +--rw (te)?
     +--:(vn)
     |  +--rw vn-ap*    -> /vn:ap/ap/vn-ap/vn-ap-id
     +--:(te)
        +--rw ltp?      te-types:te-tp-id

augment /l3vpn-svc:l3vpn-svc/l3vpn-svc:sites/l3vpn-svc:site
          /l3vpn-svc:site-network-accesses
          /l3vpn-svc:site-network-access/l3vpn-svc:service
          /l3vpn-svc:qos/l3vpn-svc:qos-profile
          /l3vpn-svc:qos-profile/l3vpn-svc:custom/l3vpn-svc:classes
          /l3vpn-svc:class:
  +--rw (te)?
     +--:(vn)
     |  +--rw vn-ap*    -> /vn:ap/ap/vn-ap/vn-ap-id
     +--:(te)
        +--rw ltp?      te-types:te-tp-id
```