

Traffic Engineering and Service Mapping Yang Model

draft-lee-teas-te-service-mapping-yang-01

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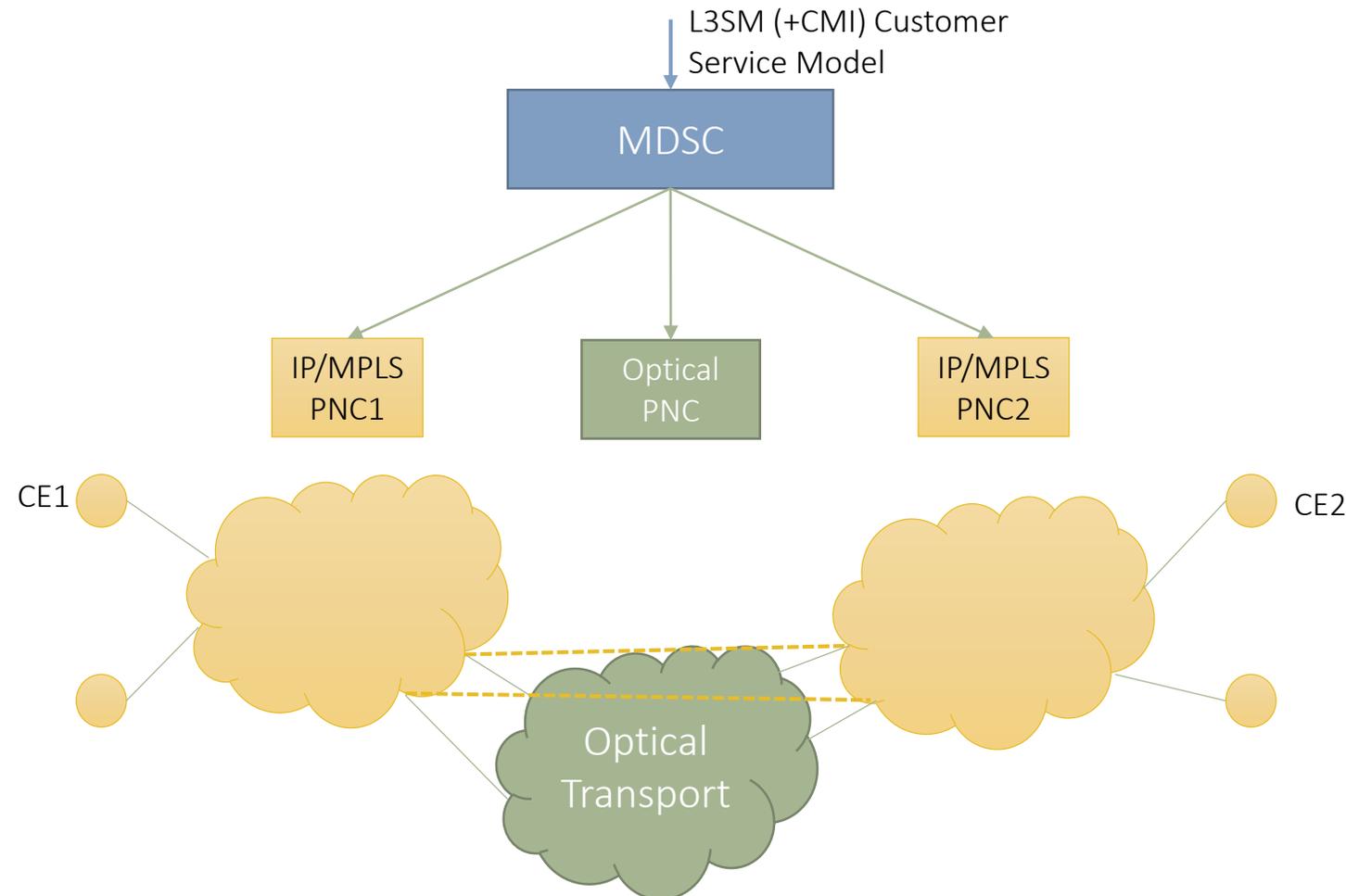
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Overview

- A YANG data model to map service model (e.g. L3SM) and Traffic Engineering model (e.g. TE Tunnel or ACTN VN model).
 - A TE service Mapping Model.
- A seamless control and management of VPN with TE tunnel.
 - Dynamic TE tunnel creation for VPN service
 - Create and bind tunnels to VPN (network slicing)
 - Creation of tunnels only when no suitable tunnel exist
 - Tunnel Selection
- Consistent with 2 core functions of ACTN MDSC
 - Customer mapping/translation function
 - Virtual service coordination function
- *The scope of this document is limited to a set of domains under the same network operator to deliver services requiring TE tunnels.*

Sample Flow



1. Create a L3VPN between CE1, CE2
 - with a new VN/TE-tunnel creation and binding
2. MDSC creates a new VN dynamically
3. MDSC coordinates with IP/MPLS PNC and Transport PNC
 - Create E2E PE-PE tunnels over the underlay transport
4. MDSC needs to pass VPN information to the IP/MPLS PNC
5. IP/MPLS PNC creates VRF instances on PE
 - Tunnel binding between VPN and TE-tunnel

Mode of Operations (Updated)

- VN/Tunnel Selection

- Customer could request an L3VPN service [L3SM-Yang],
 - The network elements (PE/ASBR) are configured to deliver the service.
 - Each of them would select a tunnel based on the configuration.
 - With this mode, new tunnels (or VN) are not created for each VPN.
- Thus, the tunnels can be shared across multiple VPN.
- The mapping yang model is used to get the mapping between the L3VPN and the tunnels in use.
- No change to any tunnels is possible, need to reuse existing tunnels.

- VN/Tunnel Binding

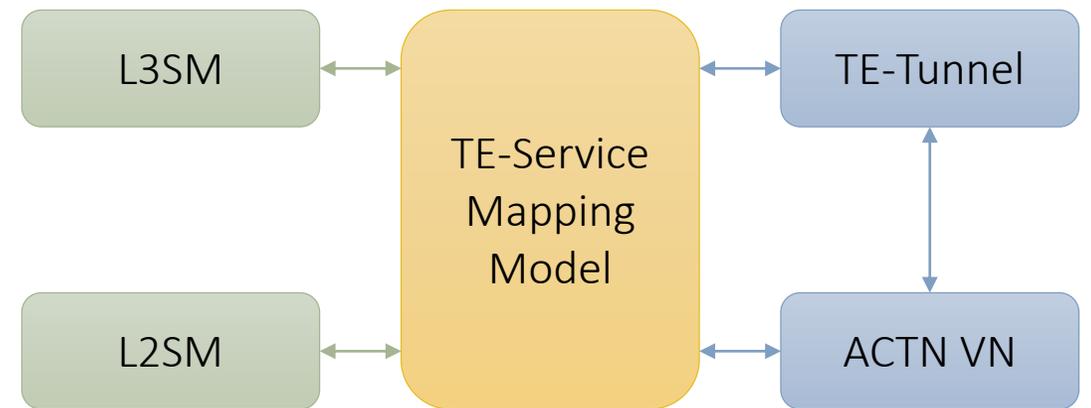
- Use VPN service model [L3SM-Yang] to deliver a L3VPN service.
- Based on the sites, QoS, **Isolation requirement**, etc., the network operator could create a new VN via [ACTN-VN-YANG].
- The mapping yang model is used to set the mapping between the L3VPN service and the **TE tunnels/VN**.
 - This could be done dynamically.
- The VN (and TE tunnels) could be bound to the L3VPN and not used for any other VPN.

- ***Other Modes/Policy (added in text)***

- Change to existing tunnels are possible, but
 - Only the bandwidth of the existing tunnels can be increased.
 - Optical Transport tunnels could not be changed; Change only in the IP/MPLS layer.
 - Optical Transport tunnels can be added on the fly.
- A new VN/tunnels are setup and bound to the service.
 - New tunnels in IP/MPLS, that can reuse optical transport tunnels.
 - New tunnels in both layer.

TE-Service Mapping Model

- The role of TE-service Mapping model is to create a mapping relationship between -
 - Services – L3SM, L2SM etc
 - TE – TE Tunnel, ACTN VN
- This TE-service mapping model is needed to bind L3VPN, L2VPN specific service model with TE-specific parameters.
- This binding will facilitate a seamless service operation with underlay-TE network visibility.



Yang Model

- Service Mapping
 - L3SM or L2SM
 - ACTN VN or Tunnel List
- Site Mapping
 - VPN Site
 - ACTN AP or TE Endpoints

```
module: ietf-te-service-mapping
  +--rw te-service-mapping
    +--rw service-mapping
      +--rw mapping-list* [map-id]
        +--rw map-id          uint32
        +--rw map-type?      map-type
        +--rw (service)?
          +--:(l3vpn)
            | +--rw l3vpn-ref?   -> /l3:l3vpn-svc/vpn-services/vpn-service/vpn-id
            +--:(l2vpn)
              | +--rw l2vpn-ref? -> /l2:l2vpn-svc/vpn-services/vpn-svc/vpn-id
              +--rw (te)?
                +--:(actn-vn)
                  | +--rw actn-vn-ref? -> /vn:actn/vn/vn-list/vn-id
                  +--:(te)
                    +--rw te-tunnel-list* te:tunnel-ref
        +--rw site-mapping
          +--rw mapping-list* [map-id]
            +--rw map-id          uint32
            +--rw (service)?
              +--:(l3vpn)
                | +--rw l3vpn-ref?   -> /l3:l3vpn-svc/sites/site/site-id
                +--:(l2vpn)
                  | +--rw l2vpn-ref?   -> /l2:l2vpn-svc/sites/site/site-id
                  +--rw (te)?
                    +--:(actn-vn)
                      | +--rw actn-vn-ref? -> /vn:actn/ap/access-point-list/access-point-id
                      +--:(te)
```

Next Step

- Continue to enhance the model...Comments are welcomed!
- Ask for WG adoption!

