Traffic Engineering and Service Mapping Yang Model

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Young Lee, Huawei
Dhruv Dhody, Huawei
Daniele Ceccarelli, Ericsson

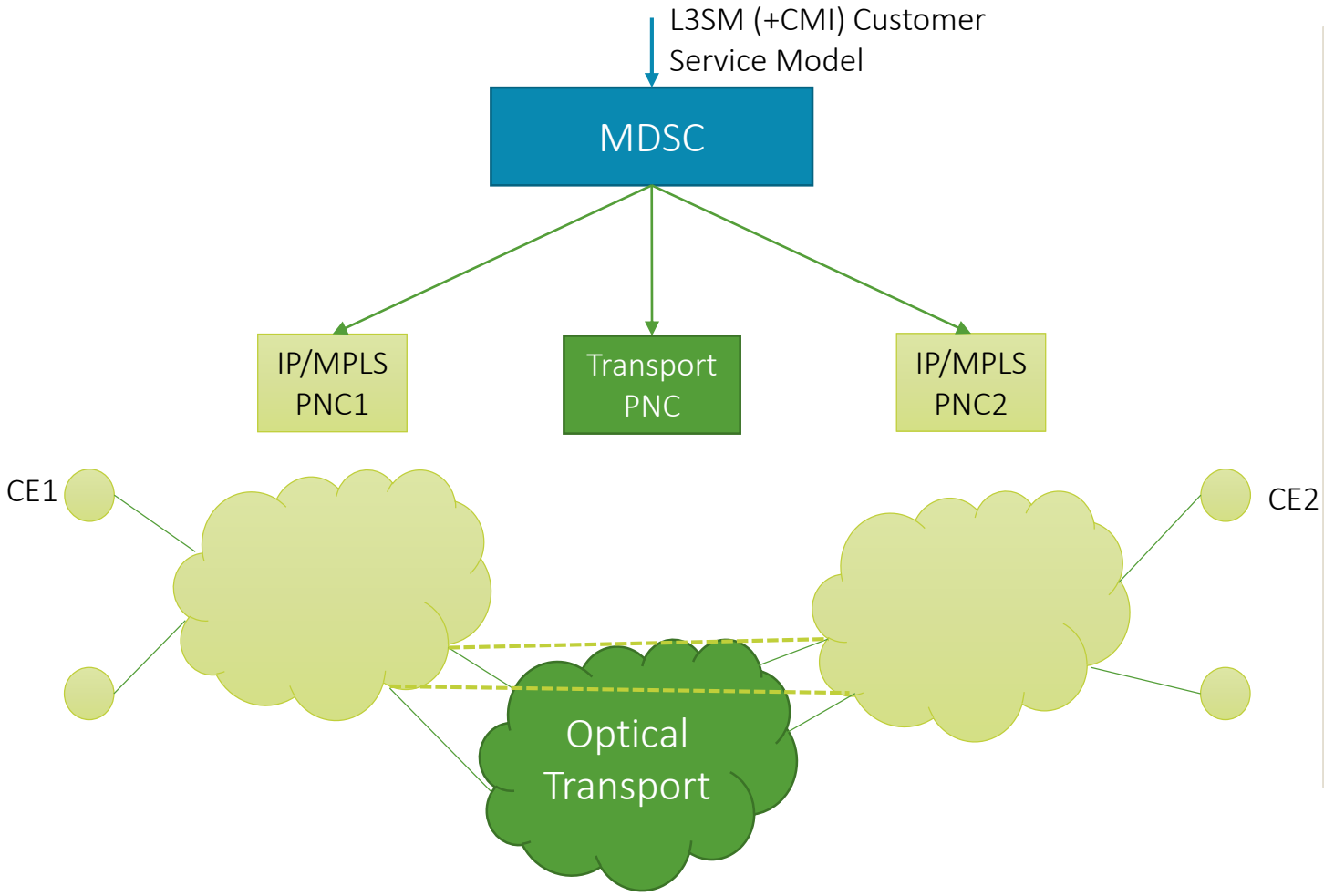
Introduction

- 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)
    - Only when no suitable tunnel exist
- Consistent with 2 core functions of ACTN-MDSC
  - Customer mapping/translation function
  - Virtual service coordination function

Mode of operations

- 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.
- 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.

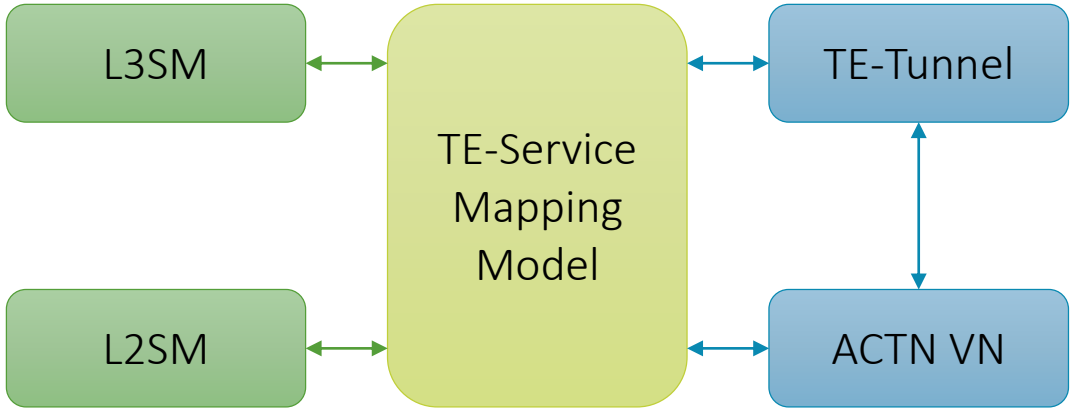
Sample Flow



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

TE-Service Mapping Model

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

- Is this ‘Mapping’ Model useful?
- Continue to enhance the model…
- Comments welcome!


Thank you!