

A Yang Data Model for VN Operation

draft-ietf-teas-actn-vn-yang-04

Young Lee, [Dhruv Dhody](#), Daniele Ceccarelli
Igor Bryskin, Bin Yeong Yoon, Qin Wu, Peter Park

Recent Changes

Removed
the tight
coupling
with
'ACTN'

Now applicable to any type
of VN operations

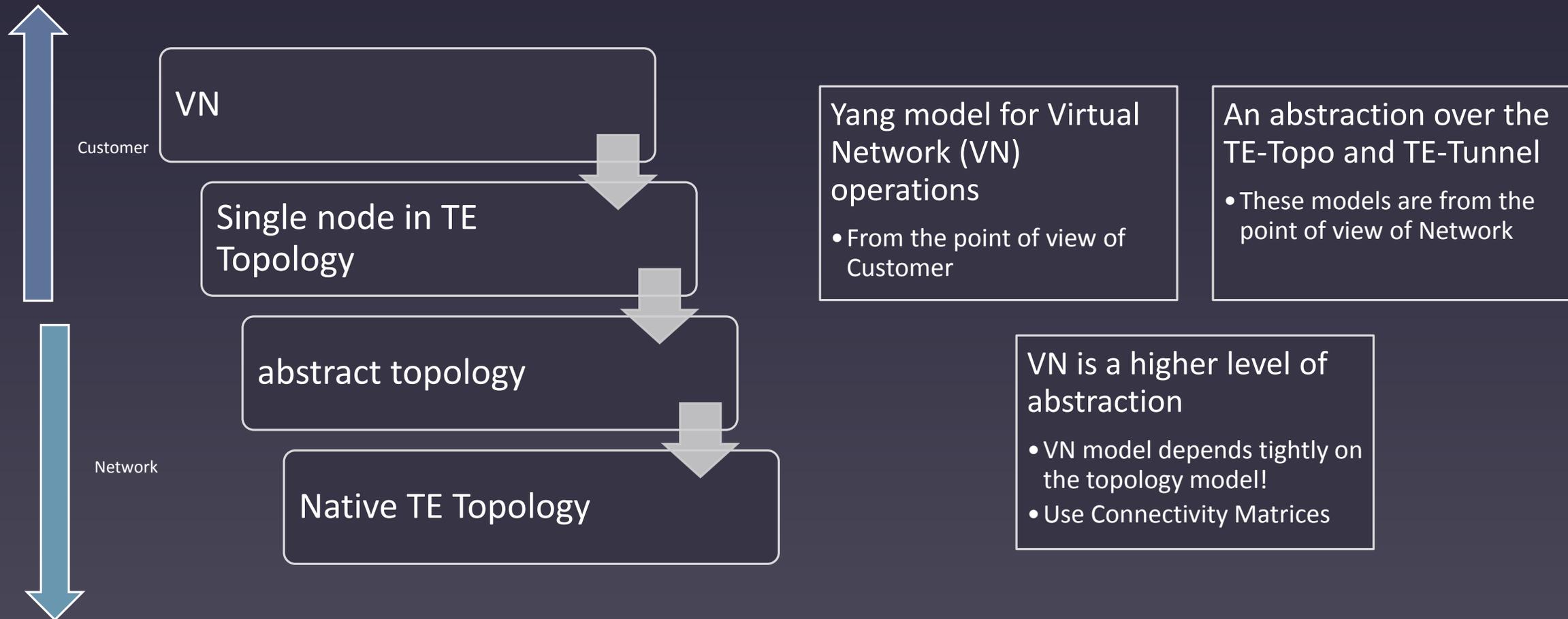
ACTN is *still* the
primary example

Removed the prefix "actn"

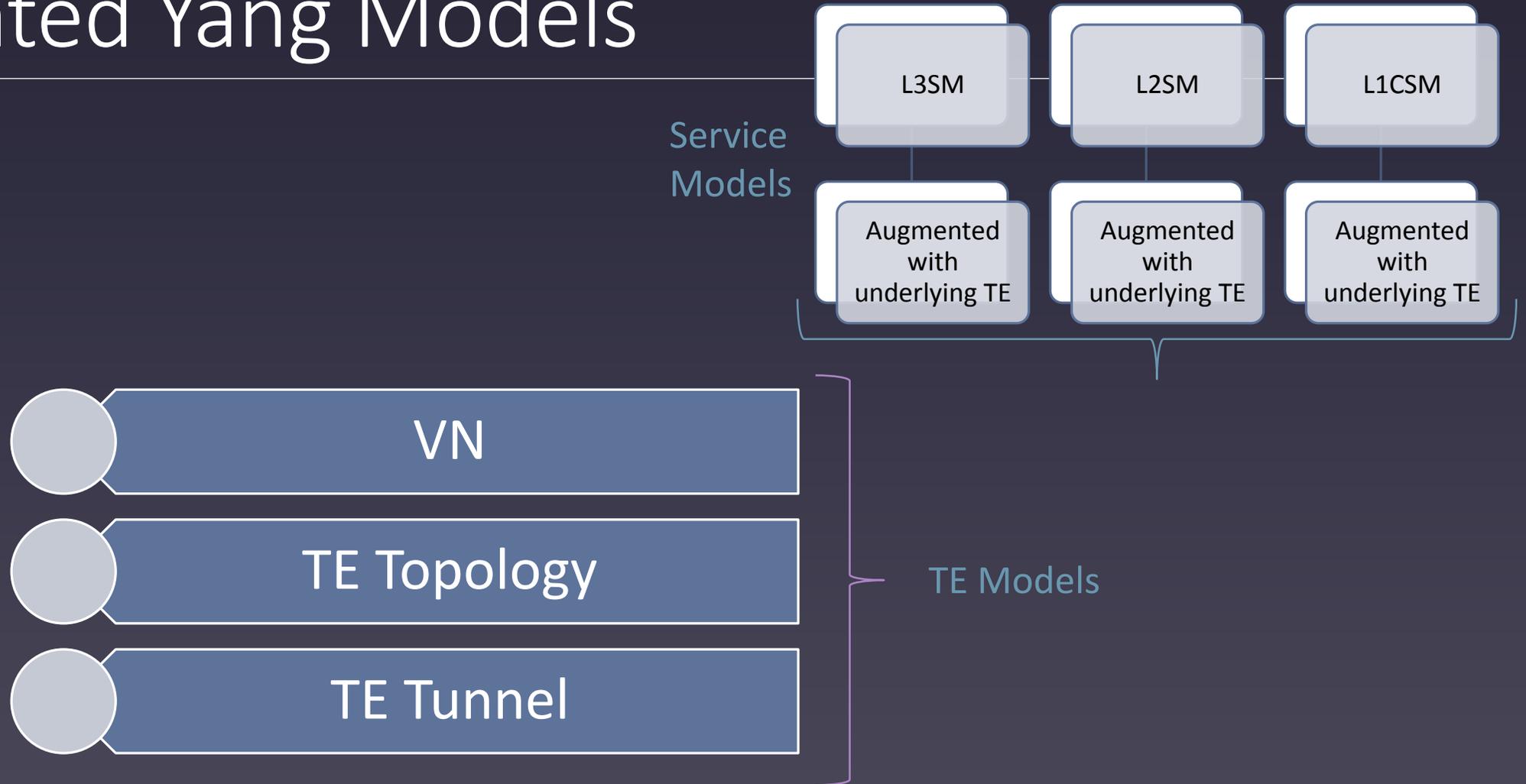
ietf-actn-vn -> ietf-
vn

Removed the actn container
in the yang module

VN Yang



Related Yang Models



Next Steps

Describe the usage of model and especially clarify its interactions with the TE topology model.

- Folks have raised questions related on how the VN parameters (bandwidth, delay etc.) is specified
- Relationship to connectivity matrices needs to be clarified.

Interaction with Services

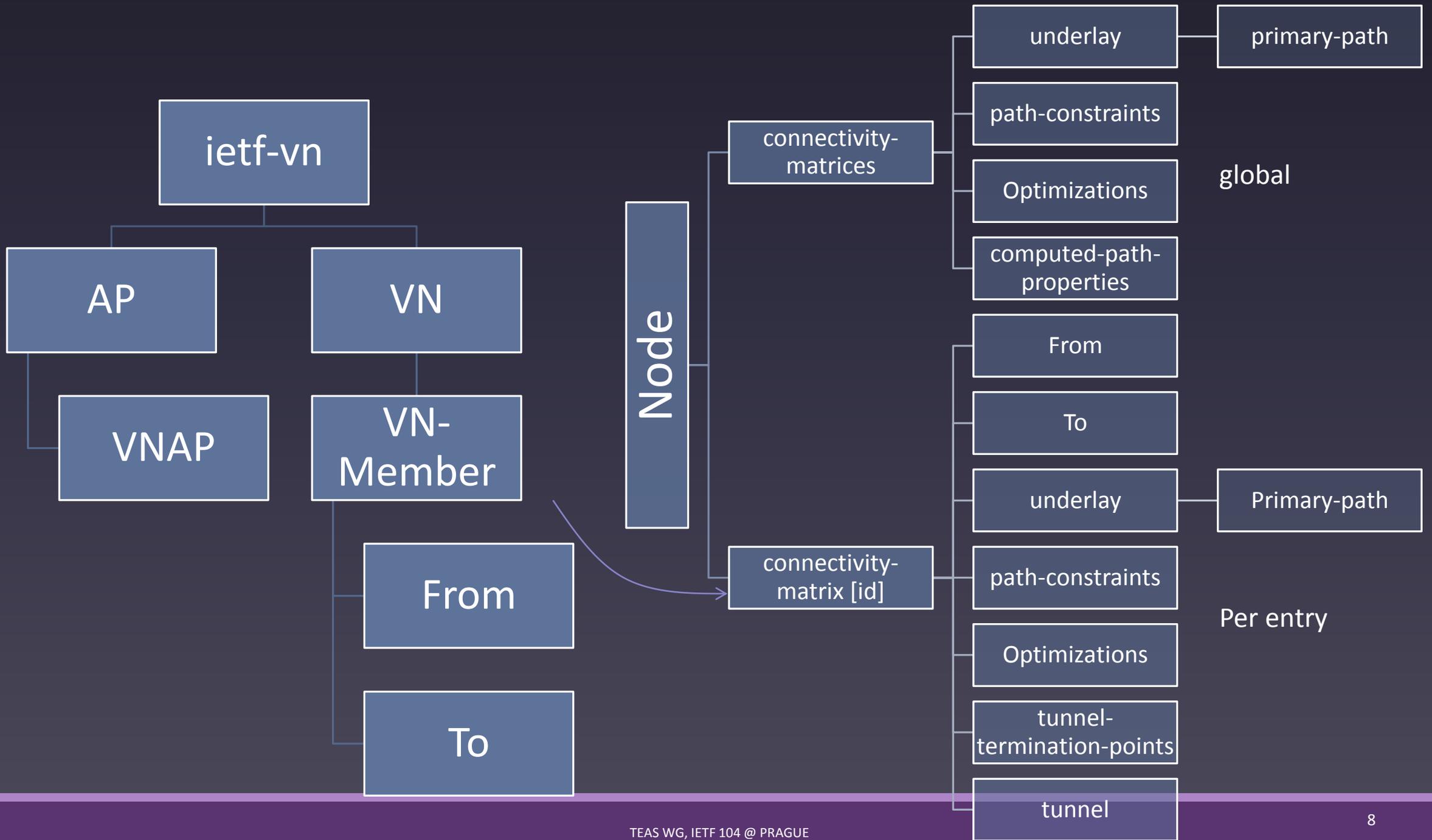
- Maybe borrow some text from service mapping?
- Add references

How this VN model could also be base for Netslicing/VPN+

- Briefly describe and add references

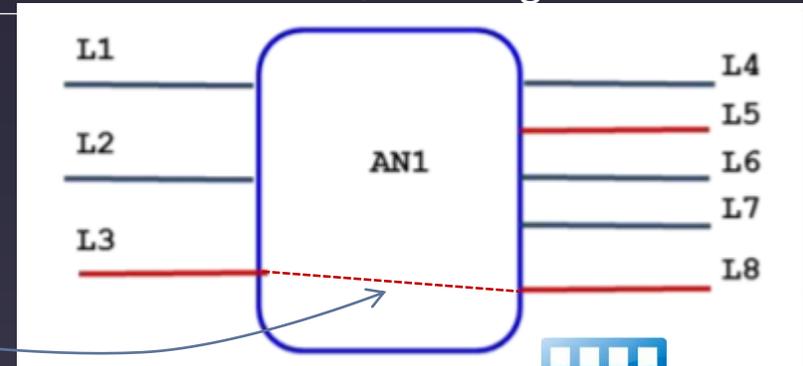
Thanks!

BACKUP!



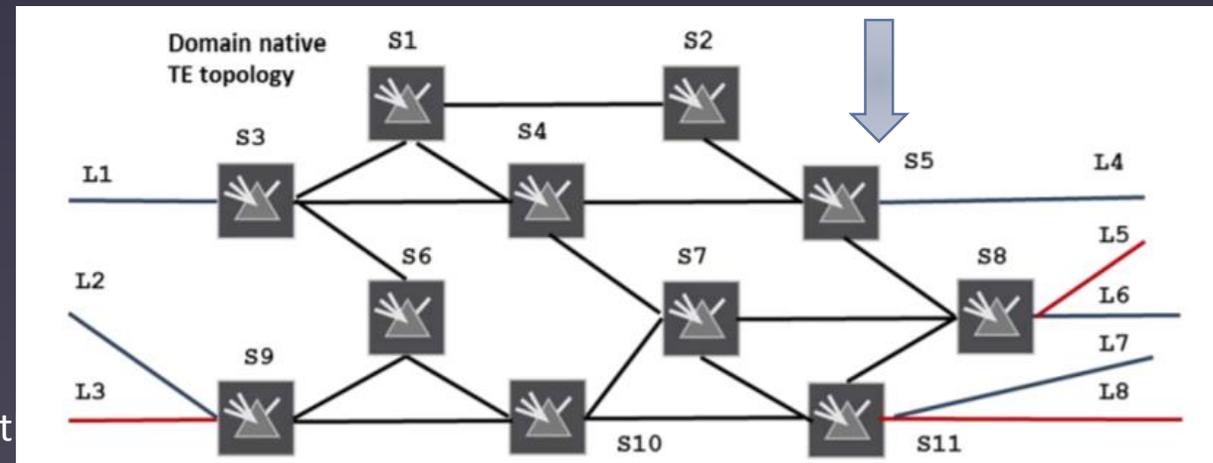


Abstract Topology with a Single Node



Connectivity Matrix

- 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 direct under the container connectivity-matrices.



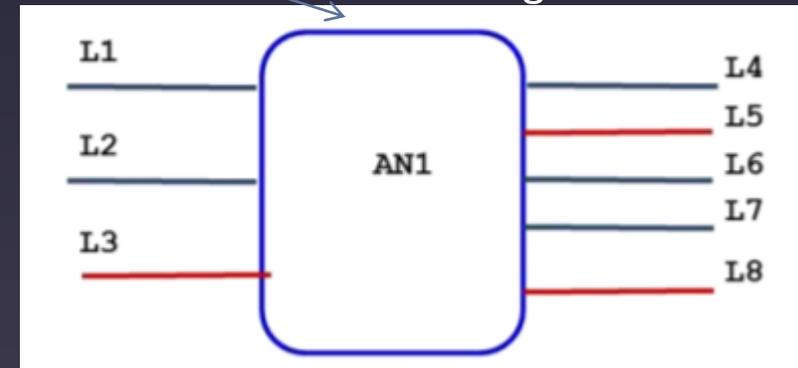
- VN is seen as edge to edge links (VN-members) setup as tunnels across underlying networks!

VN Type 1

•VN 1

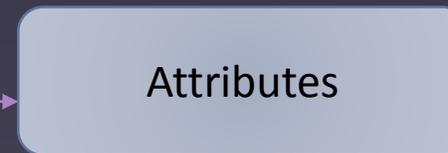
- VN-Member 1 L1-L4
- VN-Member 2 L1-L7
- VN-Member 3 L2-L4
- VN-Member 4 L3-L8
- This VN has following properties
 - Bandwidth 500
 - Optimize by delay

Abstract Topology with a Single Node



connectivity-matrices

These properties are set in TE Topo



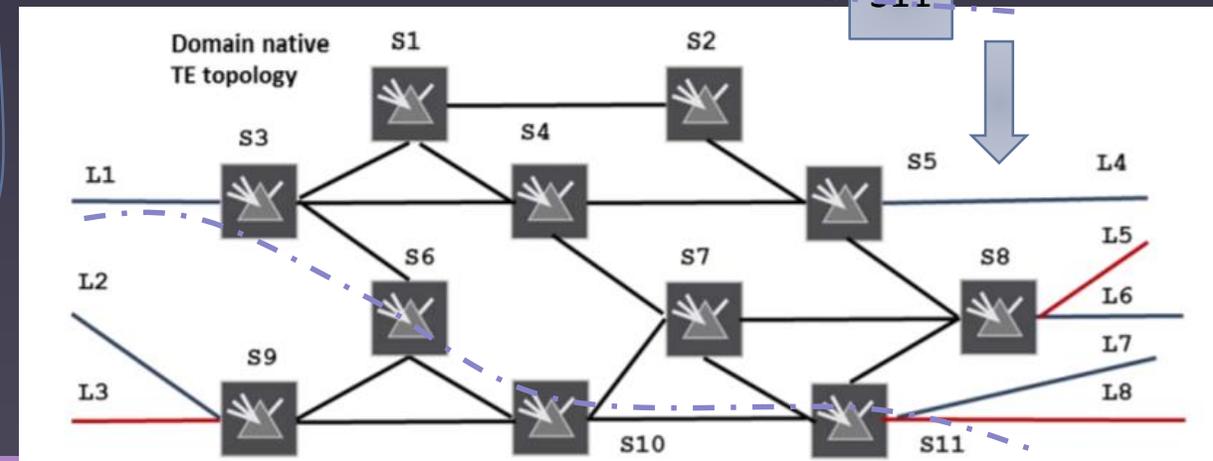
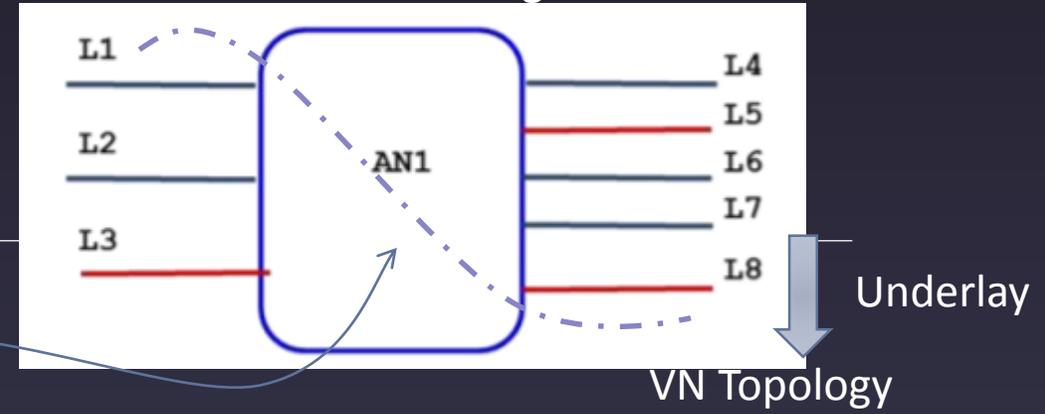
14: L1-L4	17: L1-L7
24: L2-L4	38: L3-L8

Connectivity Matrix

VN Type 2

- VN is seen 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]

Abstract Topology with a Single Node



How: Reference to TE Topology Yang Model

Access	<ul style="list-style-type: none">• AP/ VNAP -> LTP• Ltp of type te-types:te-tp-id
Customer's Virtual Network	<ul style="list-style-type: none">• VN -> Abstract Node• vn-topology-id of type te-types:te-topology-id• abstract-node -> /nw:networks/network/node/tet:te-node-id (reference)
Customer Site to Site connection	<ul style="list-style-type: none">• VN-Member -> Entry in the connectivity matrix of the abstract node• connectivity-matrix-id -> /nw:networks/network/node/tet:te/te-node-attributes/connectivity-matrices/connectivity-matrix/id (reference)

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 VN Yang model are removed!