SF Aware TE Topology YANG Model

draft-ietf-teas-sf-aware-topo-model-02

IGOR BRYSKIN (HUAWEI TECHNOLOGIES)
XUFENG LIU (VOLTA NETWORKS)
YOUNG LEE JAMES GUICHARD (HUAWEI TECHNOLOGIES)
LUIS MIGUEL CONTRERAS (TELEFONICA)
DANIELLE CECCARELLI (ERICSSON)
JEFF TANTSURA (APSTRA NETWORKS)

Status

- This draft merged the use-case draft draft-ietf-teas-use-cases-sf-aware-topo-model into the appendix.

- This draft does not model SF/VNF resource abstraction, leaving it ETSI NFV; it just maintains reference to SF/VNF types for future use.

```
augment /nw:networks/nw:network/nw:node/tet:te
   /tet:tunnel-termination-point:
      +--rw service-function
         +--rw tunnel-terminations
            +--rw tunnel-termination* [id]
               +--rw id                      uint32
               +--rw service-function-id?    string
               +--rw sf-connection-point-id? string
               +--rw enabled?                boolean
               +--rw direction?              connectivity-direction
```

Reference to a network servic

or a network function

Reference to a connection point on a network
service or a network function

Next Steps

- The model is ready for YANG doctor's review.

- The draft is ready for WG LC.

Backup Slides

Connectivity matrices introduced by the model

- **SF2SF CM** - describes which SFs could be locally inter-connected, and, if yes, in which direction, via which **CP**s and at what costs

- **SF2LTP CM** - describes how, in which direction and at what costs a given TE node's SFs could be connected to the TE node's **LTP**s and hence to SFs residing on neighboring TE nodes that are connected to LTPs at the remote ends of corresponding TE links

- **SF2TTP CM** - describes how, in which direction and at what costs a given TE node's SFs could be connected to the TE node's **TTP**s and hence to SFs residing on other TE nodes on the topology that could be inter-connected with the TE node via TE tunnels terminated by the corresponding TTPs.

SFs as TE topology elements
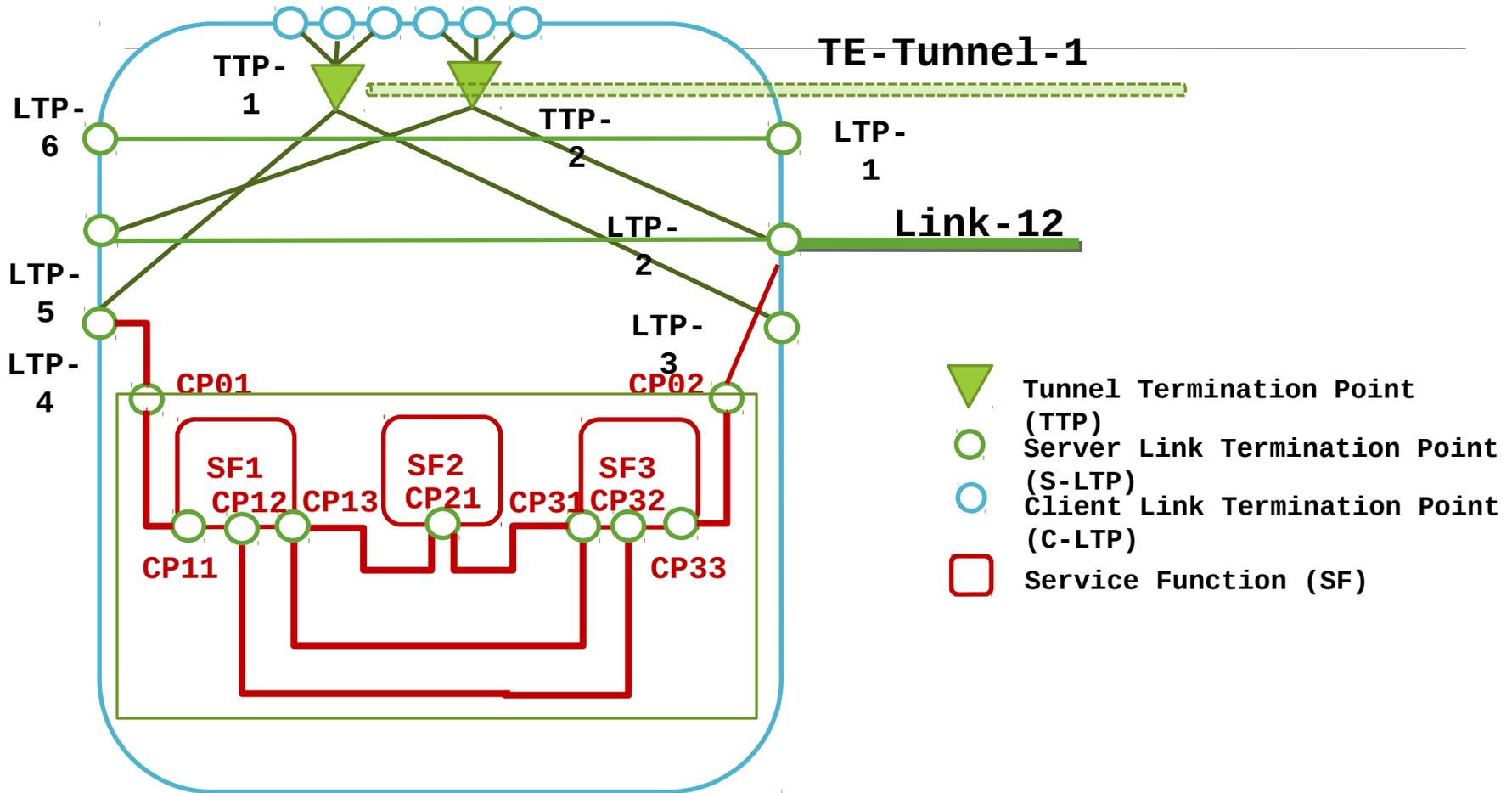
Modeling considerations

SFs are modeled as opaque objects identified via globally unique SF_IDs

SF_IDs could be used to look up SFs in ETSI defined TOSCA/YANG data stores to understand SF details

Multiple SFs with the same SF_ID could reside on different TE nodes

Each SF has one or more Connection Points (CPs) identified by SF-unique CP_IDs

SFs use CPs to inter-connect with each other, as well as with the hosting TE node's LTPs and TTPs

Interconnecting SFs via ETSI VLs

Node-1

TTP-1
TTP-2
TE-Tunnel-1

LTP-6
LTP-1
LTP-5
LTP-2
Link-12
LTP-4
LTP-3

CP01
CP02

SF1
SF2
SF3

CP12 CP13 CP21 CP31 CP32

CP11
CP33

VL_1

▼ Tunnel Termination Point (TTP)

○ Server Link Termination Point (S-LTP)

○ Client Link Termination Point (C-LTP)

☐ Service Function (SF)

⬭ ETSI Virtual Link (VL)
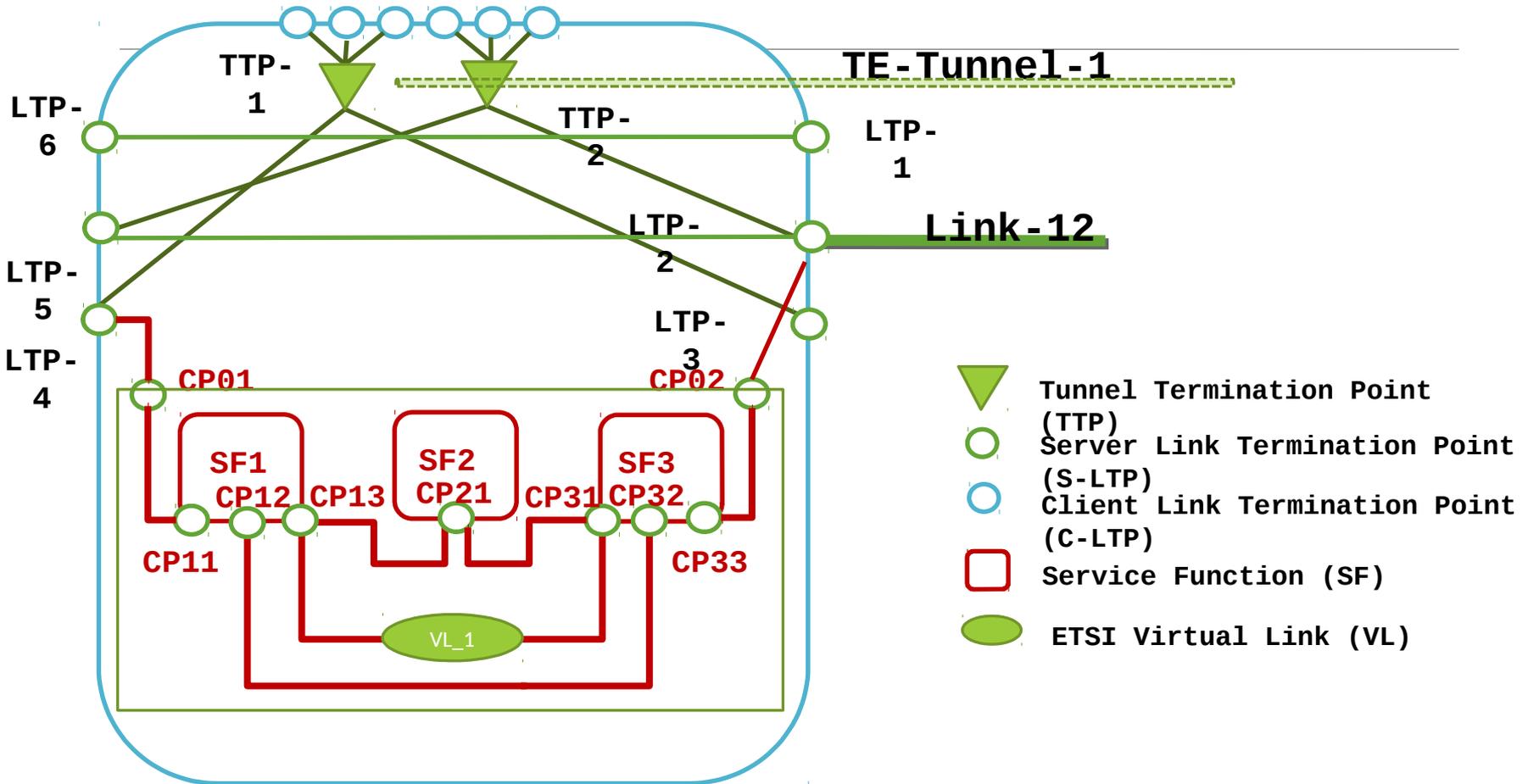
Example of SF2LTP CM:
Compute Resource aware Topology
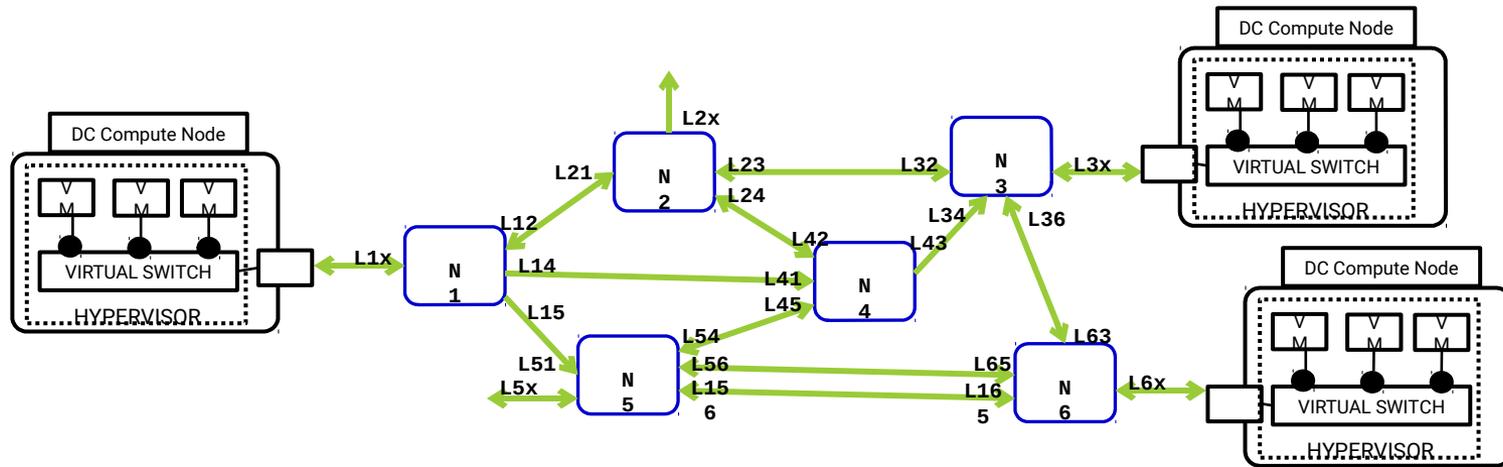
- Integrated Cross-Stratum resource model: network + DC compute/storage

- Compute Node is attached to network TE node. It contains VMs which can be modeled as a Service Function (SF). VM resources (instances, usage, CPU/Memory) can be modeled and integrated with network topology model to facilitate VM migration, dynamic load balancing, etc.

- Added is DC Compute model as an example in this version.