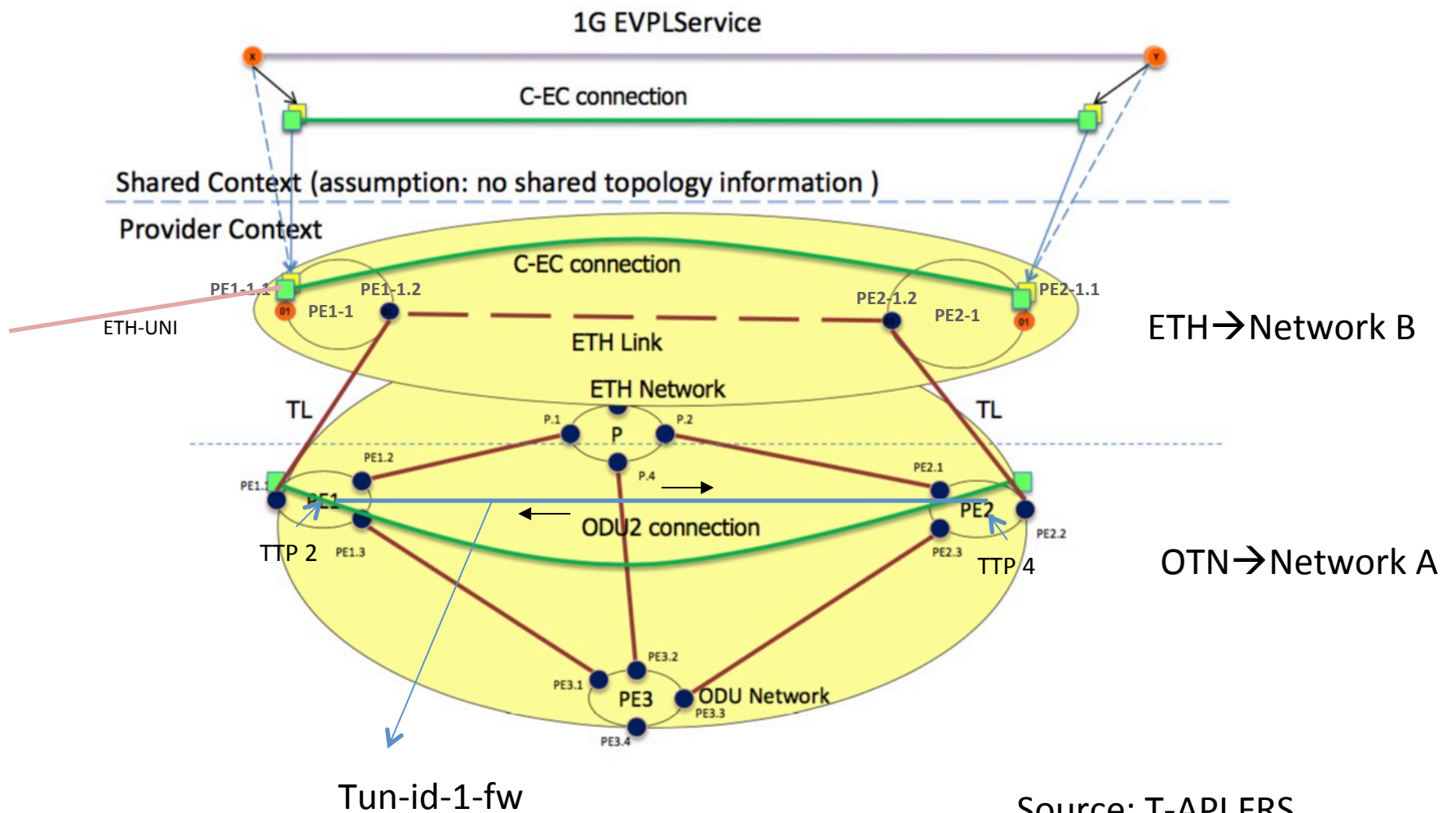


Use Case - 2

E2E Service in ML Topology

E2E Service in ML Topology



Source: T-API FRS

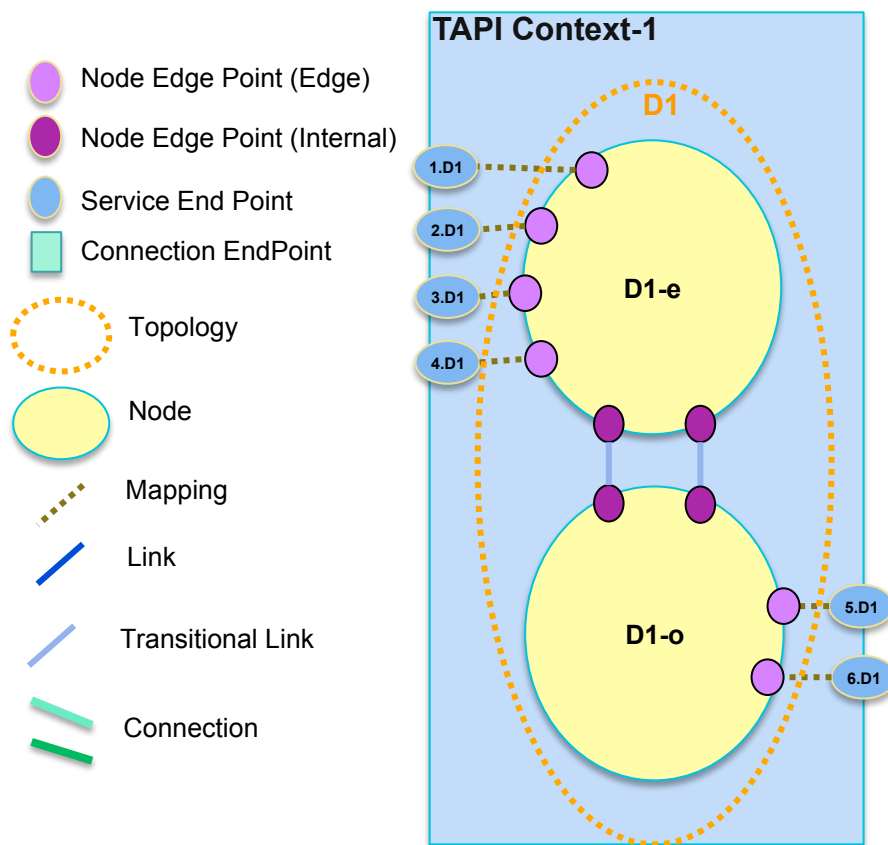
TL implications

- ETH link in red dashed line does not exist until OTN server trail (ODU2 connection) is created.
- From topology prospective TL exist to indicate “potential” layer transition and connectivity
- When server trail is created , ETH network will add the ETH link in the ETH topology
- ETH link is supported by the OTN tunnel (ODU2 connection)
- Until TL is not used, does not exists any I2RS Link related .
- As soon as ODU2 tunnel is created (with teas-yang-te draft), ETH link is appearing in the ETH topology.
- TL permits multi-layer topology representation for path computation, so should belongs to 1 topology.

Domain-1 TAPI Context Topology

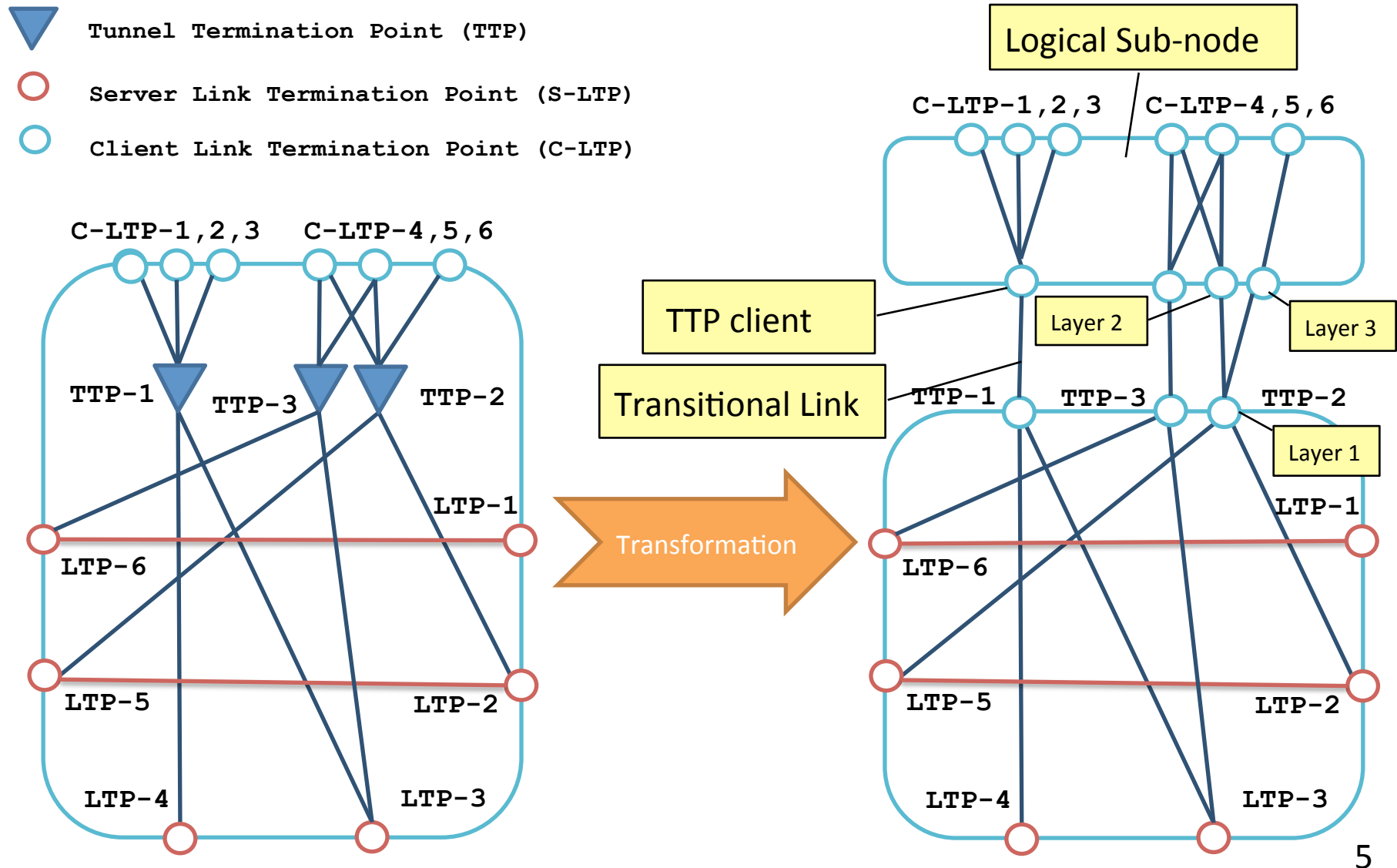


- This slide depicts the complete Topology exposed by domain-controller 1 to the multi-domain-controller*
- It is assumed that the **exposed TAPI-Context Topology is a 2 Node abstraction (1 per layer) of domain-controller 's internal Context**
- It is assumed that no Connectivity has been setup in the entire domain and this is the initial Topology view

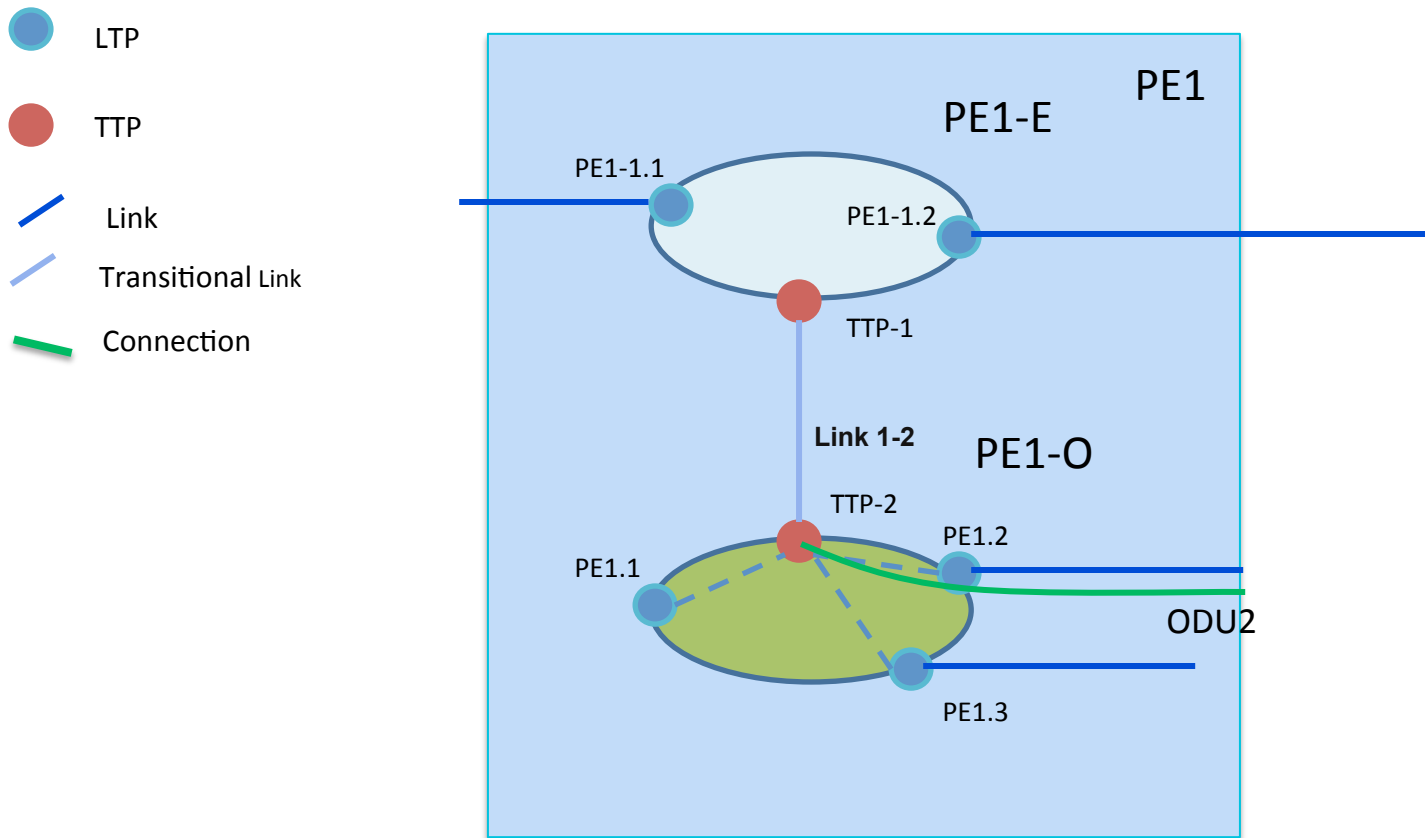


*The multi-domain controller may have to invoke more than one retrieval API operation to get this view

Transitional Link



Logical nodes separation



Added Support for Multi-layer Topology

- Transitional link
 - Connects link termination points at different layers.
- Modeling abstraction
 - Added switch-layer attributes to TE Link Termination Point.
 - Added a flag to TE Link to indicate transitional

```

augment /nw:networks/nw:network/nw:node:
  +--rw te!
    +--rw tunnel-termination-point* [tunnel-tp-id]
      +--rw tunnel-tp-id      binary
      +--rw config
        | +--rw switching-capability? identityref
        | +--rw encoding?         identityref
      +--ro state
        +--ro switching-capability? identityref
        +--ro encoding?           identityref

augment /nw:networks/nw:network/nt:link:
  +--rw te!
    +--rw config
      | +--rw te-link-attributes
      |   +--rw interface-switching-capability* [switching-capability]
      |   |   +--rw switching-capability identityref
      |   |   +--rw encoding?           identityref
      |   +--rw max-lsp-bandwidth* [priority]
    +--ro state
      +--ro is-transitional? empty

```

What about adding "sub-node" concept at this point, related to specific TTP?

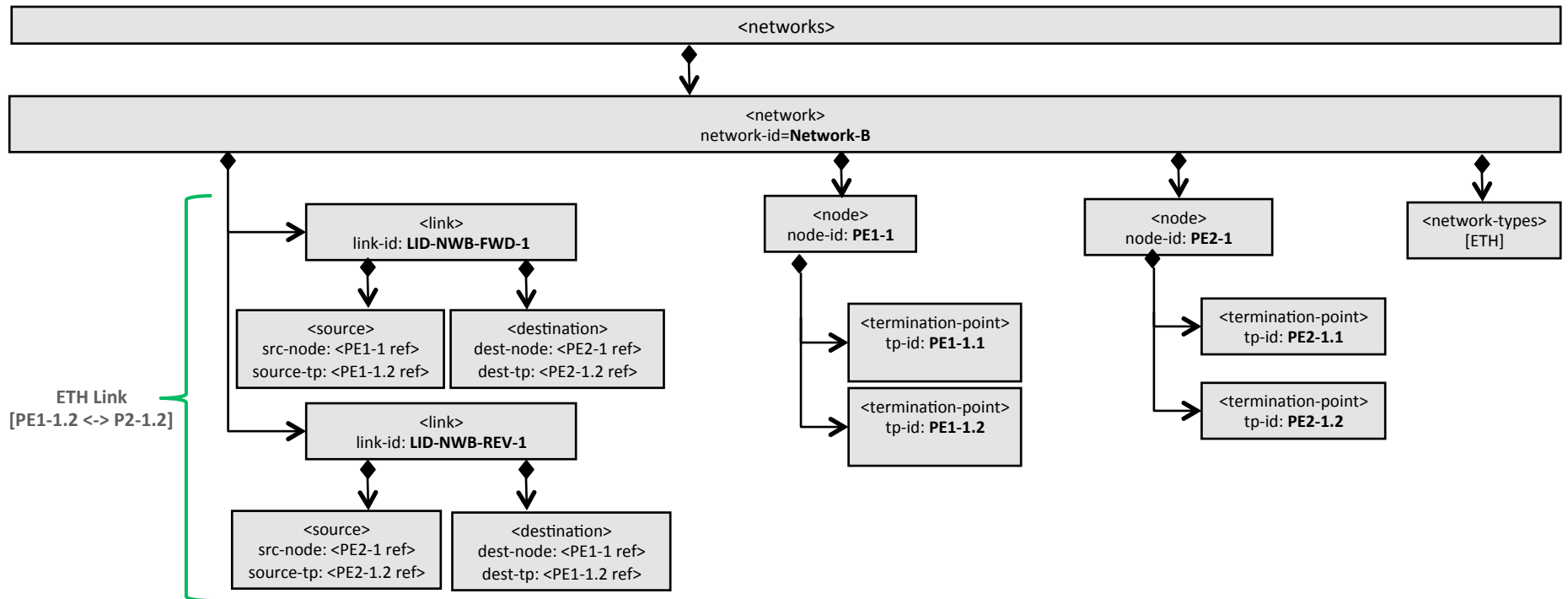
"Layer 1" at one end,
"Layer 2" at other end.

Which is the client and
which the server with this
coding ?

TL Questions

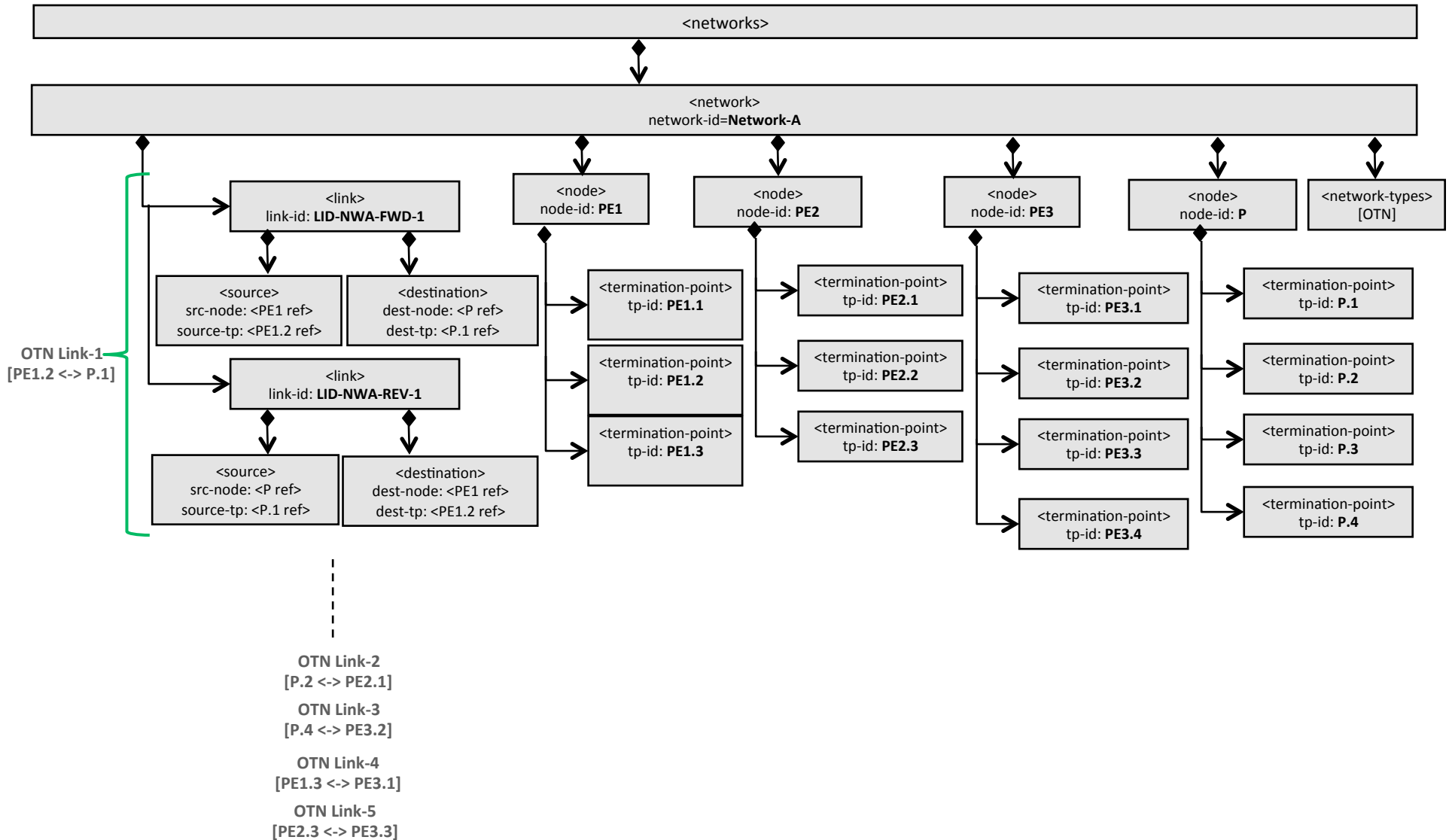
- How many nodes have to be existing in the topology?
 - 1 logical ETH node + 1 logical OTN node
 - ETH topology + OTN topology
 - ETH link in red dashed line does not exist until OTN server trail (ODU2 connection) is created.
 - 1 node (two sub-logical node) but the node is part of 1 topology (ETH) and OTN node is “supporting” node ?
- At I2RS level the TL link should be the link between two TTP. But TTP is visible at topology level or just in te-topology for path computation purpose?
 - TTP is described in the te-node augmentation, not as augmentation from i2rs TP.

ETH Topology (i2rs) Model Instantiation



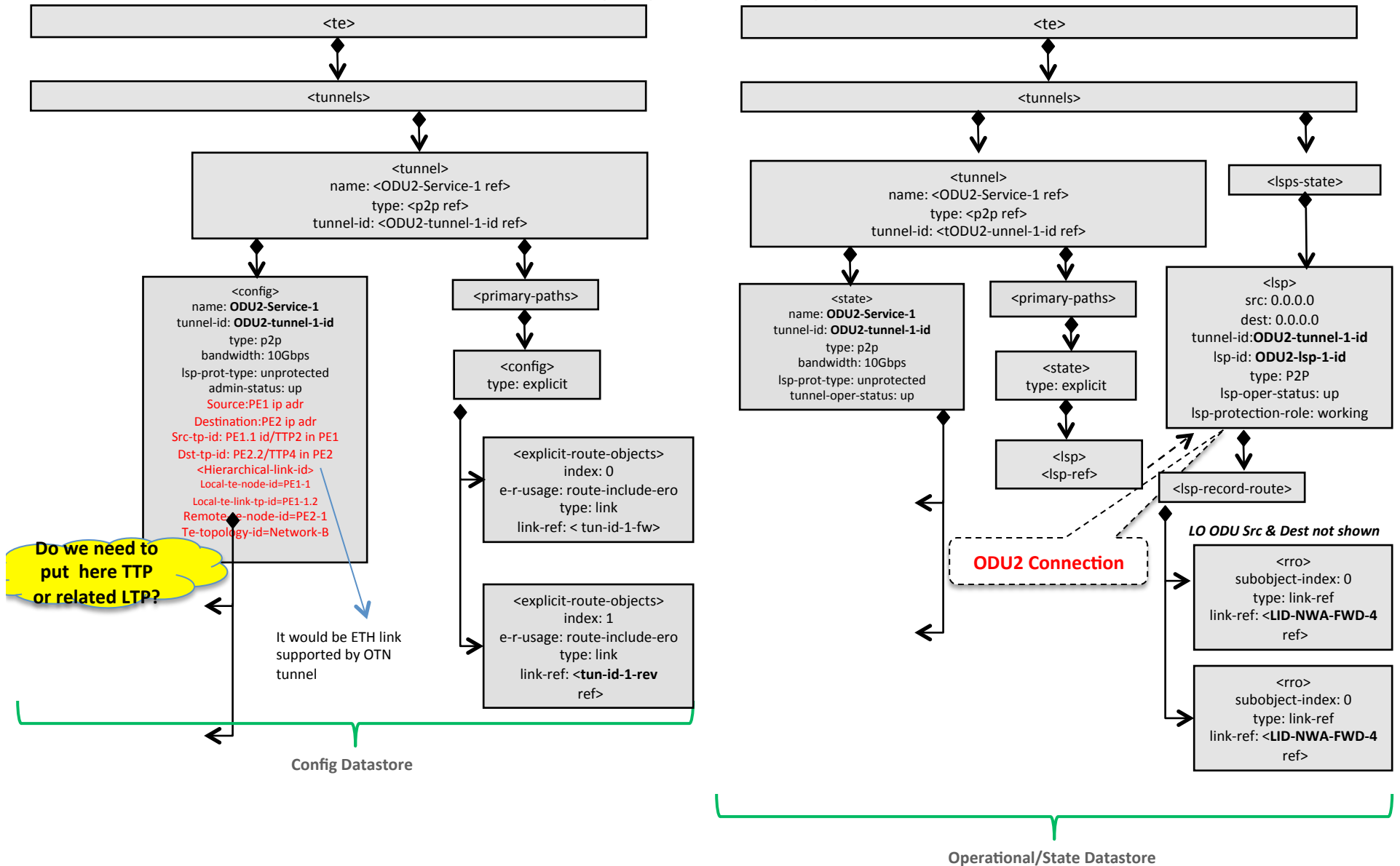
This “link” does not exist in the i2rs until TL is not used.

OTN Topology (i2rs) Model Instantiation

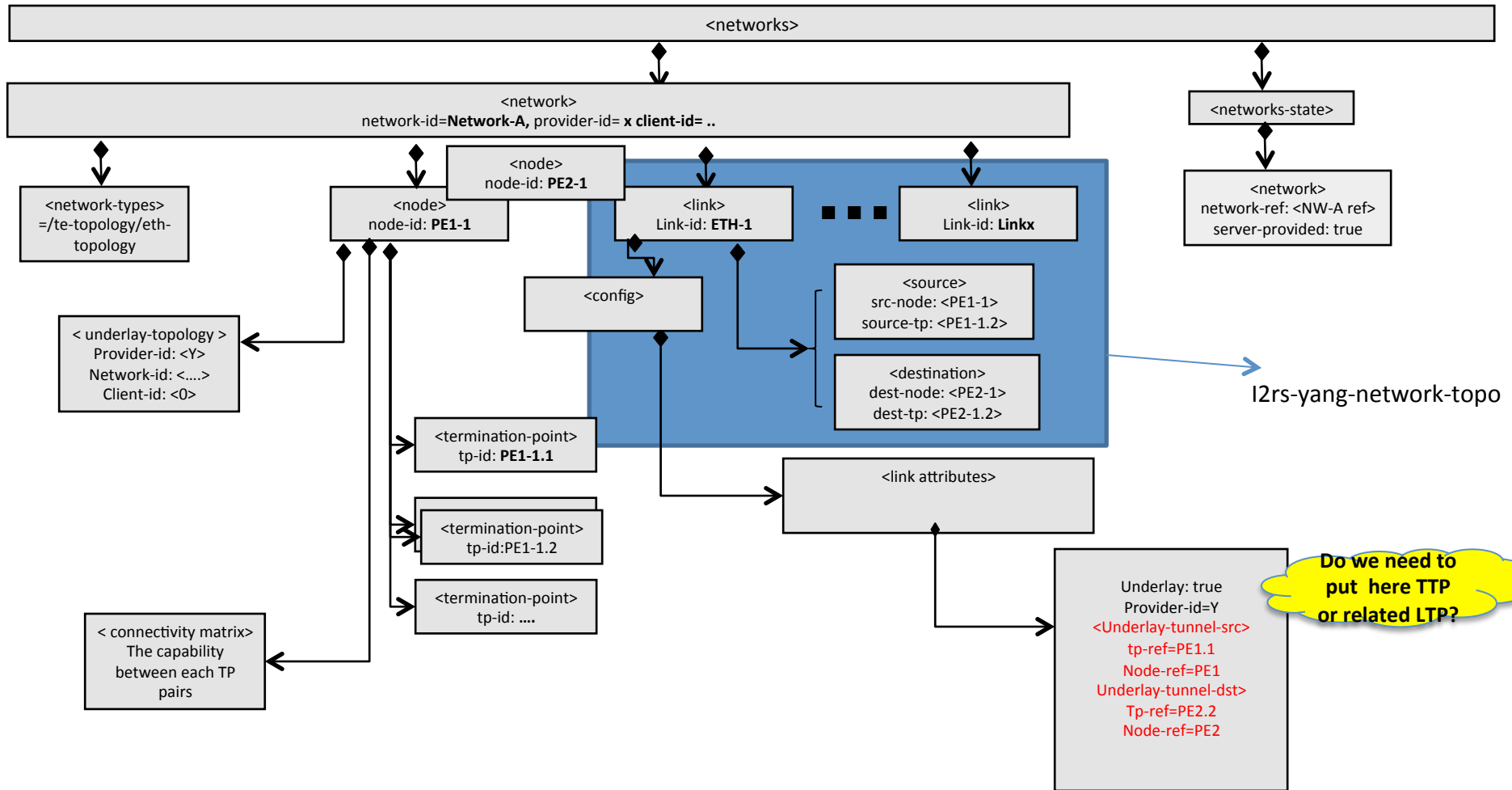


ODU2 Connection: TEAS Tunnel Model

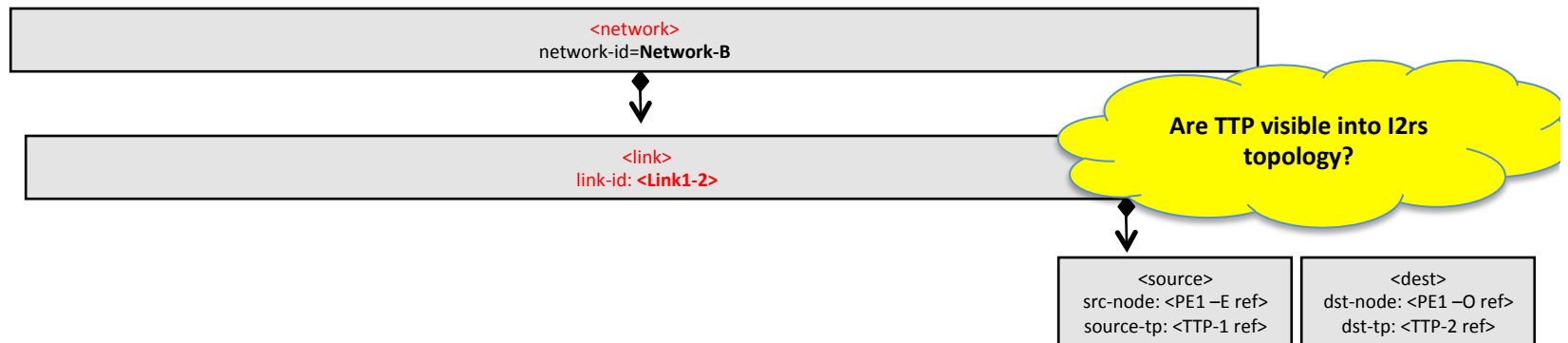
Instantiation



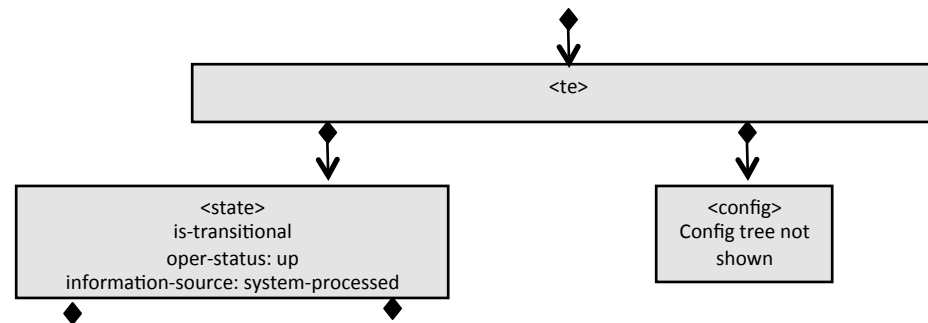
TEAS Topology Model: Dynamic ETH link Instantiation



Transitional Link: TEAS Topology Model :multi-layer representation



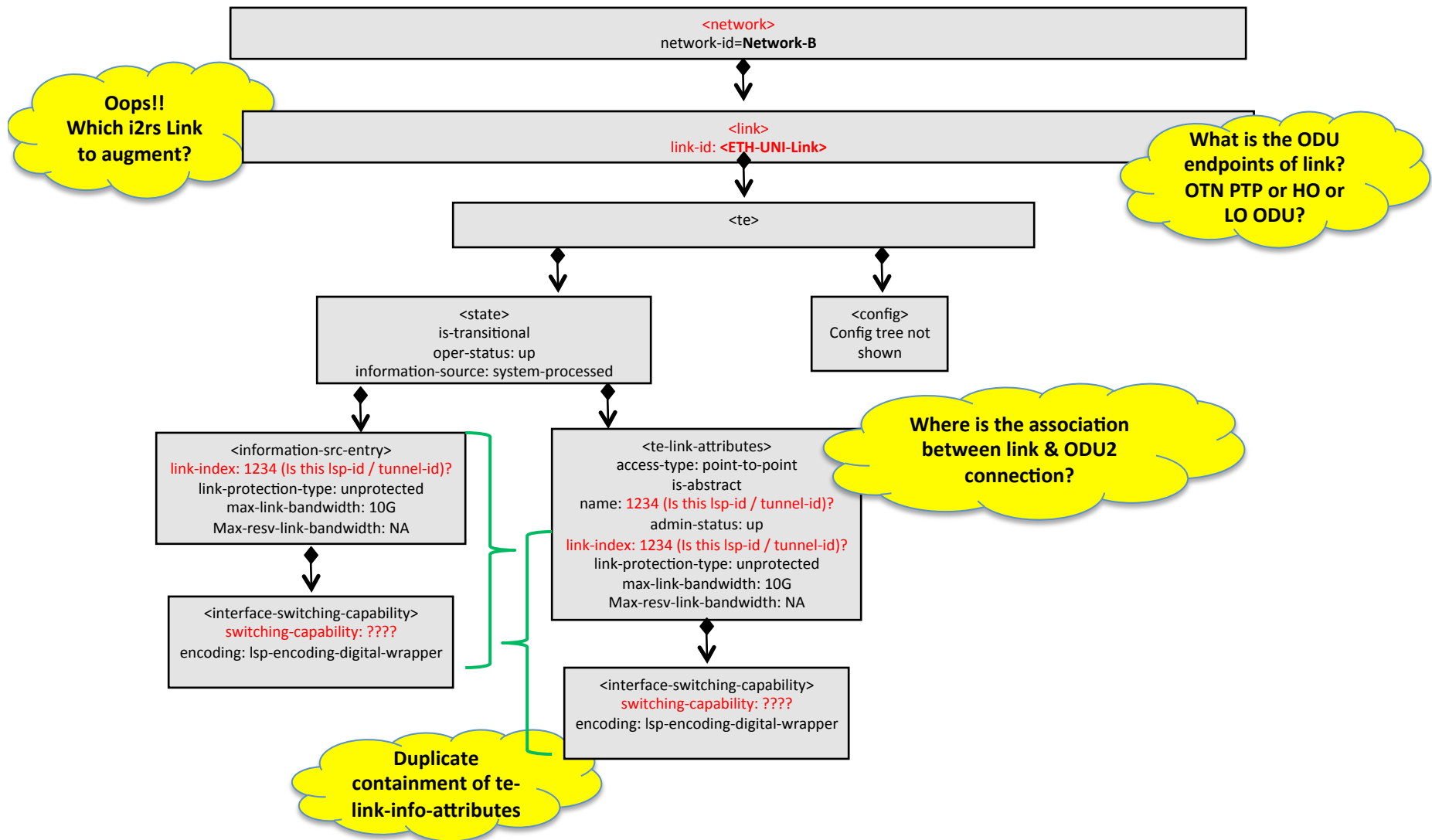
To be completed



Backup

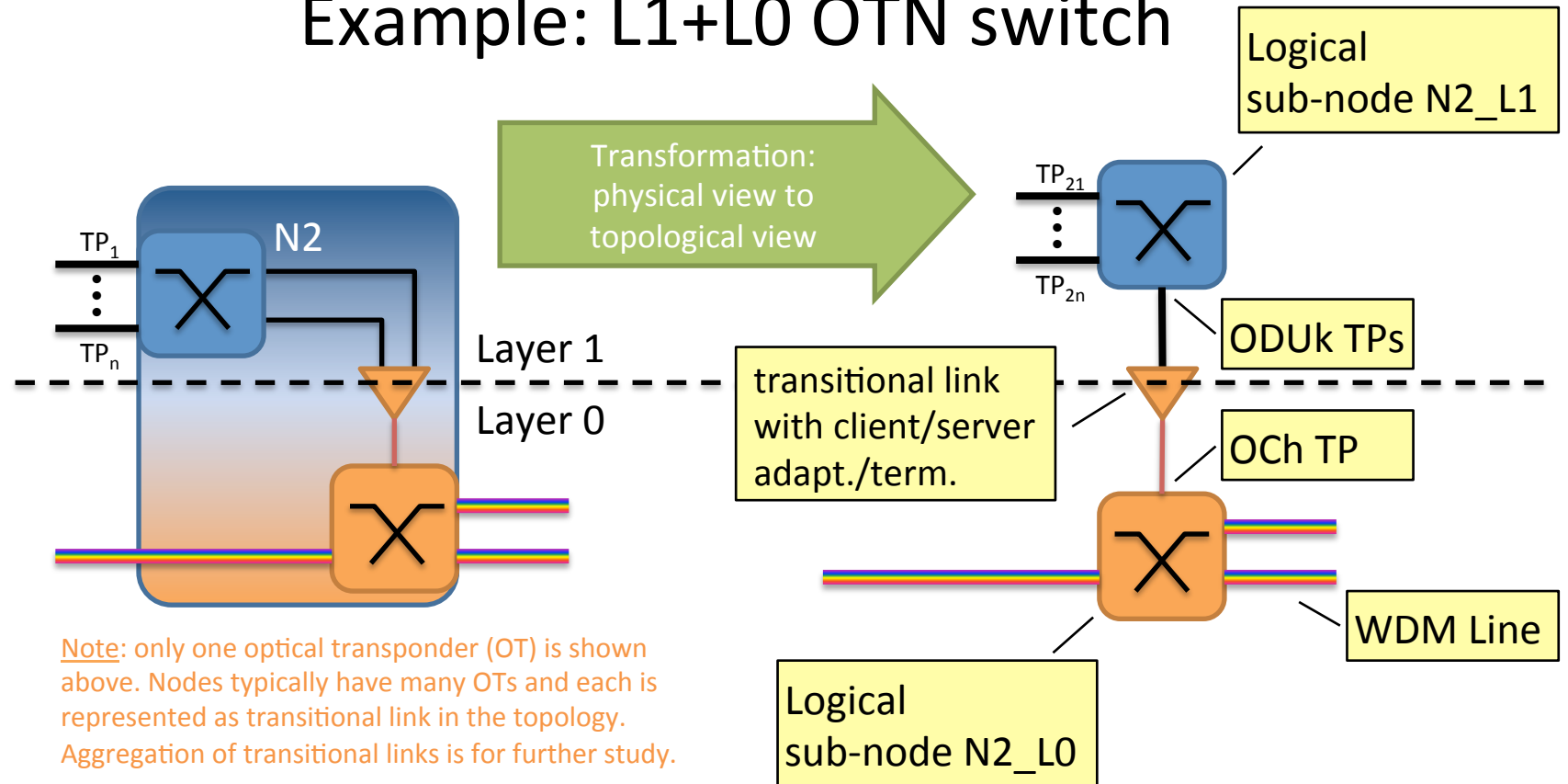
Transitional Link: TEAS Topology Model

Instantiation: ETH node



Multi-layer node decomposition

Example: L1+L0 OTN switch



Dual-layer node N2 is decomposed into 2 logical sub-nodes: N2_L1 and N2_L0
 Transitional link between N2_L1 and N2_L0 with following TPs on the link ends:
 N2_L1 side: set of ODUk TPs, N2_L0 side: single OCh TP
 Example: 100G OCh TP → ODUk TPs {80 x ODU0, 40 x ODU1, 10 x ODU2, 2 x ODU3, 1 x ODU4}

Pending & Missing Items

- Pending Model Instantiations:
 - TE Topology instantiation
 - Create Tunnel RPC
- Missing Modeling:
 - Access Link (Done)
 - OTN Mux Service

Hierarchical Control Example

