YANG Model for ETH TE Topology

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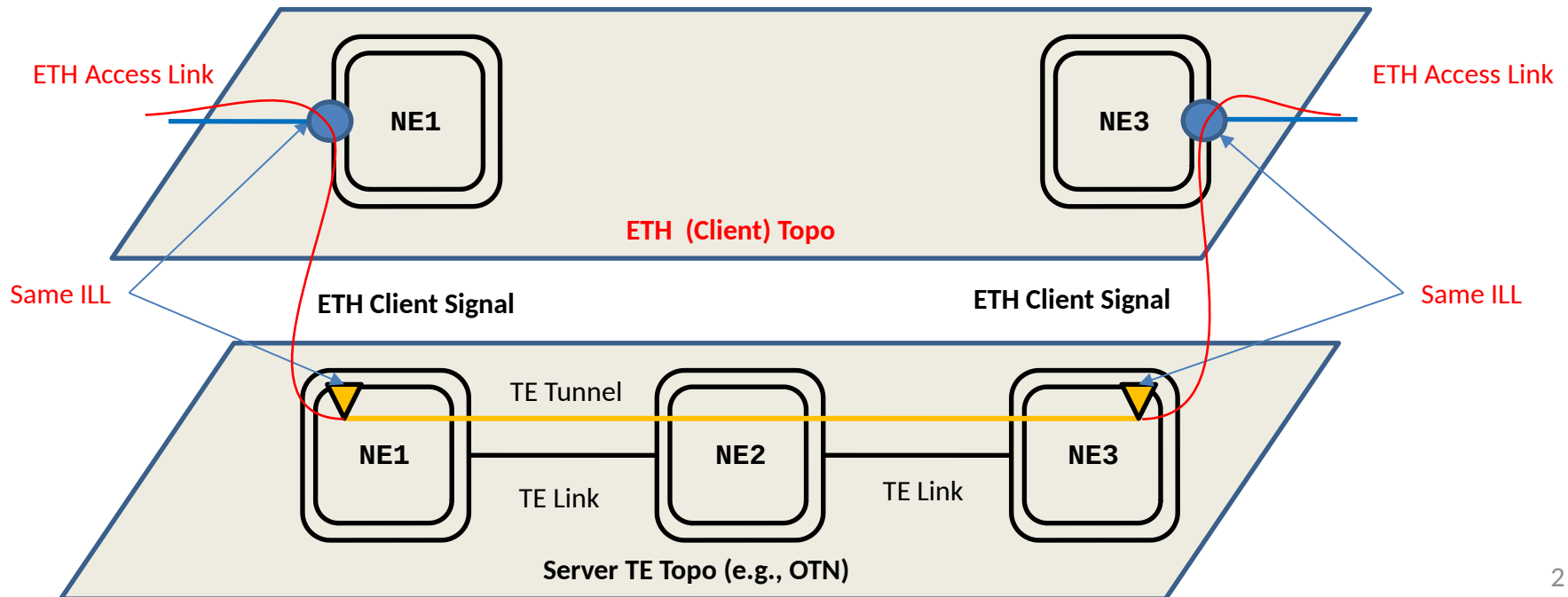
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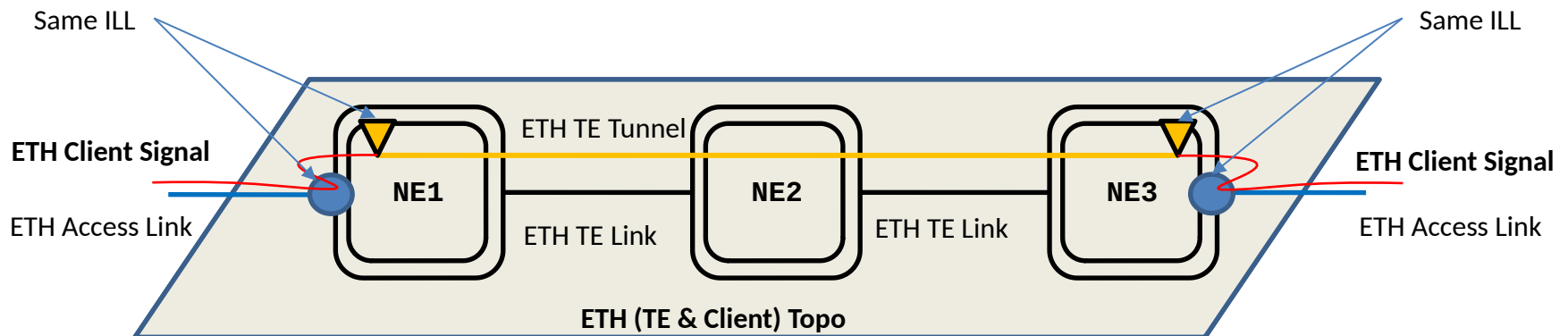
Problem Statement (1)

- Represents ETH access links
  - Inter-layer relationship with server-layer TTP (ILL or TL)
  - VLAN classification & operations capabilities
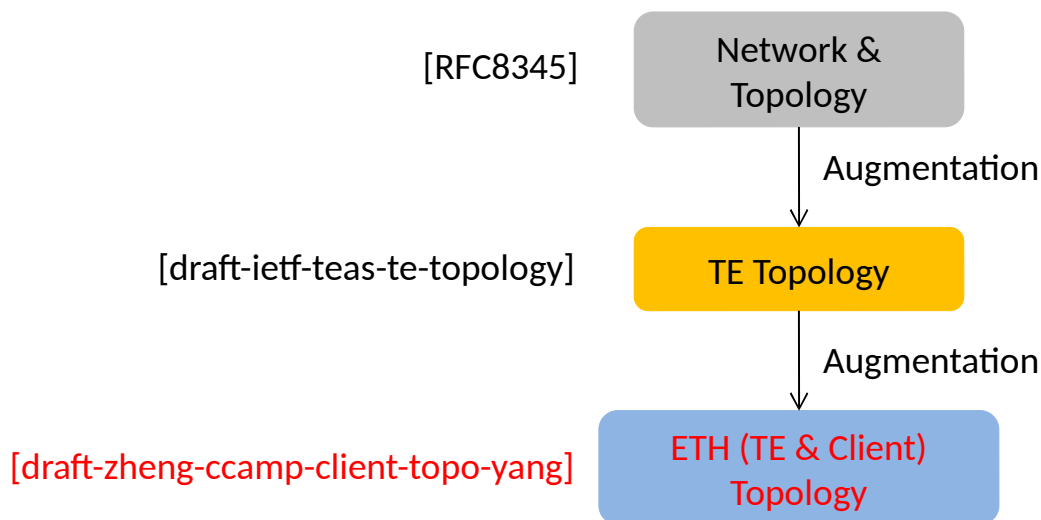 - Configure access link bandwidth profiles

ETH Access Link

ETH Access Link

NE1

NE3

ETH (Client) Topo

Same ILL

Same ILL

ETH Client Signal

ETH Client Signal

TE Tunnel

NE1

NE2

NE3

TE Link

TE Link

Server TE Topo (e.g., OTN)

Problem Statement (2)

- ETH TE Topology Discovery
  - Support path computation&setup for ETH TE Tunnels/LSPs
  - Yet another technology-specific augmentation of TE Topology model
  - Can support ETH client signals

Same ILL

Same ILL

ETH Client Signal

ETH Client Signal

ETH TE Tunnel

ETH Access Link

ETH Access Link

NE1

NE2

NE3

ETH TE Link

ETH TE Link

ETH (TE & Client) Topo

Approach

- Augment TE Topology for both ETH TE&Client Topology

[RFC8345] → Network & Topology

Augmentation

[draft-ietf-teas-te-topology] → TE Topology

Augmentation

[draft-zheng-ccamp-client-topo-yang] → ETH (TE & Client) Topology

YANG Augmentations

Attributes Augmentation

```
augment /nw:networks/nw:network/nw:network-types/tet:te-topology:
  +--rw eth-tran-topology!
augment /nw:networks/nw:network/nw:node/nt:termination-point:
  +--rw ltp-mac-address?                    yang:mac-address
  +--rw port-vlan-id?                       etht-types:vlanid
  +--rw maximum-frame-size?                 uint16
  +--rw (direction)?
  |  +--:(symmetrical)
```

TE-Bandwidth Augmentations

```
+--:(eth)
   +--rw eth-bandwidth?   uint64
```

See more details in the draft…

TE-Label Augmentations

For label-start/label-end;

```
+--:(eth)
   +--rw vlanid?   etht-types:vlanid
```

For label-step;

```
+--:(eth)
   +--rw eth-step?   uint16
```

For label-hop;

```
+--:(eth)
   +--rw vlanid?   etht-types:vlanid
```

For label-restriction;

```
+--rw tag-type?   etht-types:eth-tag-type
+--rw priority?   uint8
```

Summary & Next Step

- Good Consistency with existing IETF models;
- Used by Transport NBI DT Applicability Statement I-D;
- Ask for WG adoption;

- Model available at:
  https://github.com/haomianzheng/IETF-ACTN-YANG-Model/tree/master/YANG/ccamp/client-topo-yang

- Open Issue
  - Alignment with Packet-TE Types and Packet-TE Topology

Thank you!

YANG model for ETH access links

```
+--rw eth-svc!
   +--rw client-facing?                boolean
   +--rw supported-classification
   |  +--rw transparent?              boolean
   |  +--rw port-classification?      boolean
   |  +--rw vlan-classification
   |     +--rw vlan-tag-classification?   boolean
   |     +--rw outer-tag
   |     |  +--rw supported-tag-types*   etht-types:eth-tag-classify
   |     |  +--rw vlan-bundling?         boolean
   |     |  +--rw vlan-range?            etht-types:vid-range-type
   |     +--rw second-tag
   |        +--rw second-tag-classification?   boolean
   |        +--rw supported-tag-types*         etht-types:eth-tag-classify
   |        +--rw vlan-bundling?               boolean
   |        +--rw vlan-range?                  etht-types:vid-range-type
   +--rw supported-vlan-operations
      +--rw asymmetrical-operations?       boolean
      +--rw transparent-vlan-operations?   boolean
      +--rw vlan-pop
      |  +--rw vlan-pop-operations?    boolean
      |  +--rw max-pop-tags?           uint8
      +--rw vlan-push
         +--rw vlan-push-operation?    boolean
         +--rw outer-tag
         |  +--rw supported-tag-types*   etht-types:eth-tag-type
         |  +--rw vlan-range?            etht-types:vid-range-type
         +--rw second-tag
            +--rw push-second-tag?       boolean
            +--rw supported-tag-types*   etht-types:eth-tag-type
            +--rw vlan-range?            etht-types:vid-range-type
```

8

YANG model for ETH link BWP

```
+--rw (direction)?
|  +--:(symmetrical)
|  |  +--rw ingress-egress-bandwidth-profile
|  |     +--rw bandwidth-profile-type?    etht-types:bandwidth-profile-type
|  |     +--rw CIR?                       uint64
|  |     +--rw CBS?                       uint64
|  |     +--rw EIR?                       uint64
|  |     +--rw EBS?                       uint64
|  |     +--rw color-aware?               boolean
|  |     +--rw coupling-flag?             boolean
|  +--:(asymmetrical)
|     +--rw ingress-bandwidth-profile
|     |  +--rw bandwidth-profile-type?    etht-types:bandwidth-profile-type
|     |  +--rw CIR?                       uint64
|     |  +--rw CBS?                       uint64
|     |  +--rw EIR?                       uint64
|     |  +--rw EBS?                       uint64
|     |  +--rw color-aware?               boolean
|     |  +--rw coupling-flag?             boolean
|     +--rw egress-bandwidth-profile
|        +--rw bandwidth-profile-type?    etht-types:bandwidth-profile-type
|        +--rw CIR?                       uint64
|        +--rw CBS?                       uint64
|        +--rw EIR?                       uint64
|        +--rw EBS?                       uint64
|        +--rw color-aware?               boolean
|        +--rw coupling-flag?             boolean
```

Applicable to ETH access links but also to ETH TE links