

# YANG Model for OTN Topology

draft-ietf-ccamp-otn-topo-yang-02

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## **Contributors:**

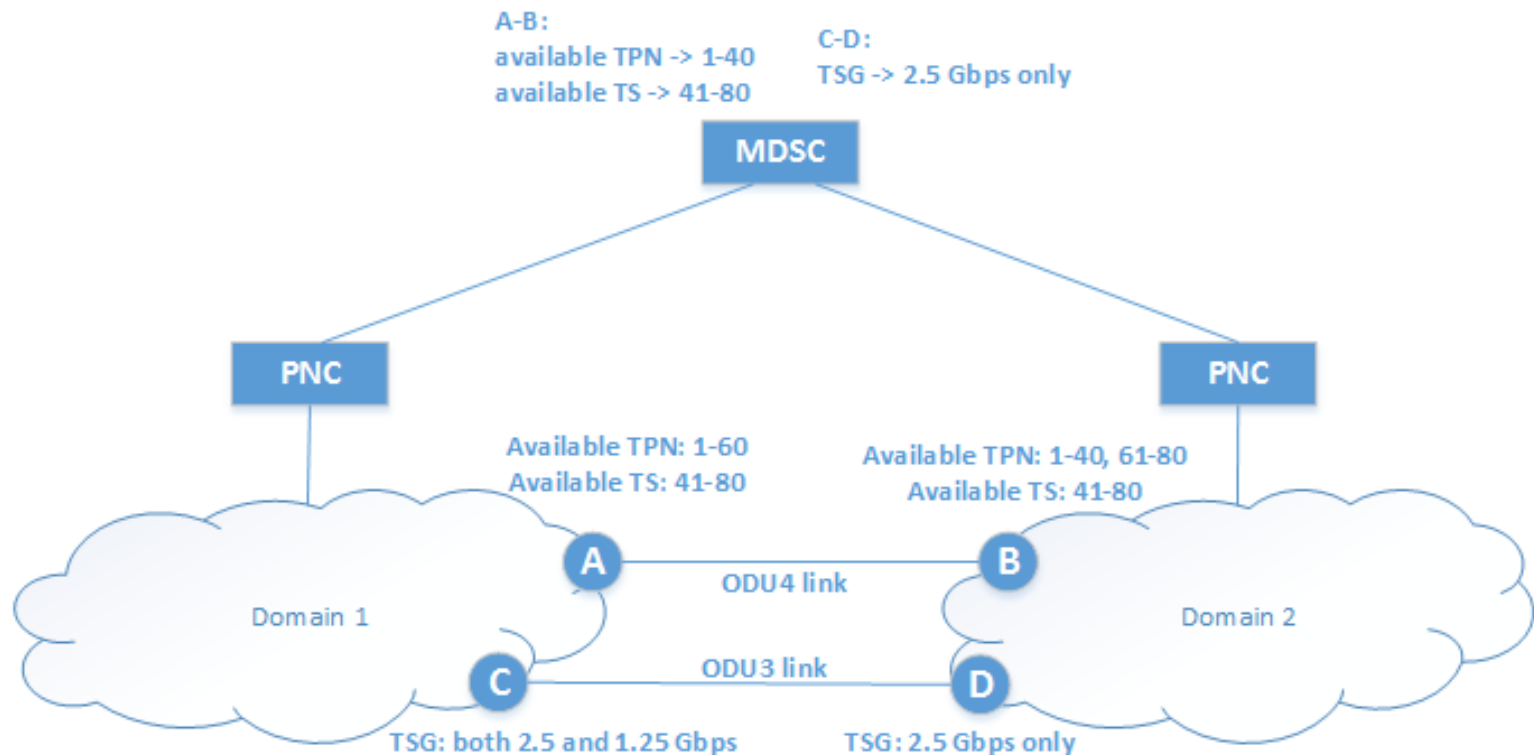
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Victor Lopez, Yunbo Li, Dieter Beller, Yanlei Zheng

# Summary of Changes

- Added clarification about interface-independency
  - The applicability of models to interfaces is described in draft-zhang-teas-actn-yang
- For YANG model
  - Removed “name” attributes in network and node as they are covered by TE topology model
  - Removed client-facing-related attributes in LTP
    - Client adaptation can be handled by “client-layer-adaptation” in TTP of TE topology model
  - Added “tpn-range”, “ts-range”, and “tsg” to link attribute for multi-domain scenario

# Added tpn-range/ts-range/tsg Attributes

- In the context of ACTN, MDSC needs to configure the inter-domain links
  - Information of inter-domain link is needed



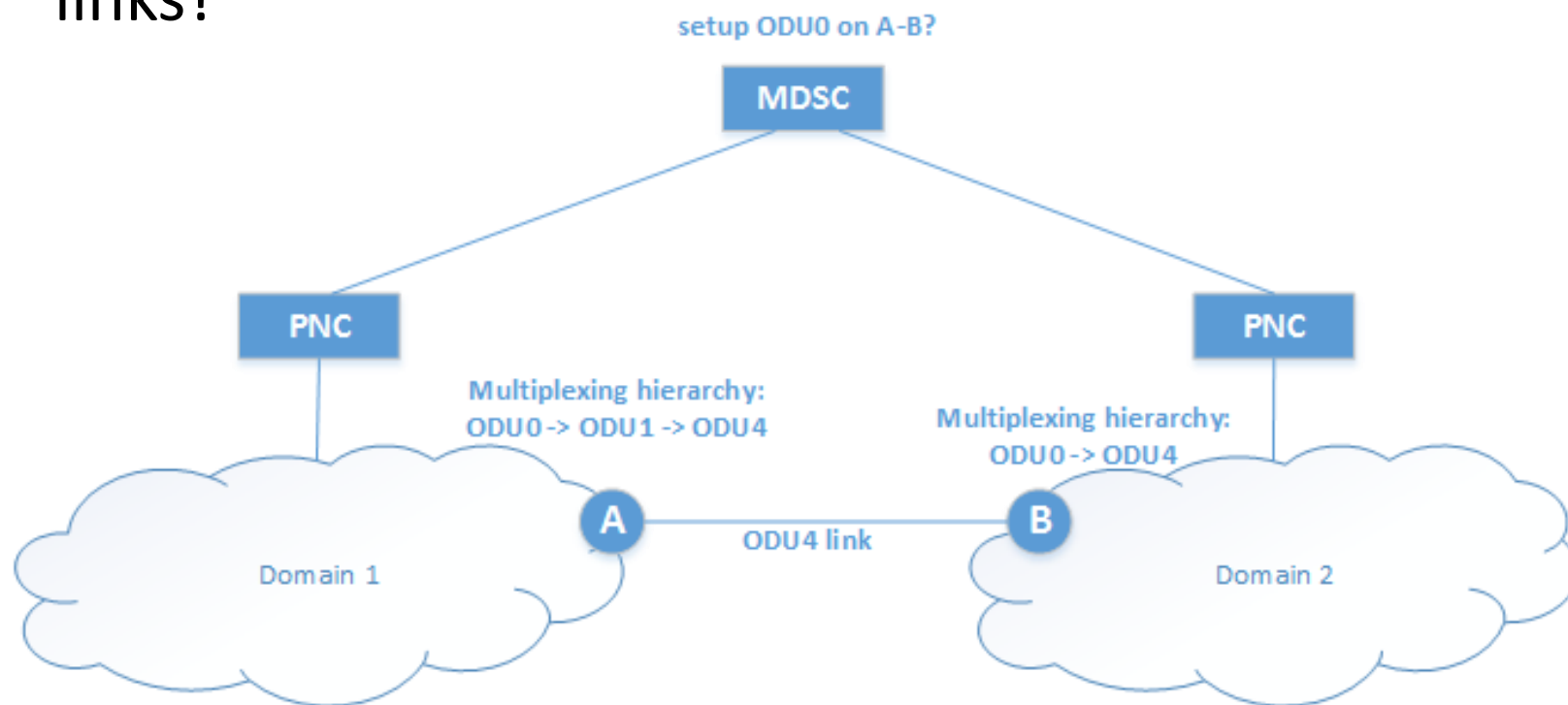
# YANG Tree

```
module: ietf-otn-topology
augment /nw:networks/nw:network/nw:network-types/tet:te-topology:
  +--rw otn-topology!
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes:
  +--rw available-odu-info* [priority]
  | +--rw priority      uint8
  | +--rw odulist* [odu-type]
  | | +--rw odu-type    identityref
  | | +--rw number?    uint16
  | | +--rw tpn-range? string
  | +--rw ts-range?   string
  +--rw tsg?          identityref
  +--rw distance?    uint32
augment /nw:networks/nw:network/nw:node/nt:termination-point/tet:te:
  +--rw supported-payload-types* [index]
  +--rw index          uint16
  +--rw payload-type? string
```

Covered by “unreserved-bandwidth”  
in TE topology model, to be removed

# Next Step/Discussion

- Remove the attributes covered by TE topology
- Report the multiplexing hierarchy of inter-domain links?



# YANG Model for OTN Tunnel

draft-ietf-ccamp-otn-tunnel-model-01

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# Summary of Changes

- Aligned with TE tunnel model (NMDA-compliant)
- Added an RPC for path computing
- Renamed “ietf-transport-types” module to “ietf-otn-types”

# YANG Tree (compliant with TE tunnel)

```
module: ietf-otn-tunnel
augment /te:te/te:tunnels/te:tunnel:
  +--rw payload-treatment?      enumeration
  +--rw src-client-signal?      identityref
  +--rw src-tpn?                uint16
  +--rw src-tsg?               identityref
  +--rw src-tributary-slot-count?  uint16
  +--rw src-tributary-slots
  | +--rw values*      uint8
  +--rw dst-client-signal?      identityref
  +--rw dst-tpn?                uint16
  +--rw dst-tsg?               identityref
  +--rw dst-tributary-slot-count?  uint16
  +--rw dst-tributary-slots
  | +--rw values*      uint8
```



# RPC: otn-te-tunnel-path-compute

- Input
  - General input for a request
  - Constraints for each path
  - Label constraints for each end of a request
- Output returns the computed paths
- Some attributes are covered in path computation draft
  - To align with the path computation draft

# Input: General Input

```
+---x otn-te-tunnel-path-compute
+---w input
+---w request* [id]
+---w id          uint8
+---w type?       identityref
+---w source?     inet:ip-address
+---w destination? inet:ip-address
+---w src-tp-id?  binary
+---w dst-tp-id?  binary
+---w switching-layer? identityref
+---w encoding?   identityref
+---w protection-type? identityref
+---w restoration-type? identityref
+---w provider-id? te-types:te-global-id
+---w client-id?   te-types:te-global-id
+---w te-topology-id? te-types:te-topology-id
+---w setup-priority? uint8
+---w hold-priority?  uint8
+---w te-path-metric-type? identityref
+---w odu-type?       identityref
.....
```

Covered by path  
computation draft

Covered by path  
computation draft

Next step: align with the path computation draft

# Input: Path Constraints

```
+---x otn-te-tunnel-path-compute
  +---w input
    +---w request* [id]
      ...
      +---w p2p-primary-paths
        +---w p2p-primary-path* [name]
          +---w name string
          +---w te-default-metric? uint32
          +---w te-delay-metric? uint32
          +---w te-hop-metric? uint32
          +---w explicit-route-objects
            +---w explicit-route-object* [index]
              +---w explicit-route-usage? identityref
              +---w index uint32
              +---w (type)?
                +---:(numbered)
                  +---w numbered-hop
                    +---w address? te-types:te-tp-id
                    +---w hop-type? te-hop-type
                +---:(as-number)
                  +---w as-number-hop
                    +---w as-number? binary
                    +---w hop-type? te-hop-type
                +---:(unnumbered)
                  +---w unnumbered-hop
                    +---w node-id? te-types:te-node-id
                    +---w link-tp-id? te-types:te-tp-id
                    +---w hop-type? te-hop-type
                +---:(label)
                  +---w label-hop
                    +---w value? rt-types:generalized-label
                +---:(sid)
                  +---w sid-hop
                    +---w sid? rt-types:generalized-label
          +---w p2p-secondary-paths
            +---w p2p-secondary-path* [name]
              ...
```

Covered by path computation draft

# Input: Label Constraints

- For multi-domain connection, TPN value and TS usage can be specified for the end of a tunnel

```
+---x otn-te-tunnel-path-compute
+---w input
|   +---w request* [id]
|   ...
|   +---w payload-treatment?      enumeration
|   +---w src-client-signal?      identityref
|   +---w src-tpn?                 uint16
|   +---w src-tsg?                 identityref
|   +---w src-tributary-slot-count? uint16
|   +---w src-tributary-slots
|   |   +---w values*   uint8
|   +---w dst-client-signal?      identityref
|   +---w dst-tpn?                 uint16
|   +---w dst-tsg?                 identityref
|   +---w dst-tributary-slot-count? uint16
|   +---w dst-tributary-slots
|   |   +---w values*   uint8
+---ro output
    ...
```

# Output

```
+--ro output
+--ro return-code?  enumeration
+--ro result* [id]
+--ro id            uint8
+--ro p2p-primary-paths
|
|  +--ro p2p-primary-path* [name]
|  |
|  |  +--ro name                string
|  |  +--ro te-default-metric?  uint32
|  |  +--ro te-delay-metric?   uint32
|  |  +--ro te-hop-metric?     uint32
|  |  +--ro explicit-route-objects
|  |  |
|  |  |  +--ro explicit-route-object* [index]
|  |  |  |
|  |  |  |  +--ro explicit-route-usage?  identityref
|  |  |  |  +--ro index                  uint32
|  |  |  |  +--ro (type)?
|  |  |  |  |
|  |  |  |  |  +--:(numbered)
|  |  |  |  |  |
|  |  |  |  |  |  +--ro numbered-hop
|  |  |  |  |  |  |
|  |  |  |  |  |  |  +--ro address?      te-types:te-tp-id
|  |  |  |  |  |  |  +--ro hop-type?    te-hop-type
|  |  |  |  |  |
|  |  |  |  |  |  +--:(as-number)
|  |  |  |  |  |  |
|  |  |  |  |  |  |  +--ro as-number-hop
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  +--ro as-number?  binary
|  |  |  |  |  |  |  |  +--ro hop-type?  te-hop-type
|  |  |  |  |  |
|  |  |  |  |  |  +--:(unnumbered)
|  |  |  |  |  |  |
|  |  |  |  |  |  |  +--ro unnumbered-hop
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  +--ro node-id?    te-types:te-node-id
|  |  |  |  |  |  |  |  +--ro link-tp-id? te-types:te-tp-id
|  |  |  |  |  |  |  |  +--ro hop-type?  te-hop-type
|  |  |  |  |  |
|  |  |  |  |  |  +--:(label)
|  |  |  |  |  |  |
|  |  |  |  |  |  |  +--ro label-hop
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  +--ro value?    rt-types:generalized-label
|  |  |  |  |  |
|  |  |  |  |  |  +--:(sid)
|  |  |  |  |  |  |
|  |  |  |  |  |  |  +--ro sid-hop
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  +--ro sid?      rt-types:generalized-label
|  |
|  |  +--ro p2p-secondary-paths
|  |  .....
|  |
|  |  +--ro p2p-secondary-paths
|  |  .....
|  |
|  |  +--ro p2p-secondary-paths
|  |  .....
```

# Next Step

- Align with the path computation draft
- Any comments are welcome

Thank you!