YANG Data Models for fine grain Optical Transport Network

CCAMP WG, IETF123

draft-tan-ccamp-fgotn-yang-04

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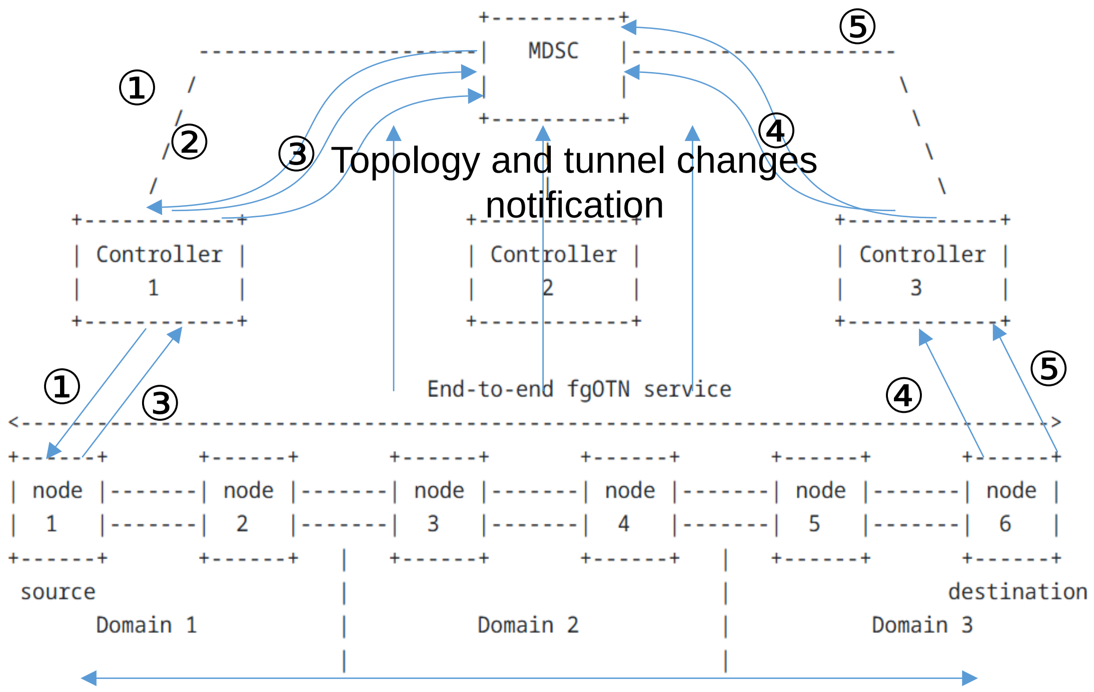
Main Ideas and Changes

- **Main ideas:**
  - Describe the control interface requirements of fgOTN and three scenarios that require special consideration.
  - Defines two YANG modules for fgOTN topology and fgOTN tunnel.
- **Main changes from -03 to -04**
  - Editorial updates
  - Updated description of the multi-domain fgOTN hitless resizing process
  - Removed link termination point augmentation
  - Updated the definition of bandwidth for links which support fgOTN

Multi-domain fgOTN Hitless Resizing Process



Hitless resizing

Step 1: The MDSC coordinator sends an resizing command to the source node (Node1) via Controller 1.

Step 2: Controller 1 reports the bandwidth adjustment status ietf-te-types:lsp-path-modifying to the MDSC via notification.

Step 3: After the resizing from Node1 to Node6 is completed, Controller 1will report an ending status notification, e.g. ietf-te-types:lsp-path-modified, to the MDSC.

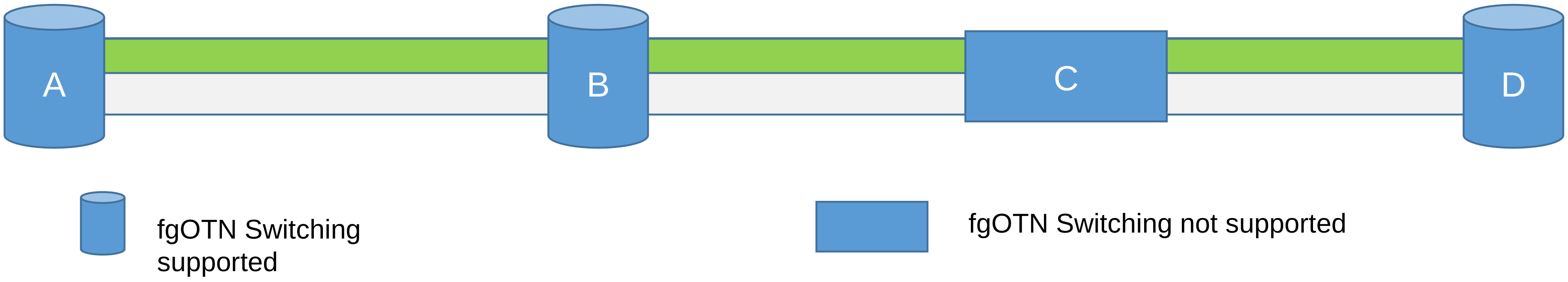
Step 4: Once the reverse resizing begins, Controller 3 reports the bandwidth adjustment status to the MDSC via notification.

Step 5: After the reverse direction (Node 6 to Node 1) resizing is completed, Controller 3 reports ietf-te-types:lsp-path-modified to MDSC.

Step 6: All domain controllers, including the intermediate domain Controller 2, need to report notifications of topology and tunnel resource changes to MDSC coordinator.

- Both source and destination controllers report the Hitless Resizing status.

How to filter the TPs which support fgOTN switching

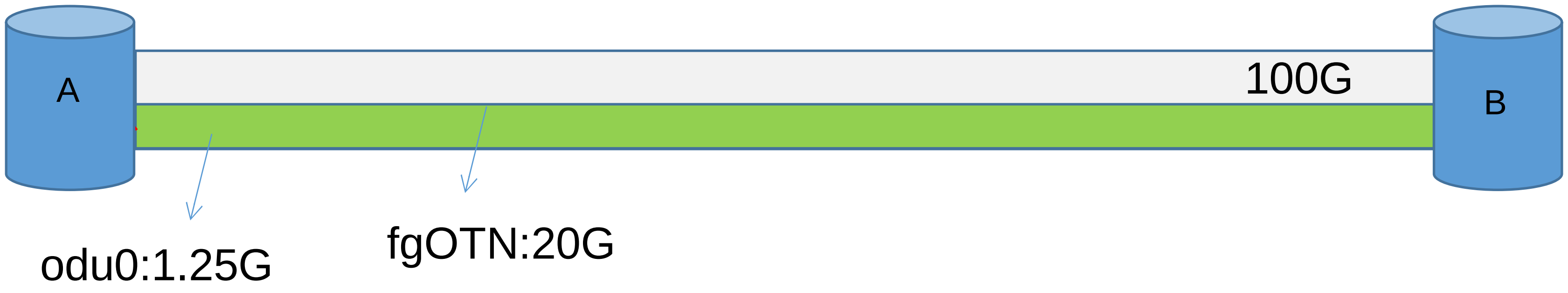


- **Previous solution**: Augment one attribute under the termination point to indicate whether the TP can support fgOTN switching or not (e.g., TPs on node C)

- **Current consideration:** The bandwidth of OTN link has provided sufficient information to identify whether the TP supports fgOTN switching or not.

- **Conclusion:** it is not needed to augment a new attribute to illustrate this feature.

An Example of link bandwidth



- max-link-bandwidth

```
"odulist": [
        {
          "odu-type": "ietf-layer1-types:odu0",
          "number": 80,
          "fgotn-bandwidth": 20000
        }
      ]
```

- unreserved-bandwidth

```
"fgotnlist": [
        {
          "odu-type": "ietf-layer1-types:odu0",
          "odu-ts-number": 1,
          "fgotn-bandwidth": 1250
        },
         ...
        {
          "odu-type": "ietf-layer1-types:odu0",
          "odu-ts-number": 16,
          "fgotn-bandwidth": 1250
        }
      ]
```

How to describe the bandwidth of links which can support fgOTN

- Bandwidth Augmentation: unsigned integer (in Mbps)
  - max-link-bandwidth
    - If a link can support fgOTN switching, we need to know the maximum bandwidth allocated for fgOTN switching.

```
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes
          /tet:max-link-bandwidth/tet:te-bandwidth/otnt:otn-bandwidth
          /otnt:odulist:
   +--rw fgotn-bandwidth?   uint16
```

  - unreserved-bandwidth
    - odu-type
    - odu-ts-number
    - fgotn-bandwidth

```
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes
          /tet:unreserved-bandwidth/tet:te-bandwidth
          /otnt:otn-bandwidth:
   +--rw fgotnlist* [odu-type odu-ts-number]
      +--rw odu-type            identityref
      +--rw odu-ts-number?      uint16
      +--rw fgotn-bandwidth?    uint16
```

Next Step and Working Method

- Continue the discussion of the open issues on github.
  - More discussion is needed on the identification of fgOTN TTPs and tunnels.
  - How to define a structure to support multi-layer path.
- Request working group adoption

- More information can be found on our github:

  https://github.com/YuChaode/draft-tan-ccamp-fgotn-yang
- Bi-weekly meetings (Wednesday 8-10am CEST)

Thank You