

G.709 Optical Transport Networks

Signaling Model Discussion

Chairs:

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Purpose of today's discussion

- The WG has a disagreement about G.709 OTN signaling *requirements*
 - Lots of discussion – on list and off list
 - Much of the discussion has focused on a *proposed mechanism* and not requirements
- This discussion is limited to **requirements**
 - Once we have consensus on requirements can then move on to mechanisms

Some relevant reminders: OTN

- OTN supports multiple data rates / switching levels
 - ODU0 → ODU1 → ODU2 → ODU3 → ODU4
 - Lower rate ODUs may be multiplexed onto higher rate ODUs
 - Without strict ordering
 - Equipment may support switching at one or more ODU levels
 - Equipment may have constraints on supported ODU levels per physical interface

Some relevant reminders:

GMPLS

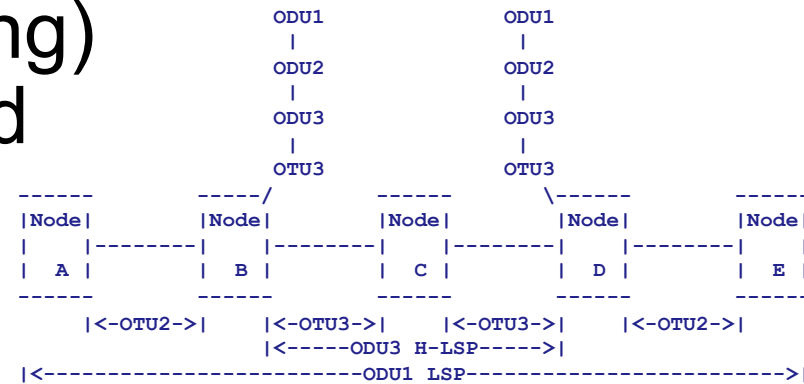
- LSP Tunnels or TE-LSPs
 - Represent a data path between end-points in a *single* switching layer
 - LSP Tunnels may or *may not* be established via control plane (e.g., RSVP-TE)
- LSP Hierarchy, H-LSPs and FAs
 - Hierarchy refers to the stacking of LSP tunnels
 - H-LSPs refers to an LSP tunnel that may carry another LSP tunnel, and are typically represented as a TE link
 - Represent a data path between end-points in a *single* switching layer
 - An FA is a data (& TE) link provided by an H-LSP (or FA-LSP)
 - Each level of the hierarchy may or *may not* be established via control plane (e.g., RSVP-TE)
- Virtual TE Link
 - TE link without a fully provisioned H-LSP/FA-LSP

Consensus

- There is a fair amount of agreement captured in
 - draft-ietf-ccamp-gmpls-g709-framework
 - draft-ietf-ccamp-otn-g709-info-model
 - draft-khuzema-ccamp-gmpls-signaling-g709
- Major points of agreement
 - Need to support all ITU-T defined ODU levels and multiplexing in GMPLS signaling
 - All existing signaling mechanisms can be used, notably: H-LSPs, FAs, Virtual TE Links

Open requirements question: #1

- How many ODU (switching) levels can be represented in one signaled LSP?



- Today:

- LSP tunnel – 1
- H-LSP – 1
+ TE Interface information for next level LSPs

- Proposed:

- A. 1 service level
+ up to full underlying ODU multiplexing hierarchy on a given TE interface (physical or H-LSP)

- Discussion:

A.

Open requirements question: #2

- How many layers can be identified in a signaled LSP's ERO?
 - Today:
 - 1 + TE interface information (including FAs & H-LSPs)
 - Proposed:
 - A. Up to full underlying ODU multiplexing hierarchy, & use to trigger FA-LSP creation
 - B. Up to full underlying ODU multiplexing hierarchy, & use mechanism to support #1
 - Discussion
 - A.
 - B.

Open requirements question: #3

- Should it be possible to signal in one LSP more than one layer on an egress?
 - Today:
 - Follows ERO
 - Proposed:
 - A. Up to full ODU multiplexing hierarchy
 - Discussion
 - A.

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