IETF 108 – CCAMP Meeting

draft-meuric-ccamp-tsvmode-signaling

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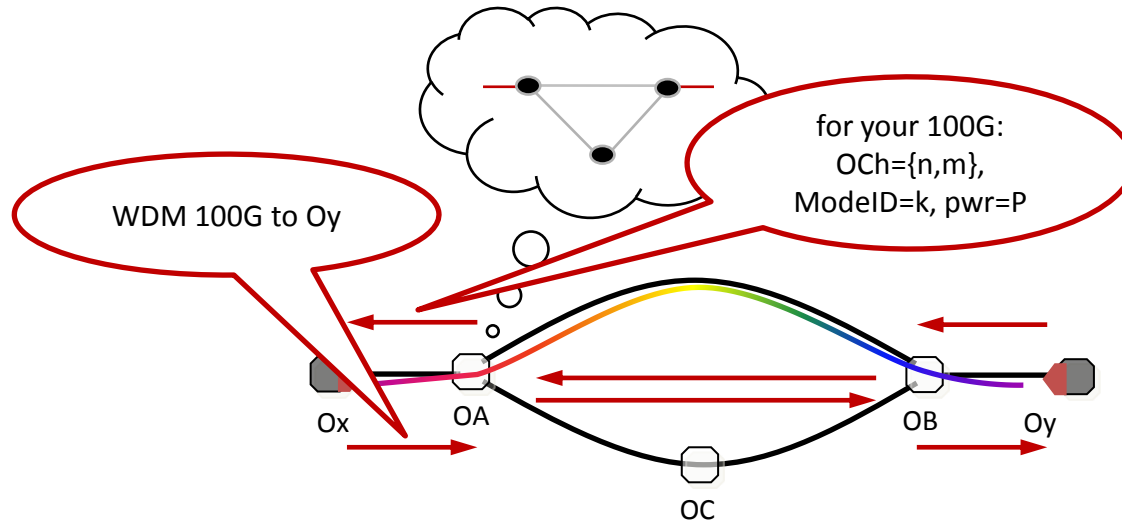Luay Alahdab, IMT Atlantique
Gabriele Galimberti, Cisco

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Problem Statement

- Some optical transceivers support multiple modulation formats, baudrates, FECs, etc.
    - a set of values for these parameters is here referred to as a "mode".

- Assuming RWA happens before leaving the ingress ROADM:
    - the signaling needs to carry the mode information up to the egress transceiver
    - (RWA may rely on embedded path computation or external PCE).

- In case the transceivers are installed in shelves independent from the ROADMs ("Open Line System"):
    - mode selection may be performed:
        - statically before ingress transceiver,
        - dynamically at ingress ROADM,
    - the selected mode must be exchanged between the line and transceivers at both ends.
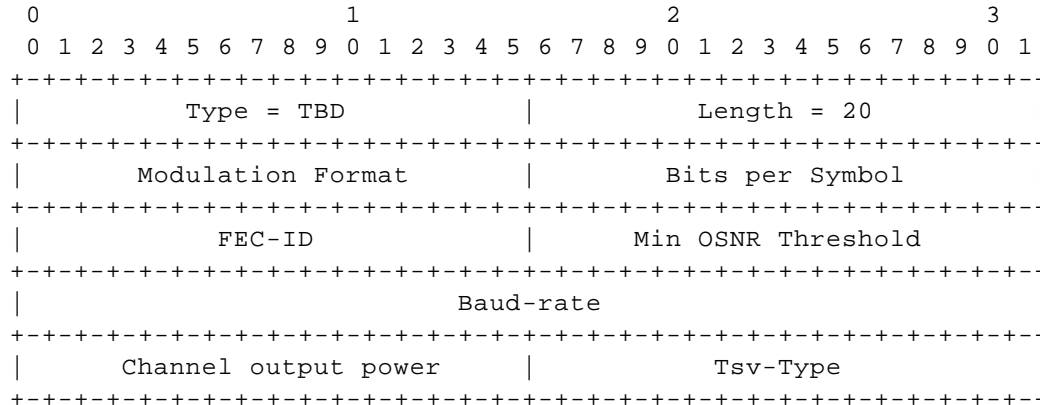
Solution Principle

- RSVP-TE Path/Resv convey the required channel info end-to-end
- The 1st Path message may be the path computation trigger ("alien" case)

WDM 100G to Oy

for your 100G:
OCh={n,m},
ModeID=k, pwr=P

Ox OA OB Oy

OC

- Ox/Oy: transceiver shelves; OA/OB/OC: ROADMs

Short-Term Encodings

- The path computation entity (ingress ROADM or external PCE) uses a mapping table containing transceiver info
    - operator-configured or learnt by LMP

Tsv-Type	Mode-ID	Parameter Set
Board-X	1	baud-rate=B, modulation=M, symbol-rate=S, FEC-ID=F…
Board-X	2	…
Board-Y	1	…

- Proposed TLV (using AppID from draft-ietf-ccamp-dwdm-if-lmp):

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Type = TBD1  |  Length = 16  |   Reserved    |AppID Type=TBD6|
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                              OUI                              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|         OUI (cont'd)          |           ModeID              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                           Tsv-Type                            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Mid-Term Encodings

- Instead of opaque identifier + lookup table, RSVP-TE messages carry detailed mode parameter set.

- Proposed TLV (aligned on draft-ggalimbe-ccamp-flexigrid-carrier-label):

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|          Type = TBD           |          Length = 20          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       Modulation Format       |        Bits per Symbol        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|            FEC-ID             |       Min OSNR Threshold      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                           Baud-rate                           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|      Channel output power     |           Tsv-Type            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- Some fields may be only relevant from transceivers to line, some from line to transceivers

Next Steps

- Align terminology on draft-ietf-ccamp-optical-impairment-topology-yang
- Keep detailed parameter set alignment on:
    – draft-ietf-ccamp-dwdm-if-param-yang
    – draft-ggalimbe-ccamp-flexigrid-carrier-label
- Ensure Application ID alignment on draft-ietf-ccamp-dwdm-if-lmp
- Address received comments (an unpublished revision is ready)
- Collect WG's feedback

- Gauge WG's interest and consider WG adoption