Framework for GMPLS based control of Flexi-grid DWDM networks
draft-ietf-ccamp-flexi-grid-fwk-01
CCAMP WG, IETF 89

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v0

Changes in -01 version

- Additional contributions regarding control plane requirements discussed on CCAMP mailing list

  - Agreed on a set of basic requirements for the support of media channels

  - Some proposed requirements do not fit in the current framework (based on ITU-T defined data plane)
    - Finer frequency slot granularity
    - Media channel resizing
    - Media channel with multiple frequency slots

Open Questions (1)

- Proposed requirement about media channels

    - *The control plane SHOULD be architected to allow support network media channels with frequency slot width m ranging from a minimum of 6.25 GHz to a maximum of the entire C-band with granularity of 6.25GHz*

        - Current minimum 12.5 GHz

        - No clear view on maximum

        - Current granularity: 12.5 GHz

        - Lower granularities not covered by ITU-T data plane, G.694.1/G.872 (yet?)

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Open Questions (2)

- Proposed requirement about "rerouting" a flexi-LSP

- Resizing (assumes same ERO)
  - *The control plane SHALL allow resizing (grow or shrink) frequency slot width of a network media channel. In certain scenarios, the resizing of frequency slot of a network media channel MAY cause temporary data plane disruption*
  - *Hitless?*
    - Currently, there is no clear view on hitless resizing at the data plane

  - Procedures defined in RFC3209 (shared explicit?) would suffice.

Open Questions (3)

- Proposed requirement in CCAMP mailing list about Network Media Channels with Multiple Frequency Slots
    - *The control plane architecture SHALL allow network media channels with multiple contiguous or non-contiguous frequency slots. In this scenario, it SHALL be possible to co-route all frequency slots associated with a given network media channel* → discarded

    - The current framework text (based on ITU-T consented data plane), does not cover a network media channel over multiple (contiguous or not) frequency slots.

- Agreed requirement in the framework:
    - "The control plane architecture SHOULD allow multiple media channels to be co-routed and logically associated"

Feedback from ITU-T ?

- Possible values of m

  - May impact the encodings of the solutions draft
  - CCAMP discussions → no objections to 16 bits.

- ITU-T view on hitless?

- Values of grid channel spacing (CS). Any plans for amendments?

  - Assumed to be 6.25 GHz
  - Future 3.125 GHz ?

- Values of slot width granularity. Any plans for amendments?

  - Assumed to be 12.5 GHz
  - Always set to 2 CS

Next steps (1)

- Add text to reflect amendment ITU-T G.872
  - Architecture of optical transport networks, Amendment 1 11/13
  - Issued by ITU-T after CCAMP discussions on allocation with different n
  - Values of n & m with resolution 0.5
  - Useful to describe "effective" frequency slots

The size of a media channel is specified by its effective frequency slot, which is described by its nominal central frequency and its slot width [ITU-T G.694.1]. The effective frequency slot of a media channel is that part of the frequency slots of the filters along the media channel that is common to all of the filters' frequency slots. The parameters "n" and "m" as defined in Clause 7 of [ITU-T G.694.1] are used to describe the effective frequency slot with the exception that n and m (for cases where the n value of the constituent filters' frequency slots are not all the same) may have a granularity of 0.5 rather than being integers

Next steps (2)

- Add text on the association of LSPs representing media channels
  - ASSOCIATION objects?
  - Channel sets?
  - Virtual concatenation?

- Further work regarding control plane requirements