

# Problem Statement

Signaling extensions for Media Channel sub-carriers configuration in Spectrum Switched Optical Networks (SSON) in Lambda Switch Capable (LSC) Optical Line Systems.

draft-ggalimbe-ccamp-flexigrid-carrier-label-01

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# Motivation

- Generalised Multiprotocol Label Switched (GMPLS) is widely used in Wavelength Switched Optical Network (WSO<sub>N</sub>) to support the optical circuits set-up through the signalling between Core Nodes and Edge Nodes.
- Spectrum Switched Optical Networks (SSO<sub>N</sub>) are in advanced development phase or even ready to be deployed.
- No information is available in signalling to support the sub-carriers definition / reservation in SSO<sub>N</sub>
- RFC7698 Ch.3.3 defines the concept of Media Channel and the associated carriers set needed for Spectrum Switched Optical Network (SSO<sub>N</sub>).
- The new labels are related to the Media Channel and the carriers routed with it and keep the backward compatibility with the WSO<sub>N</sub> signalling. In particular this informational memo wants to address the use cases where the SSO<sub>N</sub> LSP (the Media Channel in RFC7698) carries multiple carrier (OTS<sub>i</sub>) containing same Payload. The set of the carriers can be seen as single Logical circuit.

# Document Scope

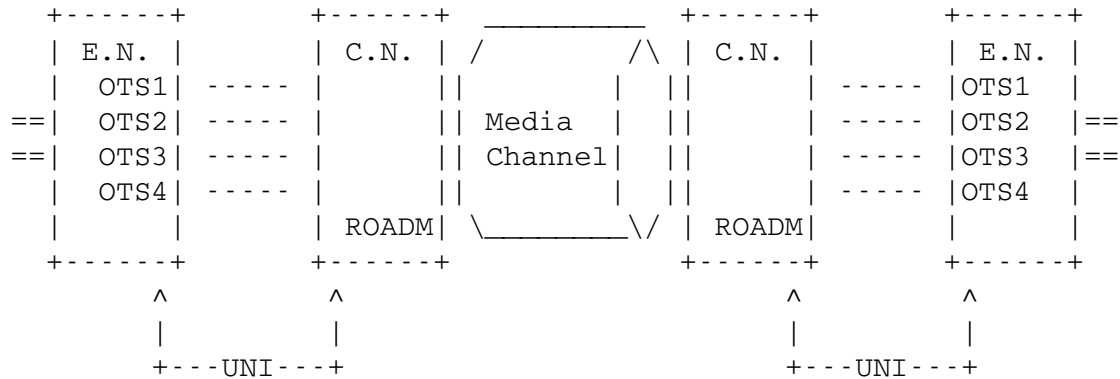
- This document proposes the experimental results from the GMPLS implementation supporting the Spectrum Switched Optical Network
- This memo can be considered as the "companion" of [RFC7699] The contents and the parameters reflect the experimental activity on IP over SSON recently done.
- Or can be and extension of [RFC7792] (TSPEC/FLOW\_SPEC)

# Changes from the previous version

- Fixed typos
- Modify some description text
- Modify the TLV reflecting the RFC7699 and RFC7792

# The application

Multiple carrier are mapped into a Media Channel. A set of parameters must be shared on the UNI to allow the GMPLS to do the proper routing and Spectrum Assignment and decide the carrier position.



E.N. = Edge Node - UNI Client

C.N. = Core Node - UNI Network

ROADM = Lambda/Spectrum switch

Media Channel = the optical circuit

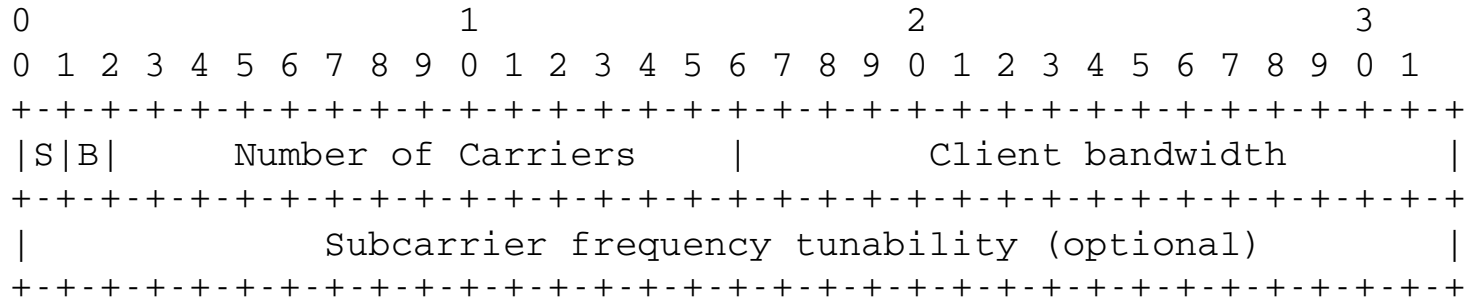
OTS<sub>i</sub> = Carriers belonging to the same Network Media Channel (or Super

Channel)

UNI = Signalling interface

# Model proposal

New LSP set-up parameters

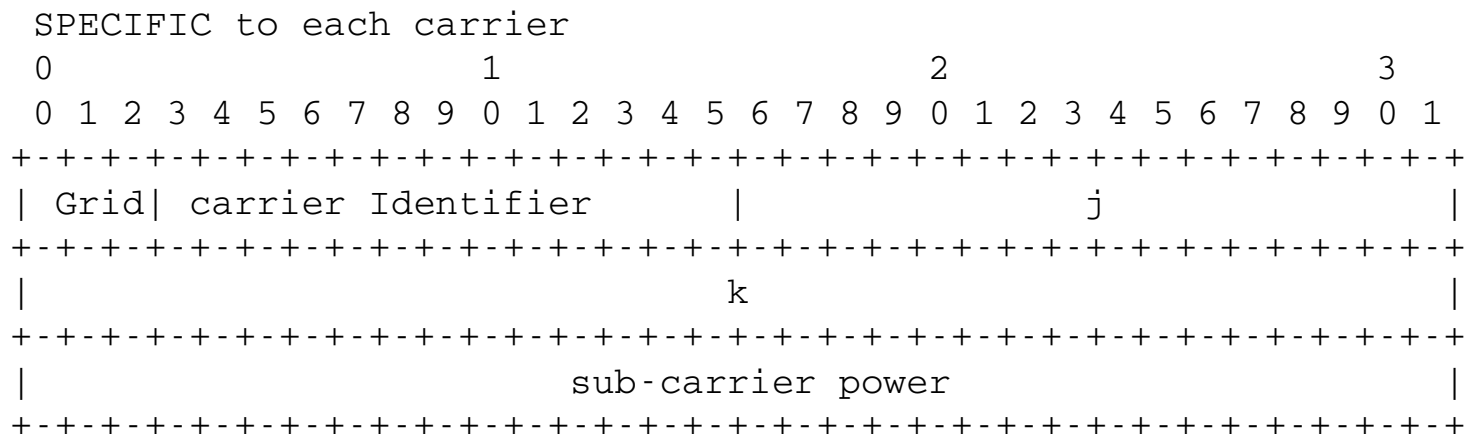
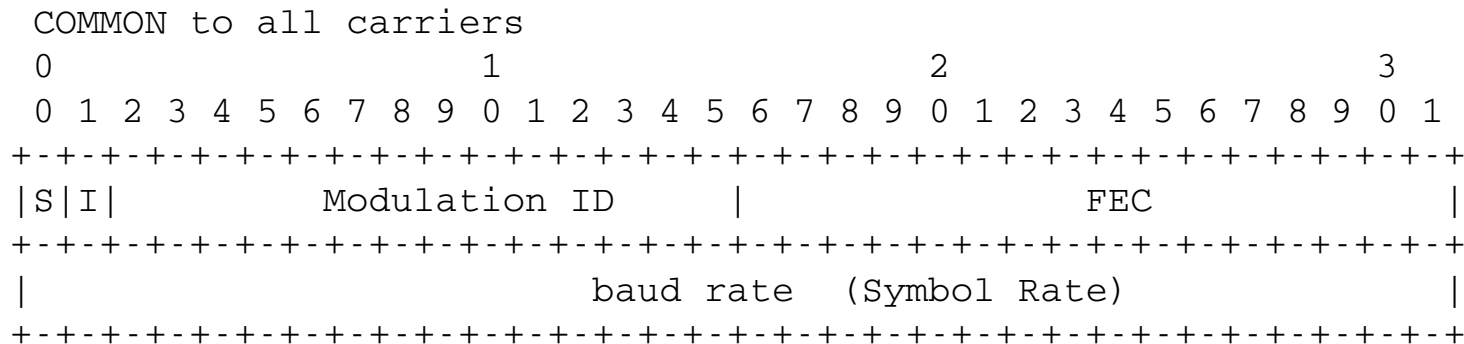


Sub-Transponder Mod Format: In the Value Field (96 bits) it is specified

- S strict number of subcarrier (No = 0, Yes = 1)
- B strict client bandwidth (No = 0, Yes = 1)
- Num Carriers
- Client bandwidth (100Gb, 150Gb, 200Gb, 400Gb, 1Tb, etc)
- Subcarrier frequency tunability (optional)

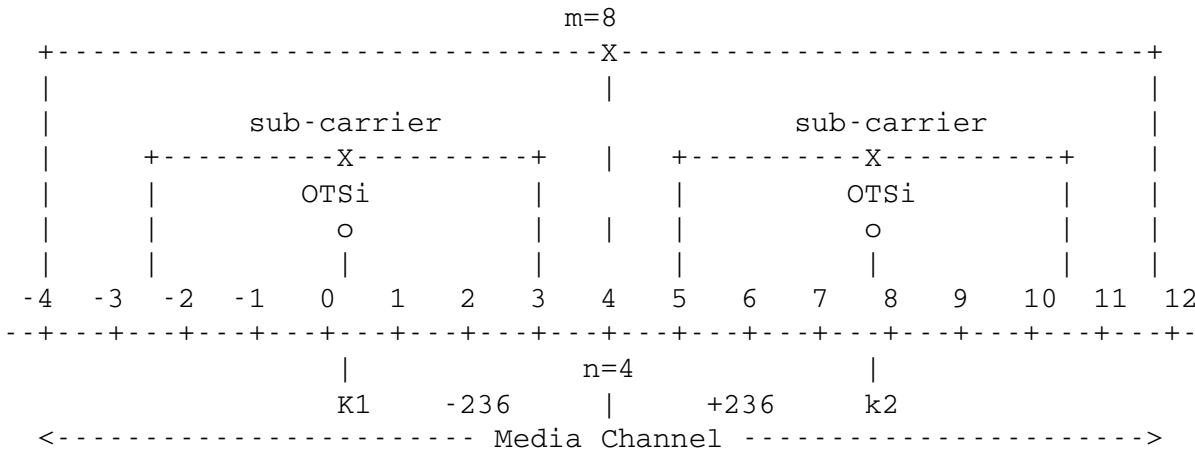
# Model proposal

Extension to LSP set-up reservation:



# Model Proposal cont'

- m Media Channel width
- n Media channel central frequency
- Sub carrier identifier field: sub-carrier identifier inside the Media Channel
- J field: granularity of the channel spacing, can be a multiple of 0.01GHz. default value is 0.1GHz.
- K field: positive or negative integer (including 0) to multiply by J and identify the S.C. Position inside the Media Channel, J can be set at default value = 0.1GHz.



$$\text{Media Channel CF} = 193.1 + n * 0.00625 \text{ (THz)}$$

$$\text{Media Channel Width} = m * 0.0125 \text{ (THz)}$$

$$\text{SC-1} = \text{MC-CF} + k1 * 0.1 \text{ GHz. (j) (GHz)}$$

$$\text{SC-2} = \text{MC-CF} + k2 * 0.1 \text{ GHz. (j) (GHz)}$$



# Next steps

- Collect feedbacks on the proposal
- Address feedbacks and comments
- Start discussion how to progress with the adoption of the new objects