

Generalized Label for Super-Channel Assignment on Flexible Grid

draft-hussain-ccamp-super-channel-label-03

IETF 83 - Paris, France

March 25 - 31, 2012

Iftexhar Hussain (ihussain@infinera.com)

Abinder Dhillon (adhillon@infinera.com)

Zhong Pan (zpan@infinera.com)

Marco Sosa (msosa@infinera.com)

Bert Basch (bert.e.basch@verizon.com)

Steve Liu (steve.liu@verizon.com)

Andrew G. Malis (andrew.g.malis@verizon.com)

Agenda

- Changes since IETF-82
- Open Issues
- Next Steps

Changes

- Ver-02 to Ver-03
- Modified
 - Changed the term “group” to “slot” in the n_start and n_end fields in the label
- Added (similar to RFC4328)
 - a new G-PID type = OTUadapt
 - » See (ITU-T SG15, Contribution C1573r1, Dec 2011 (Geneva))
 - a new G-PID value to be assigned by IANA
 - A new Switching Type = Super-Channel-Switch-Capable(SCSC)
 - » See draft-dhillon-ccamp-super-channel-ospfte-ext)
 - LSP Encoding Type = Lambda (as defined in RFC4328)

Proposal - Summary

- Extends [RFC3471] [RFC6205]
 - Defines a new generalized label format for super-channels assignment on flex-grid networks
- Super-Channel Label extensions summary
 - Allows label assignment for both Contiguous Spectrum and Split-Spectrum Super-Channels
 - Provides two encoding options for the label
 - List/Range (n_start, n_end)
 - Bitmap

- Terminology clarifications
 - Framework document submitted with definitions & use cases
- WG agreement on Control Plane requirements
 - Alignment with ITU docs on data plane aspects

Next Steps

- Requesting for review and comments
- Discuss merge options with other contributions

Super-Channel Optical Parameters GMPLS Signaling Extensions

draft-hussain-ccamp-super-channel-param-sig-00
IETF 83 - Paris, France
March 25 - 31, 2012

Iftexhar Hussain (ihussain@infinera.com)

Vinayak Dangui (vdangui@infinera.com)

Michael VanLeeuwen(MVanleeuwen@infinera.com)

Marco Sosa (msosa@infinera.com)

Agenda

- Motivation
- Extensions Summary
- TLV Summary
- Use Case
- Open Issues
- Next Steps

Motivation

- Coexistence of super-channels using different modulation formats
- Adjacent super-channels may affect each other detrimentally
- Desirable to evaluate the mutual impact of the existing and new super-channels on each other's quality of transmission

Extensions Summary

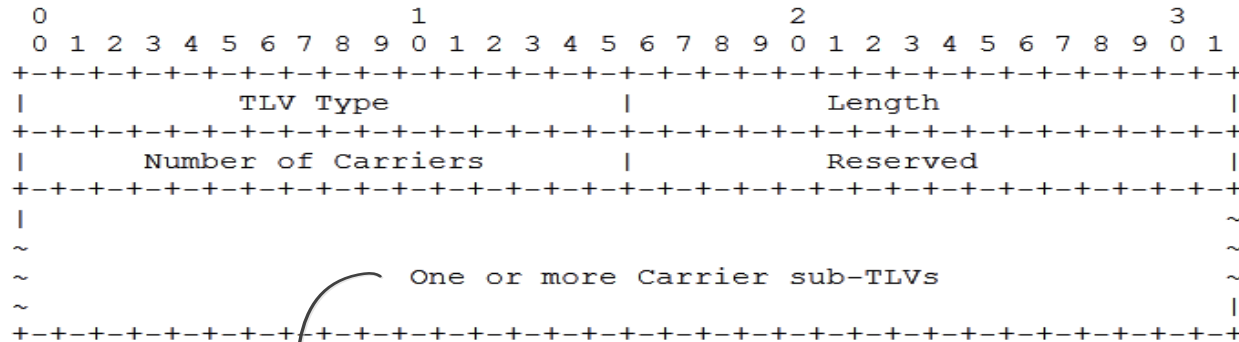
- This draft defines GMPLS signaling extensions to convey following super-channel optical parameters:
 - Number of Carriers
 - Carrier Center Frequency (THz)
 - Carrier Modulation
 - Carrier Baudrate (Gbit/s)
 - Carrier FEC Type

TLVs Summary

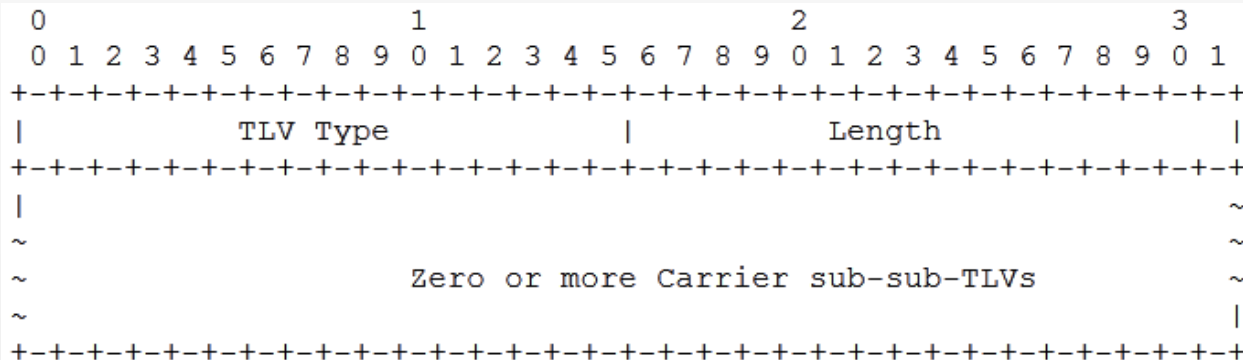
- Defines following new TLVs
 - Super-Channel Carriers TLV
 - Carrier sub-TLV Carrier
 - Carrier Center Frequency sub-sub-TLV
 - Carrier Modulation sub-sub-TLV
 - Carrier FEC sub-sub-TLV
- Two options to carry these TLVs
 - Option 1
 - RSVP FLOWSPEC or TSPEC Object
 - Option 2 (add in next revision)
 - With the Super-Channel Label

Super-Channel Carrier TL and Sub-TLVs

Super-Channel Carriers TLV Format

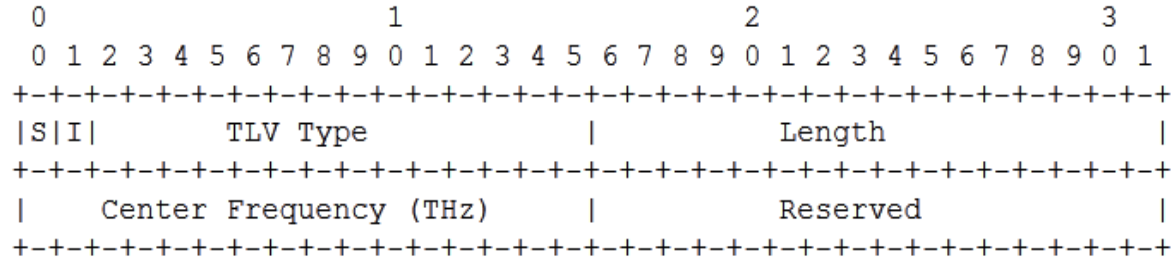


Carrier sub-TLV Format

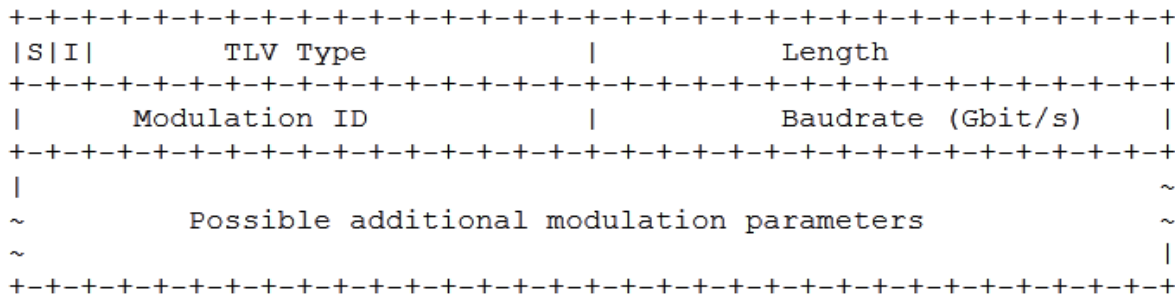


Carrier Center Frequency, Modulation, and FEC sub-sub-TLV

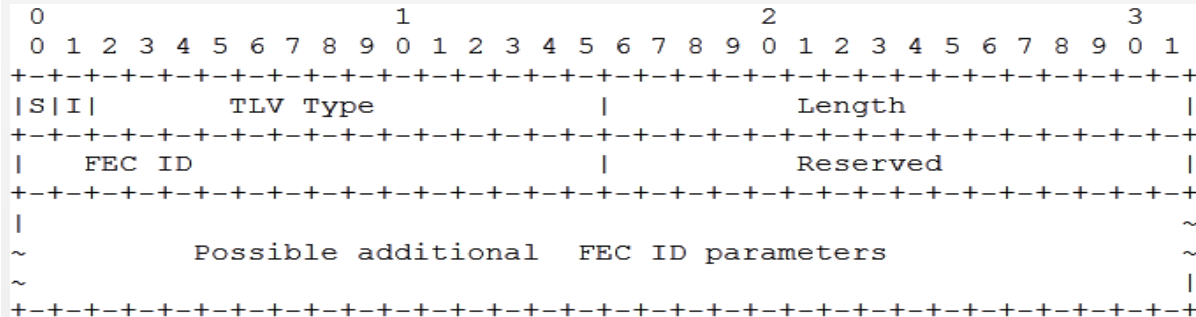
Carrier Center Frequency sub-sub-TLV



Carrier Modulation sub-sub-TLV



Carrier FEC sub-sub-TLV



Use Case

- Signal optical parameters of the super-channel in the RSVP message using proposed TLVs
- Each node along the super-channel setup path allocates the required number of slices and learns the associated set of signaled parameters.
- Each node advertises this information to other nodes in the network using routing extensions (see draft-hussain-ccamp-super-channel-param-ospfte) to apply added constraints

Open issues

- Terminology clarifications
 - Framework document submitted with definitions & use cases
- WG agreement on Control Plane requirements
 - Alignment with ITU docs on data plane aspects

Next Steps

- Requesting for review and comments
- Discuss merge options with other contributions