Signaling for Inverse Multiplexing via GMPLS using RSVP-TE

draft-roch-ccamp-gmpls-inv-mux-00

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Motivation

- Many Inverse Multiplexing schemes exist
  - ATM IMA
  - BONDING
  - IEEE802.1ax/.3ad Link Aggregation (LAG)
  - ML-PPP
  - VCAT

- A GMPLS Signaling Scheme is needed that establishes an Inverse Multiplexing Group (IMG)
  - Mechanism creates Inverse Multiplex Group and allows non-intrusive monitoring at intermediate nodes
  - Applicable to any technology (i.e. not SONET/SDH specific)
  - Able to deal with various business relationships
    - E.g. LAG configuration by an ISP separate from OCh connections being being setup by a Telco
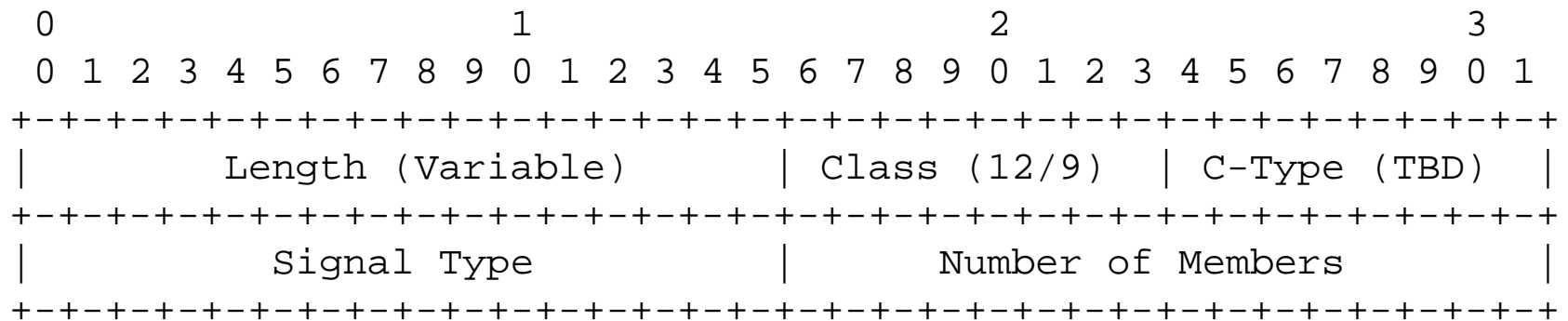
Motivation

- Recognizing that Inverse Multiplexing exists:
  - separate from the underlying links and
  - separate from the service running over the IMUX

  this draft proposes distinct GMPLS signaling for establishing an Inverse Multiplexed Group (IMG) LSP

Proposed Extensions

- Mechanism to uniquely identify IMG signal being established
  - Defines new Switching Type – Inverse Multiplexing Capable (IMC)
  - Reuses existing Encoding Type/Signal Types:
    - E.g. SONET/SDH + VC3 – IMUX of VC3 entities
    - E.g. Ethernet + 100M – IMUX of 100M Ethernet Interfaces
- Mechanism to specify bandwidth of IMG being established
  - Specifies number of IMG members

- New SENDER_TSPEC for use with IMC:

```
 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
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|          Length (Variable)        | Class (12/9)  | C-Type (TBD)  |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|           Signal Type             |        Number of Members      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Proposed Extensions

- Method to identify link resources used by the IMG instance
  - Assumes lower layer connections include LSP_TUNNEL object, turning them into links for another layer to use
  - Uses RSVP_HOP list extension defined in draft-sadler-ccamp-rsvp-mt-bundled-links
  - Order of links in RSVP_HOP provides IMG member ordering
- Identified link resources are wholly utilized. As a result, the same label behavior defined for FSC is used.

Summary & Proposal

- Generalized Inverse Multiplexing Group (IMG) signaling method is required
  - Handle a wide variety of IMUX methods, IMUXed technologies
- IMG setup exists independent of
  - Setup of Links used for IMG
  - Client service using IMG
- Draft proposes extensions to perform IMG signaling
  - Reuses LSP Hierarchy architecture, existing Encoding and Signal Types
  - Reuses RSVP_HOP list extensions proposed for RSVP scaling.

- Looking for co-authors

- Request: WG Draft?