RoE Control Channel considerations

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About RoE Control Channel

- ☐ Used for:
  - Link setup between one SA/DA pair.
  - Transport structure aware mapper auxiliary information such as CPRI control words.
  - Transport native RoE data streams related control data.
  - Transport “alien” protocols..
- ☐ Assumptions:
  - TLV-based payload.
  - TLVs can be interleaved across multiple RoE Control packets.
  - RoE Control packets are sent over the same path as the RoE data packets -> also shares the same timing constraints and interleaved among the data packets.

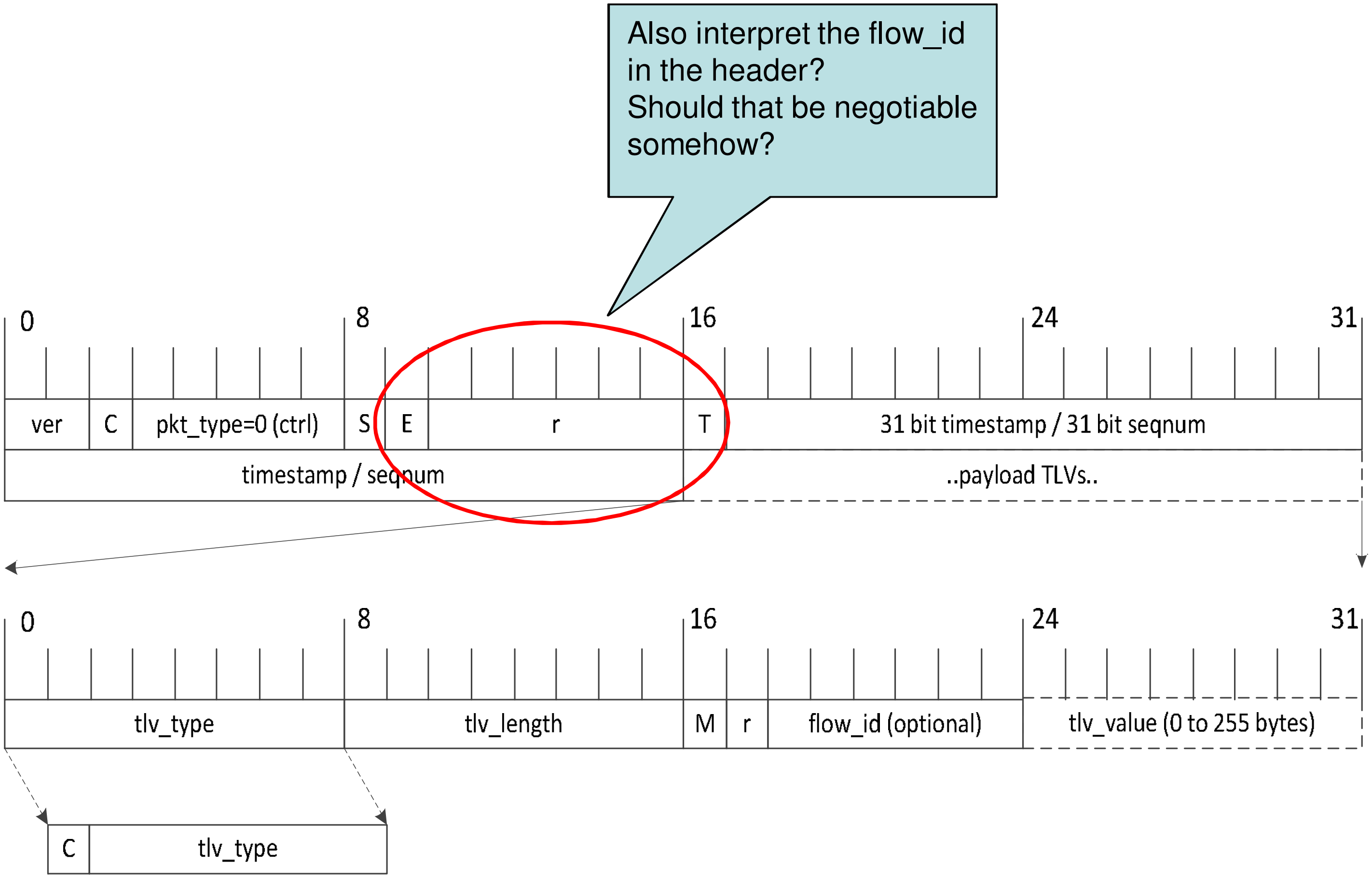
Issues:

- ☐ If the link (bandwidth) budget it tight, even transporting RoE Control packets entails considerable buffering at the ends -> to "collect" a packet worth room to send the control packet.

- ☐ RoE Control packets compete available "remaining" capacity with other important non-data traffic – example IEEE 1588 PTP and SyncE SSM packets -> some bandwidth must be reserved for those "by some means".

Control message multiplexing

- Should we also allow multiplexing control messages at the RoE header level??


Also interpret the flow_id in the header?
Should that be negotiable somehow?

Link setup algorithm

- When the link comes up between the end points the “master port” starts negotiation – unless everything has been preconfigured statically.
- Two step approach:
  - Discovery.
  - Parameter negotiation.
- Involves a small state machine:
  - Discovery->negotiation->active states
  - Details TBD.

- Ethernet level autonegotiation takes place earlier using Ethernet specified mechanisms.

Link setup – discovery

- Each “master” multicasts (address TBD) a BOOTSTRAP_QUERY TLV.
  - Contains capabilities..
- Each “slave” who wishes to communicate with the “master” unicasts a BOOTSTRAP_REPLY TLV:
  - Contains common capabilities etc..

- May be repeated (with different capabilities) if no or too few “slave” responds.
- ToDo: agree on the timeout..

Link setup - negotiation

- Each “master” unicasts a TLVs to selected “slaves”.
  - Contains capabilities to agree on..
- Each “slave” who wishes to communicate with the “master” unicasts a reply with common capability TLVs
  - Can also disagree and drop off from the “association”.

- After a positive reply the “slave” is in “active” state.
- After the “master” has collected answers from all who replied to initial query it moves to “active” state.

Sequence numbers during link setup

- During link setup use only sequence numbers:
  - Sequence numbers are reset to 0.
  - “slaves” echo the sequence number from “master” sent message they respond to.
  - When the “master” or “slave” move to active state the sequence number gets reset to 0x40000000.
- If the link setup is static:
  - Sequence numbers are reset to 0x40000000.