# RS layer

workplan

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# Outline of 10G-EPON RS

**76. Reconciliation Sublayer, Physical Coding Sublayer, and Physical Media Attachment for 10GEPON**

**76.1 Overview**

**76.2 Reconciliation Sublayer (RS) for 10G-EPON**

**76.2.1 Overview**

**76.2.2 Dual-speed MII**

**76.2.2.1 10/10G-EPON**

**76.2.2.2 10/1G-EPON**

**76.2.2.3 Dual-rate mode**

**76.2.2.4 Mapping of XGMII and GMII primitives**

- 100G-EPON will have complementary functions on multi-rate:
  - 25/100G ?
  - 50/100G ?
  - 10/25G ?
  - 25/100G ?

**76.2.3 Summary of major concepts**

**76.2.3.1 Application**

- New Function: Lane Assignment
  - Mux/Demux
  - Frame Reordering

**76.2.4 GMII structure**

**76.2.5 XGMII structure**

**76.2.6 Mapping of XGMII and GMII to PLS**

**76.2.6.1 Functional specifications for multiple MACs**

- Which MII will we use ?
  - 25GMII ?
  - Something else ?
  - XGMII ?

**76.2.6.1.1 Variables**

**76.2.6.1.2 RS Transmit function**

**76.2.6.1.3 RS Receive function**

**76.2.6.1.3.1 SLD**

**76.2.6.1.3.2 LLID**

**76.2.6.1.3.3 CRC-8**

- New overhead: Lane Assignment
  - Mux/Demux
  - Frame Reordering

# Task Force decisions

- **Which MII; 25GMII, 25GMII/XGMII, or any combination?**
- **Multi-Lane decisions:**
  - How to distribute multi-lane traffic; by whole frames?
  - If distribution by frames how to deal with frame reordering; PSN?
    - How large is PSN? 9 bits appears to be needed for jumbo packets
    - Where to put PSN? Clearly have 8 bits available for PSN, but 9$^{th}$ bit location is not as obvious. Can we steal the mode bit? (remember we DO steal!)
  - How to describe frame reordering in the receive RS?
- **Buffering** (not necessarily part of the standard but need to understand)
  - Transmit buffering to adapt 100G RS input to 25G output (assumed rates)
  - Receive buffering to accommodate frame reordering mechanism
- **Idle Insertion – part of RS or MPCP/PCS?**
- **EEE support?**

# Rate decision

- **Downstream base rate of 25 Gbps?**
  - 25, 50 & 100 Gbps required by Objectives
  - Exclude 75
- **Upstream base rate of 10 Gbps or 25 Gbps**
  - Allow 10, 25, 50 & 100 Gbps
  - Exclude other combinations?

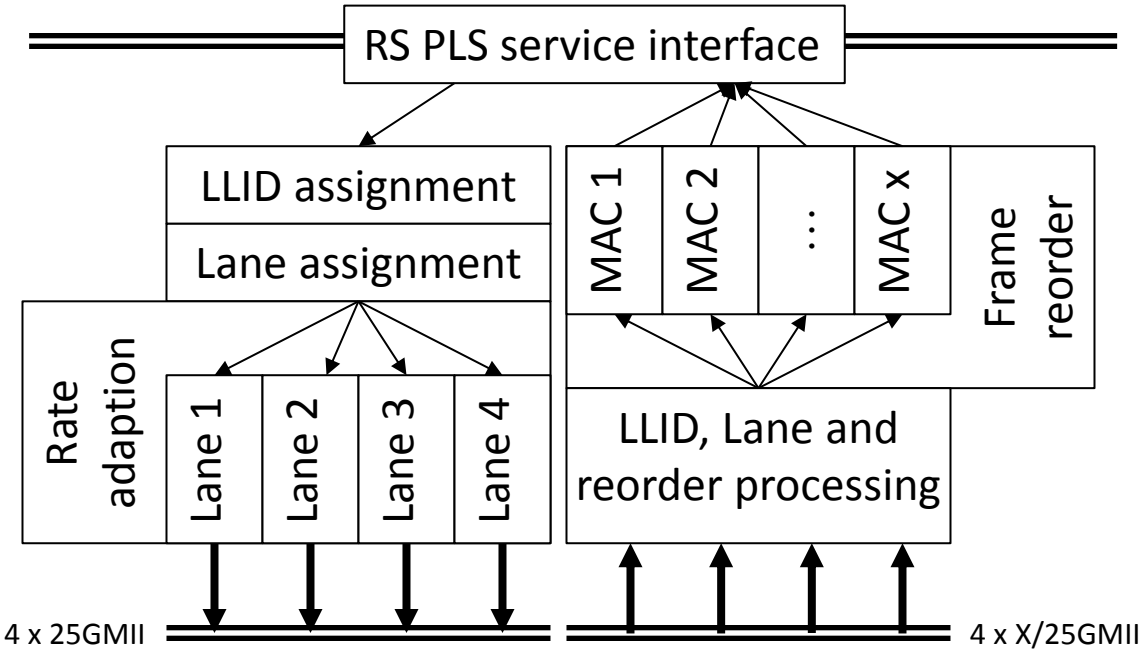
| **DS Rate** (Gbps) | **US rate** (Gbps) | | | | | |
|---|---|---|---|---|---|---|
| | 10 | 25 | 50 | 100 | 20 | combinations of 10+25 |
| 25 | Y | Y | N | N | N | N |
| 50 | N | Y? | Y | N | N | N |
| 100 | N | Y? | Y? | Y | N | N |

| | |
|---|---|
| Y | Specifically defined & specified |
| Y? | Named but maybe not specified precisely |

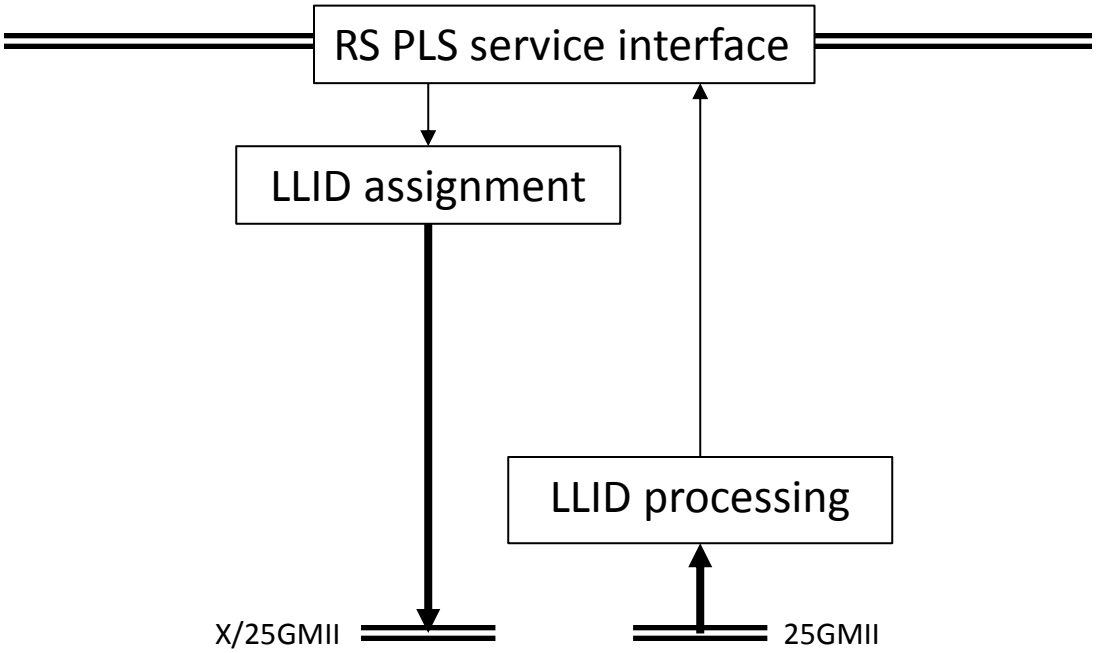
# Fragmentation?

- **Allowed or Disallowed?  BIG IMPLICATIONS!**
- **If Allowed**
  - Optional or mandatory?
  - What is the minimum packet size that can be fragmented?
    - Preemption allows anything > 124 Bytes
      - note preemption per 802.3br is mutually exclusive of EPON as it uses byte 8 of the preamble for Start mPacket Delimiter (SMD) which is CRC8 in EPON.
    - Set to Max allowed framed size (2000 B)?
      - implies that only jumbo packets would be fragmented.
      - Limits size of fragmentation indication
    - Allow variable size fragmentation?
      - Could be provisionable allowing implementer (or market) to set.
  - Buffering impact? (Cost & Technical Feasibility impacts need to be clear)
  - Has implications to the RS (maybe not so much to PCS/PMA/PMD)

# RS Block Diagram – CLT & Multi-lane CNU



# RS Block Diagram – Single-lane CNU



# Thank you

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