

Baseline Proposal for technical decisions #45 & #43

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Summary

- 4 technical decisions passed in associated with DRA at the last meeting (#42, #43, #44, and #45)
- This slide deck summarizes the baseline proposal addressing technical decisions #43 and #45, affecting the operation of PCS:
 - Rx Idle Insertion
 - Tx Idle Deletion
- Contribution hajduczenia_3bn_01_0513.pdf provides further detail, including textual description, state diagrams, and all necessary definitions, included in PCS clause outline presented at the last meeting

Rx Idle Insertion (I)

- In the receive direction, EPoC CNU and CLT shall support Idle Insertion process used by 10G-EPON, as defined in IEEE Std 802.3-2012, 76.3.3.7, with the following changes:
 - The value of FIFO_II_SIZE is TBD at this time and shall be set once FEC and PMD details are defined.
- The content of subclause 101.3.3.7 was modeled on Idle insertion mechanism from 10G-EPON, with changes as outlined on the next slide

Rx Idle Insertion (II)

- Descriptive text under 101.3.3.7 now reflects the fact that the Idle control character insertion process accounts for FEC parity data as well data rate adaptation in EPoC.
- The value of FIFO_II_SIZE is TBD at this time, pending technical decisions on FEC and data rate range for EPoC PCS/PMD.
- SD in Figure 101–5 separates state PASS_VECTOR_TO_XGMII from Figure 76–23 into two states VECTOR_TO_XGMII and SHIFT_FIFO for cleaner description. Otherwise, there are no technical changes to this SD or its operation.

Tx Idle Deletion (I)

- In the transmit direction, EPoC CNU and CLT shall support Idle Deletion process used by 10G-EPON, as defined in IEEE Std 802.3-2012, 76.3.2.1, with the following changes:
 - Figure 76–9 (CLT operation) shall be modified to account for EPoC-specific FEC and PMD overhead, once these details are settled.
 - Figure 76–10 (CNU operation) shall be modified to account for EPoC-specific FEC and PMD overhead, once these details are settled.
- The content of subclause 101.3.2.1 was modeled on Idle deletion mechanism from 10G-EPON, with changes as outlined on the next slides

Tx Idle Deletion (II)

- The Idle deletion process was separated into two sub-processes executed one after another in a cascade, i.e. data rate adaptation, and FEC overhead compensation.
 - Respective SDs are executed one after another. Data rate adaptation is executed first, removing excess Idles to bring data rate down to the limit accepted by PCS/PMD. Next, FEC overhead compensation is executed, removing excess Idles to make room for FEC parity data.
 - The same two sub-processes are executed on CNU and CLT alike.
- Such functional separation simplifies calculations and makes the design more robust, allowing to (e.g.) bypass FEC if needed, without affecting data rate adaptation.

Tx Idle Deletion (III)

- Names of some of variables and constants were modified, to use a single naming convention. The way they were defined in Clause 76 was not really very consistent.
- The values for FEC_OSize, FEC_PSize, PHY_OSize, and PHY_PSize are all TBD at this time. FEC_Osize and FEC_Psize are defined as constants (we are likely to specify just one FEC), while PHY_OSize and PHY_Psize are defined as variables (data rate changes during operation are anticipated)
- Independent counters were added for data rate adaptation sub-process and FEC overhead compensation sub-process, to avoid confusion.

Motion

- Adopt hajduczenia_3bn_01_0513.pdf (content of subclauses 101.3.2.1 and 101.3.3.7) as baseline for draft D1.0 for Tx Idle Deletion and Rx Idle Insertion functions, respectively.
- Moved by: Marek Hajduczenia
- Seconded by: Andrea Garavaglia
- Technical motion ($\geq 75\%$)