



Asymmetric Media Independent Interface

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Outline

- Previous work
- One Possible AMII implementation
- How existing standard may be used
- Conclusion

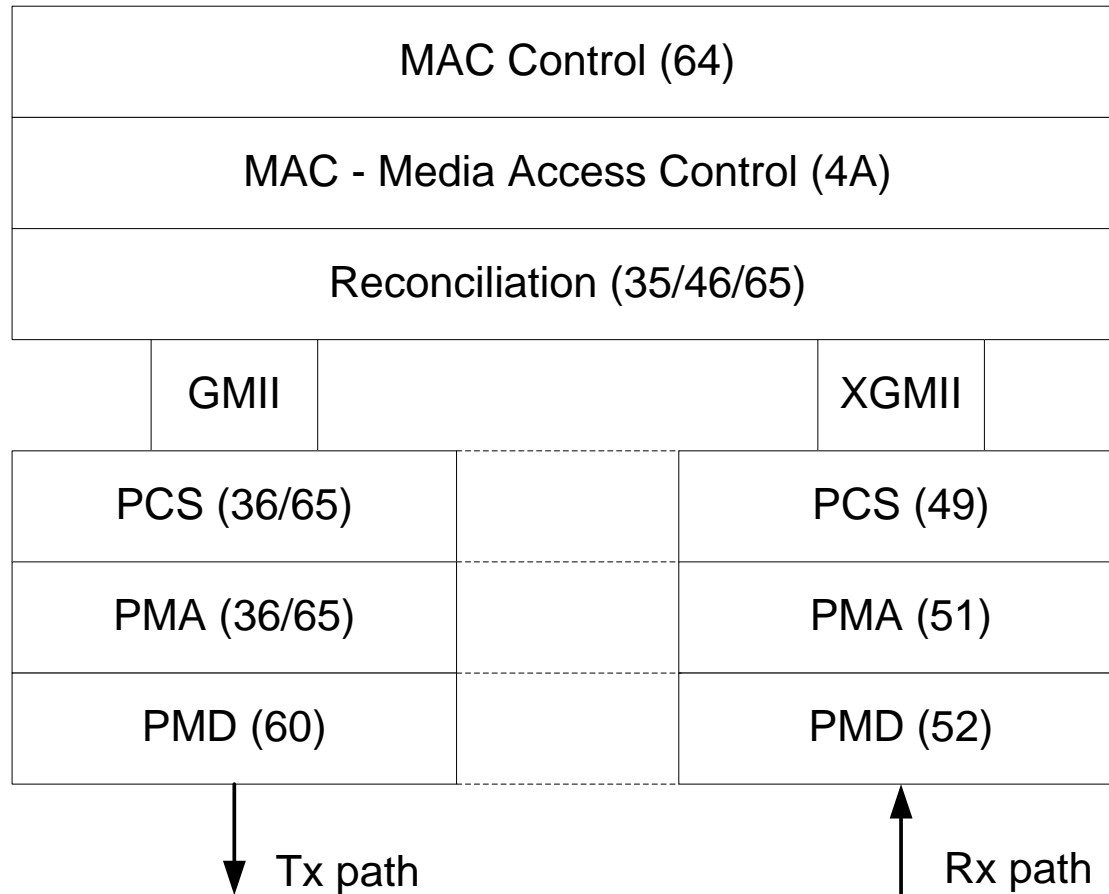
Problem statement

- EPON uses the GMII
 - 8 bits wide @ 125 MHz
- 10GBASE-X uses XGMII
 - 32 bits wide @ 156.25 MHz
- An asymmetric 10G/1G EPON will need to use some combination of the existing interfaces

Previous work

- Asymmetric data transmission rates
 - http://www.ieee802.org/3/10GEPON_study/public/may06/frazier_1_0506.pdf
- Conclusion was that “No changes to the standard are needed above the physical layer in order to support asymmetric data transmission rates on an EPON.”

Possible implementation (ONU)



Clauses in () indicate where material may potentially be borrowed from.

Interaction may be necessary between Rx/Tx paths within the PHY.

How can clauses be used?

- Clause 35 RS Transmit subclauses

- 35.2.1.1 Mapping of PLS_DATA.request
- 35.2.1.6 Conditions for TX_ER
- 35.2.1.1 GTX_CLK
- 35.2.2.3 TX_EN
- 35.2.2.4 TXD
- 35.2.2.5 TX_ER
- 35.3.3.11/12 (MDC/MDIO)
- 35.2.3 GMII data stream
- 35.2.4 MAC delay constraints
- 35.2.5 Management functions
- 35.3 Signal mapping
- 35.4 Electrical characteristics
- 35.5 PICS

- The clauses are written so that the relevant TX/RX parameters can easily be pulled out from the existing text.
- Clauses can be directly referenced, or new text can be generated.

PHY Clauses to be investigated

- Clause 35 – RS and GMII
- Clause 36 – PCS and PMA, 1000BASE-X
- Clause 45 – Management
- Clause 46 – RS and XGMII
- Clause 49 – PCS, 10GBASE-R
- Clause 51 – PMA, 10GBASE-R
- Clause 52 – PMD, 10GBASE-R
- Clause 60 – PMD, 1000BASE-PX
- Clause 65 – RS, PCS, PMA extensions
- Clause XX – PHY clause for 10GEPON

Conclusion

- Asymmetric RX and TX paths are possible within existing standard.
- The interfaces for both RX and TX paths at 1000Mbps and 10Gbps are already well defined in IEEE 802.3.
- Text from existing clauses can be reused to define asymmetric interface.