

# **Brief Overview of the 802.3by draft standard**

## **Arthur Marris - Cadence**

# Ethernet is getting 25G PHY types

- The 802.3by project is amending the base standard to add 25G
- Clause 4 being amended to add a 25G MAC rate
- Clauses 30 and 45 being amended to add 25G data-rate and new PHY types
- P802.3by is adding new PHY types for backplane, twin axial and MMF:
  - **25GBASE-KR**
  - **25GBASE-CR**
  - **25GBASE-SR**

# 802.3by additions

- New Clauses:
  - 105. Introduction to 25 Gb/s networks – includes architecture diagram and inter-sublayer service interface definitions
  - 106. Reconciliation Sublayer (RS) and Media Independent Interface (25G-MII) for 25 Gb/s operation
  - 107. Physical Coding Sublayer (PCS) for 64B/66B, type 25GBASE-R
  - 108. Reed-Solomon Forward Error Correction (RS-FEC) sublayer for 25GBASE-R PHYs
  - 109. Physical Medium Attachment (PMA) sublayer, type 25GBASE-R

# 802.3by additions - continued

- New Clauses:
  - 109A. Chip-to-chip 25 Gb/s Attachment Unit Interface (25G-AUI C2C)
  - 109B. Chip-to-module 25 Gb/s Attachment Unit Interface (25G-AUI C2M)
  - 110. Physical Medium Dependent (PMD) sublayer and baseband medium, type 25GBASE-CR
  - 111. Physical Medium Dependent (PMD) sublayer and baseband medium, type 25GBASE-KR
  - 112. Physical Medium Dependent (PMD) sublayer and medium, type 25GBASE-SR

# 802.3by architecture

- Nomenclature:
  - 25G-MII
  - 25G-AUI
- Roman numerals “XXV” considered too ugly so not used
- 25G-MII is a speeded up version of XGMII rather than a slowed down version of XLGMII. Therefore SOP occurs on 4-byte boundaries rather than 8-byte and local and remote fault encoding is slightly different from XLGMII.
- 25G-AUI is a single lane version of the C2C and C2M electrical interfaces defined in 802.3bm Annexes 83D and 83E

# 25G Ethernet layer diagram

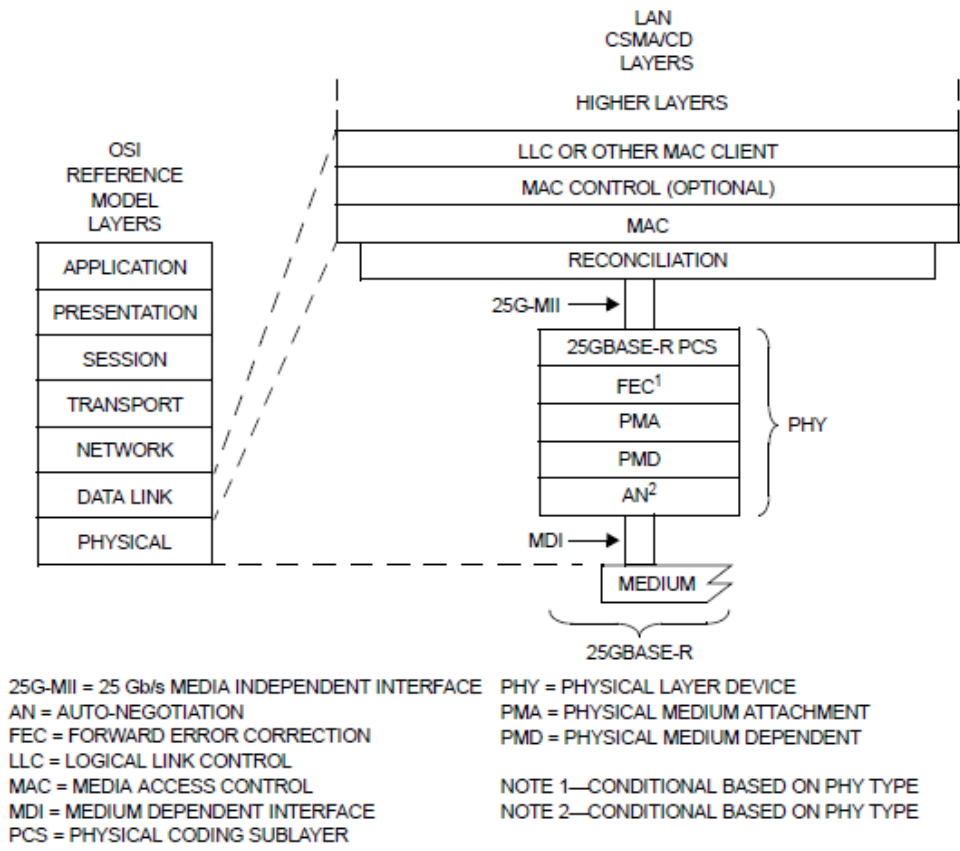


Figure 105-1—Architectural positioning of 25 Gigabit Ethernet

# Summary

- 802.3by adds a 25G MAC rate, an introductory 25Gb/s Clause and definitions for 25G-MII and 25G-AUI
- Clause 105 – Introduction, Clause 106 – 25G-MII and Clause 109 – 25G-AUI are particularly relevant to 25GBASE-T
- 25G-MII is logically equivalent to XGMII, so has differences from XLGMII used by 40GBASE-T