

25 Gb/s Ethernet Architecture and Specification Re-use (updated)

IEEE 25 Gb/s Study Group
Architecture Ad Hoc

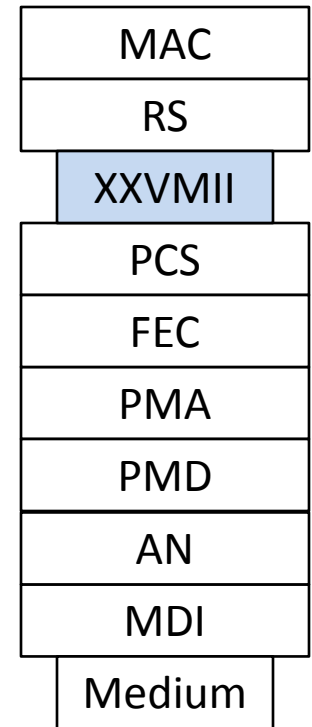
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Introduction

- The justification for creating specifications for 25GE PHYs, relies largely on reuse of existing specifications in 802.3-2012, 802.3bj-2014, and P802.3bm and the resulting implemented technologies.
- This presentation provides a list of options for mapping of current specifications to a 25GE layered architecture.
- This presentation does not promote any of these specifications in particular and does not preclude specifications that are not discussed in this presentation.

25GE layered architecture

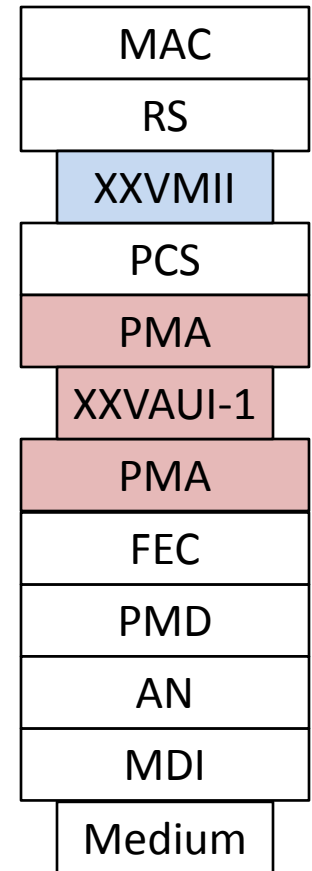
- The assumed layered architecture is similar to 10G and 100G architectures as shown in the figure to the right.
- The specifications of the RS, PCS, FEC, PMA, AN, and management may be based upon specifications for 10G, 100G, or a combination of both.
- The specifications of the PMD, MDI, and Medium may be based upon 4x25G 100G specifications.
- A mapping to specific clauses is shown on a future slide.



25GE extension sublayer/interface

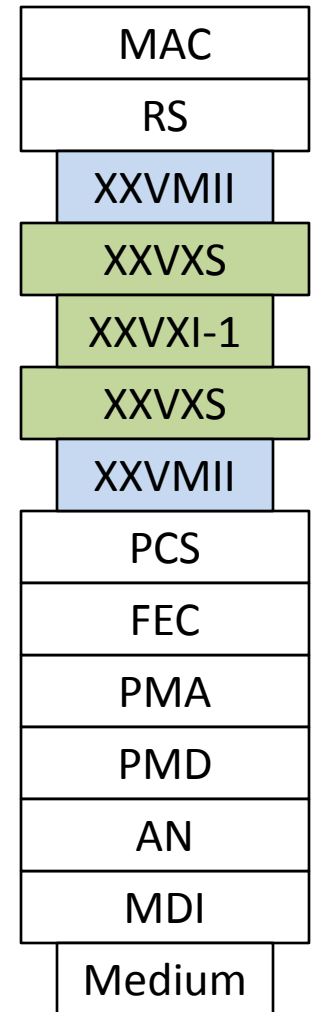
option #1 – PMA service interface extension

- It may be necessary to provide an extension sublayer and interface to permit a PHY to be implemented across two or more devices.
- One possibility is to use a PMA service interface extension like XLAUI and CDAUI as shown in the figure to the right.



25GE extension sublayer/interface option #2 – XXVMII extension

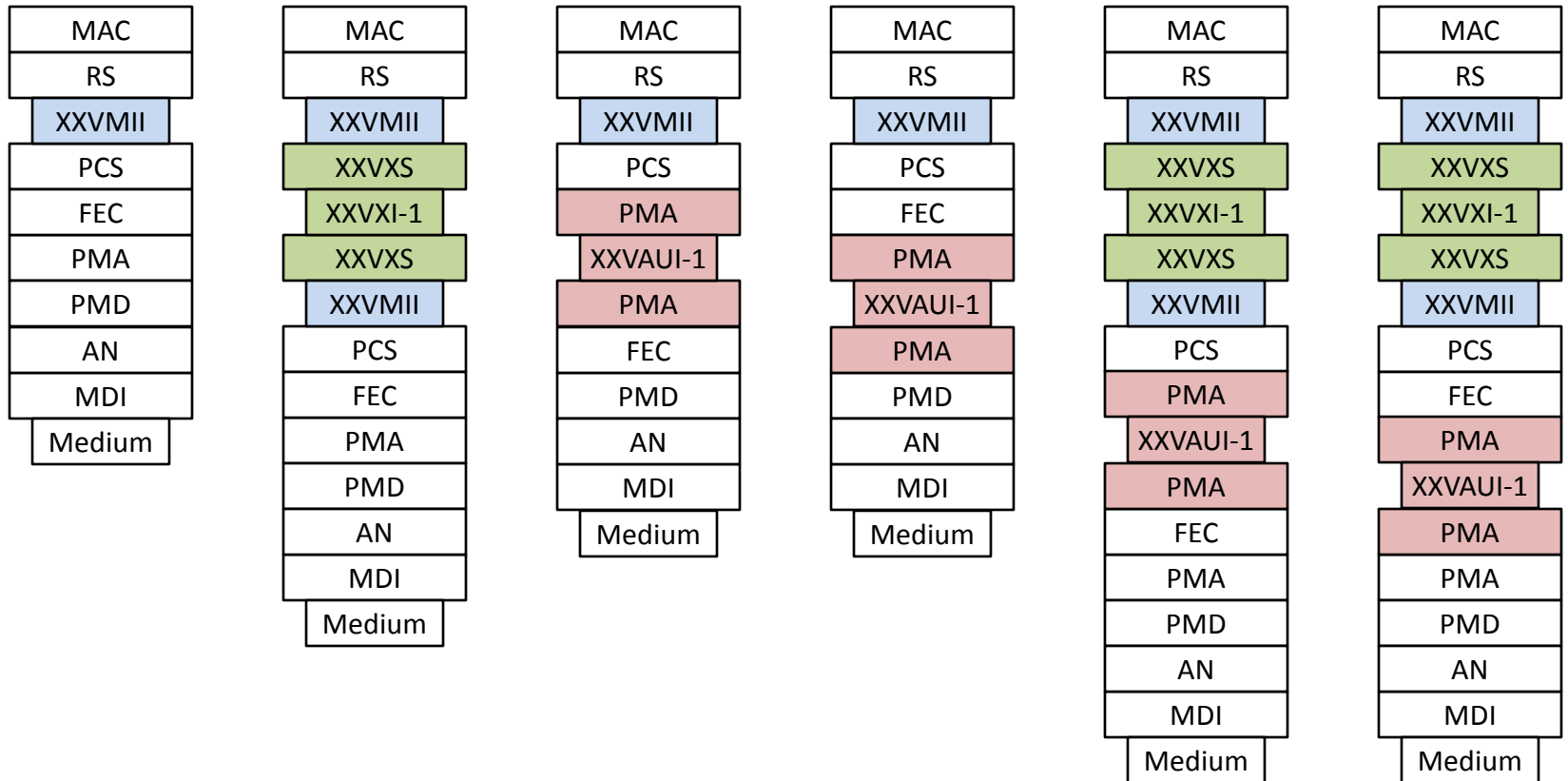
- An alternate approach is to use an XXVMII extension similar to that like the XAUI specified for 10G as shown in the figure to the right.
- A combination of option #1 and option #2 is a third option.



25 Gb/s specification sources

Sublayer/Function	Specification Sources
MAC	Clause 4
RS	Clause 46 or Clause 81
XXVMII	Clause 46 or Clause 81
PCS	Clause 49 or Clause 82
FEC	Clause 74 and/or Clause 91
PMA	Clause 52 or Clause 83
PMD	Clause 92 Copper Cable Clause 93 Backplane PAM2 Clause 94 Backplane PAM4 Clause 95 Optical MMF
XXVAUI and/or XXVXI	Clause 47 (only loosely) and/or Annex 83D/E.
AN	Clause 73
MDI	Clause 92/95 provide multi-lane connector specifications only. No backplane MDI required.
Medium	Same as PMD
Management	Clause 45 MDIO Clause 30 Management Objects
EEE	Reuse EEE specifications in source clauses.

Summary of possible 25GE PHY stacks



Conclusion

- There are existing 802.3 specifications that can be leveraged extensively as a basis for 25GE PHY specifications.
- There are a number of forms that the final specifications may take that will be determined by the task force.