

25GE PMA sublayer baseline proposal

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Introduction

- Propose a baseline structure and content for the PMA sublayer.

New Clause

(from brown_3bj_02_0115)

Clause	Changes
Front matter	Title page, etc.
X	Introduction to 25 Gb/s networks
X+1	25G RS + XXVMII
X+2	25G PCS ***
X+3	25G FEC
X+4	25G PMA
X+5	25GBASE-CR PMD (copper cable)
X+6	25GBASE-KR PMD (backplane)
X+7	25GBASE-SR PMD (MMF optical)
Annex (X+4)A	XXVAUI chip-to-chip
Annex (X+4)B	XXVAUI chip-to-module
Annex (X+5)A	25GBASE-CR TP parameters and channel characteristics
Annex (X+5)B	25GBASE-CR cable/host use cases
Annex (X+5)C	25GBASE-CR and XXVAUI C2M test fixtures and form factors *** tentative ***

Considerations

- PMA sublayer connects PCS and FEC sublayers to the PMD sublayer to the XXVAUI interface.
- Since all 25 Gb/s electrical and optical interfaces are serial the PMA is not required to convert between interfaces with different number of lanes.

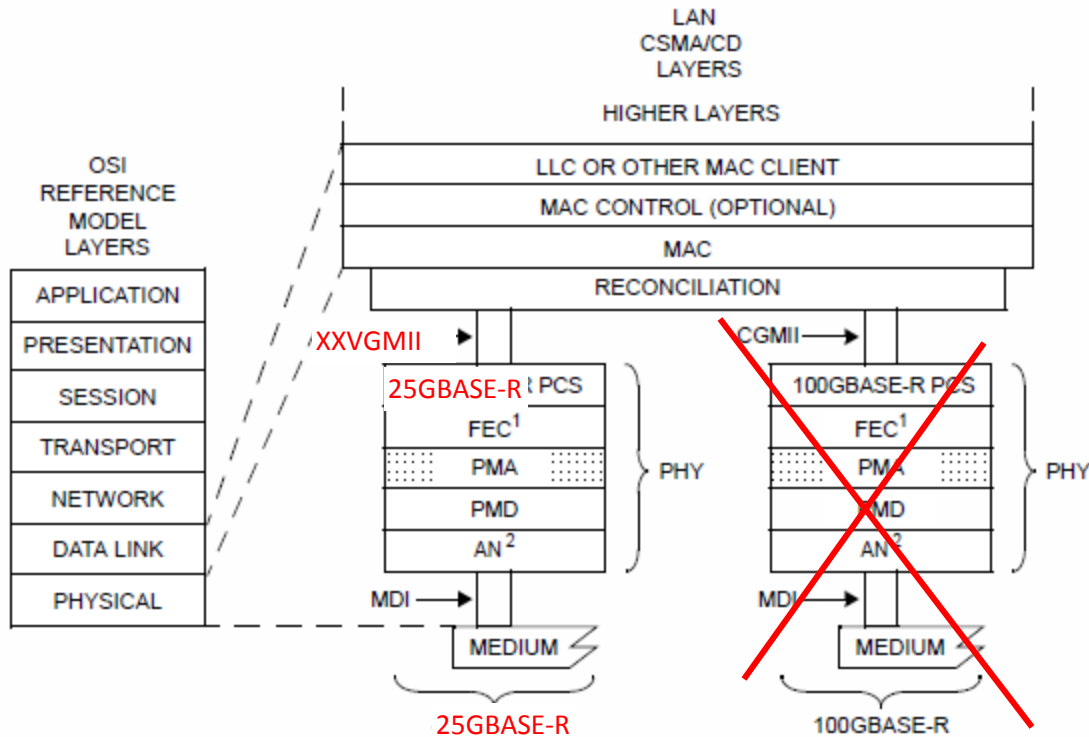
General Proposal

- Use Clause 51 as the starting point
 - This is the PMA for serial 10 Gb/s Ethernet interfaces.
- Use portions of Clause 83 as a basis for specification of other enhancements including:
 - use of PMA for the XXVAUI interface and related layering considerations
 - test patterns
 - service interface conventions

PMA Subclause Content

- Use Clause 51 as a starting point with the following changes:
 - Changes references to 10GBASE-R to 25GBASE-R.
 - Remove content relating to 10GBASE-W.
 - Remove content relating to XSBI.
 - In particular, remove 51.4.
- Incorporate specifications based on Clause 83 as follows:
 - CAUI introduction in 83.1 (for XXVAUI)
 - PMA position and MMD numbering in 83.1.4
 - See modifications to Figures 83-1 and 83-2 on the following slides.
 - service interface naming conventions in 83.3
 - signal drivers in 83.5.6
 - PMA test patterns in 83.5.10

Relationship to ISO/IEC OSI reference model



AN = AUTO-NEGOTIATION

XXVGMII = 25 Gb/s MEDIA INDEPENDENT INTERFACE

FEC = FORWARD ERROR CORRECTION

LLC = LOGICAL LINK CONTROL

MAC = MEDIA ACCESS CONTROL

MDI = MEDIUM DEPENDENT INTERFACE

PCS = PHYSICAL CODING SUBLAYER

PHY = PHYSICAL LAYER DEVICE

PMA = PHYSICAL MEDIUM ATTACHMENT

PMD = PHYSICAL MEDIUM DEPENDENT

~~XXGMII = 40 Gb/s MEDIA INDEPENDENT INTERFACE~~

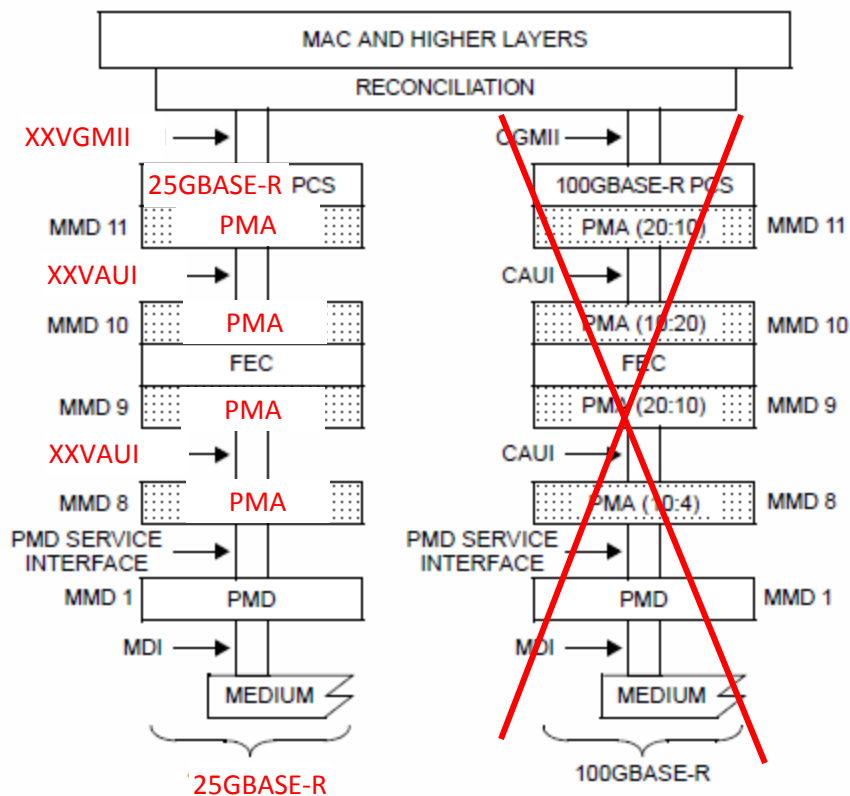
NOTE 1—OPTIONAL OR OMITTED DEPENDING ON PHY TYPE

NOTE 2—CONDITIONAL BASED ON PHY TYPE

Figure 83-1-25GBASE-R

! PMA relationship to the ISO/IEC Open Systems Interconnection (OSI) reference model and IEEE 802.3 CSMA/CD LAN model

PMA layering example



XXVAUI = 25 Gb/s Attachment Unit Interface
 XXVGMII = 25 Gb/s MEDIA INDEPENDENT INTERFACE
 FEC = FORWARD ERROR CORRECTION
 MAC = MEDIA ACCESS CONTROL
 MDI = MEDIUM DEPENDENT INTERFACE
 MMD = MDIO MANAGEABLE DEVICE

PCS = PHYSICAL CODING SUBLAYER
 PMA = PHYSICAL MEDIUM ATTACHMENT
 PMD = PHYSICAL MEDIUM DEPENDENT
~~XLCAUI = 40 Gb/s ATTACHMENT UNIT INTERFACE~~
~~XLGMII = 40 Gb/s MEDIA INDEPENDENT INTERFACE~~

Figure 83-2—Example 4 25GBASE-R

! PMA layering

Conclusions

- Consider using this proposal as a baseline proposal for the 25 Gb/s PMA sublayer.

Thanks!