Ethernet Architcture

LLC – Logical Link Control

MAC – Media Access Control

RS – Reconciliation Sublayer

Data Link Layer

Medium Independent Interface (MII: 100 MbE,
GMII: 1GbE ; XGMII: 10 GbE; CMII: 100 GbE

Physical Layer

PCS – Physical Coding Sublayer

PMA- Physical Medium Attachment

PMD- Physical Medium Dependent

Physical medium

Medium Dependent
Interface (Connector)

The RS is responsible
for converting MAC
messages into physical
signals.Ex: indicating
that data is ready for
transmission.

XGMII

MAC
10Gb/s

Tx Clock
4 control bits
32 data bits
32 data bits
4 control bits
Rx Clock
(156.25 MHz)

PCS
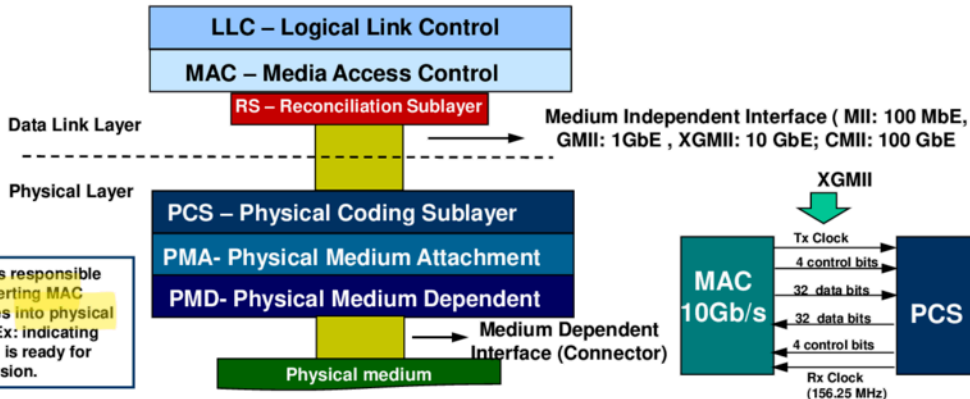
The PCS, sublayer is responsible for the coding and decoding of the data streams flowing from and to the MAC layer. Gbit Ethernet uses the code 8B10B, originating a symbol transmission equal 1.25 Gbaud, 10 GbEthernet uses the code 64B66B originating a symbol rate equal 10.3125 Gbaud.

PMA sublayer is responsible for paralell/serial conversion and vice-versa, clock recovery, collision detection, etc

PMD is responsible for signal transmission, including modulating, wave shaping and electrical/optical conversion and vice-versa.

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BIT RATE = SYMBOL RATE
                x
BITS PER SYMBOL =