200 GbE Architecture Development

IEEE 802.3 Next Gen 100GbE and 200GbE Study Group

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Moving Forward

> **Presentations have been made proposing that the PAR for IEEE P802.3bs be modified to include**

– Architecture

– Electrical interfaces

– 2km SMF

– 10km SMF

> **Discussions regarding PCS / Forward Error Correction**

– Can 802.3bs be re-used for 200GbE SMF?

– Can 802.3bs be re-used for 200GbE Backplane, Cu Twin-ax, MMF?

> **Where does work for PCS / FEC occur?**
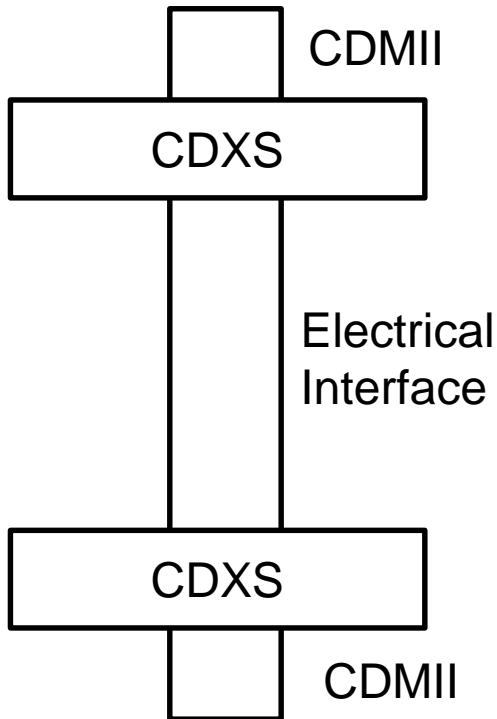
Absorbing 200GbE SMF into 802.3bs

	200 GbE	400GbE
Introduction	Clause 116?	Clause 116
RS / MII	Clause 117	
Extender Sublayer	Similar approaches assumed (PCS reference TBD) Clause 118	
PCS including FEC	Same for all PMDs? 400GbE PCS for SMF? New for BP, CU, MMF?	Clause 119
PMA	Similar approaches assumed Clause 120	
100m MMF	New TF	16 x 25G Clause 121
500m SMF	Not anticipated	Clause 122
2km SMF	Similar approach assumed Clause 123	
10km SMF		
Partioning Examples (Informative)	Similar approach assumed Annex 120A	
CxAUI-x (x50G) C2C Norm	Similar approach assumed Annex 120D	
CxAUI-x (x50G) C2M Norm	Similar approach assumed Annex 120E	

The Basic Layer Diagram

MAC
RS

CxMII

PCS
PMA
PMD

MDI

Medium
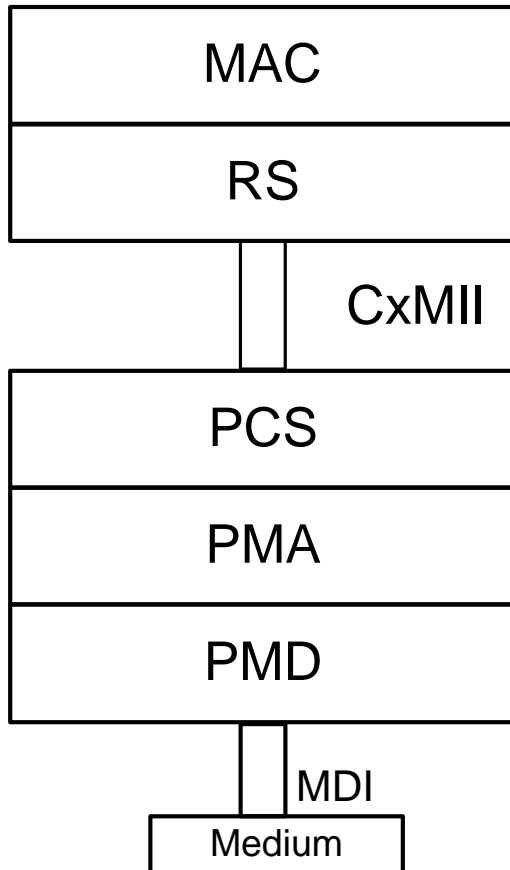
- But…

  - To enable flexibility between different PCSs, an extender sublayer for the MII is desirable, but there is no physical instantiation of the MII.

  - From a standardization perspective, a respective speed could leverage the appropriate AUI (optional physical instantiation of the PMA service interface)

Reminder: Comments on CDXS

```
        CDMII
   ┌──────────────┐
   │     CDXS     │
   └──────────────┘
          │
          │   Electrical
          │   Interface
          │
   ┌──────────────┐
   │     CDXS     │
   └──────────────┘
        CDMII
```

➤ **CDMII is the only media independent interface**

➤ **Different implementations or future PHYs may require changing FEC, which would require a return to CDMII (from a standardization perspective)**

➤ **The CDXS, as shown, is an extension of the CDMII.**

➤ **This allows support for new PCS / PMA functionality below the extended CDMII, if needed.**

➤ **The CDXS provides the coding / FEC of the electrical interface, not the coding / FEC of the PHY.**

Summary

▶ **Significant overlap with 802.3bs, where existing clauses can be modified to accommodate definition of 200 GbE**

▶ **PCS / FEC**

  – 802.3bs based-architecture, including PCS / FEC, could be used for 200GbE SMF objectives

  – Logical starting point for new TF defining 200 GbE Backplane, Cu Twin-ax, MMF, but further work is being requested.

▶ **Extender sublayer was defined for 400GbE with foresight that new PCSs could happen in future**

  – 200GbE – 802.3bs-based PCS/FEC is being considered as a starting point with talk of another potential PCS/FEC that could address either:

    • 200 GbE Backplane, Cu Twin-ax, MMF

    • All 200 GbE PMDs

  – New TF could create new PCS / FEC if consensus that it is necessary

  – ***From a documentation perspective***, utilizing an extender sublayer to support multiple PCSs is not an issue.

Thanks!