



Extender Sublayer for 100GbE ?

Gary Nicholl, Cisco

IEEE P802.3cn

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Introduction

- This presentation proposes the adoption of an 100GbE Extender sublayer in support of the 100G 80km DWDM PHY objective.
- The terms “400GBASE-ZR” and “100GBASE-ZR” are used throughout this presentation and placed in quotes as the TF has not yet chosen an official name for the 400G and 100G 80km DWDM PHYs respectively.

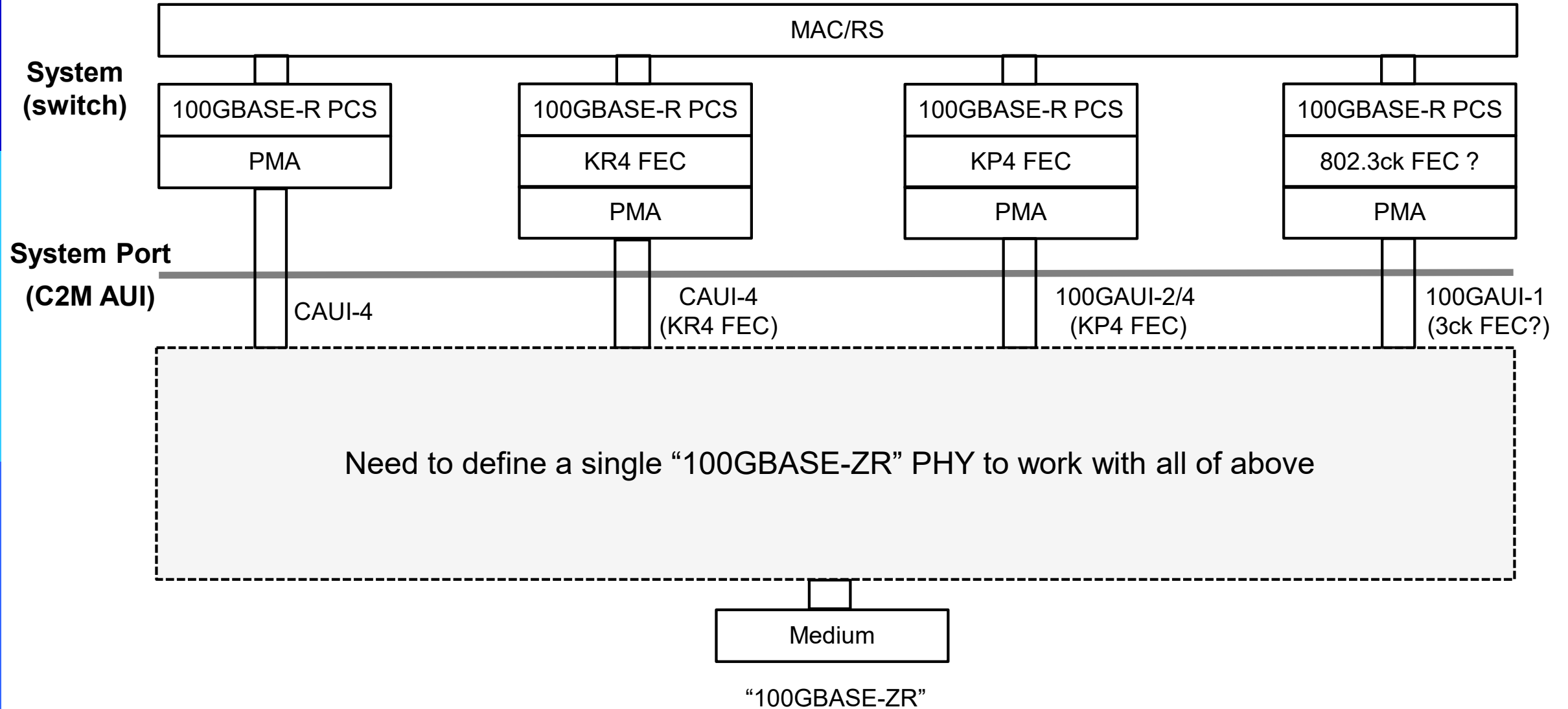
Background

[nicholl_b10k_01a_0918](#) proposed using the existing 400GbE Extender Sublayer (Clause 118) to support a new “400GBASE-ZR” PHY and address the 400G 80km DWDM PHY objective.

[nicholl_b10k_01a_0918](#) also pointed out that the situation is somewhat more complex at 100GbE for the following reasons:

- There is no existing 100GMII Extender to leverage
- The PCS and FEC are implemented as separate sub-layers
- There are potentially four different C2M AUIs to connect to:
 - CAUI-4 (no FEC)
 - CAUI-4 (KR4 FEC)
 - 100GAUI-2/4 (KP4 FEC)
 - 100GAUI-1 (P802.3ck FEC?)

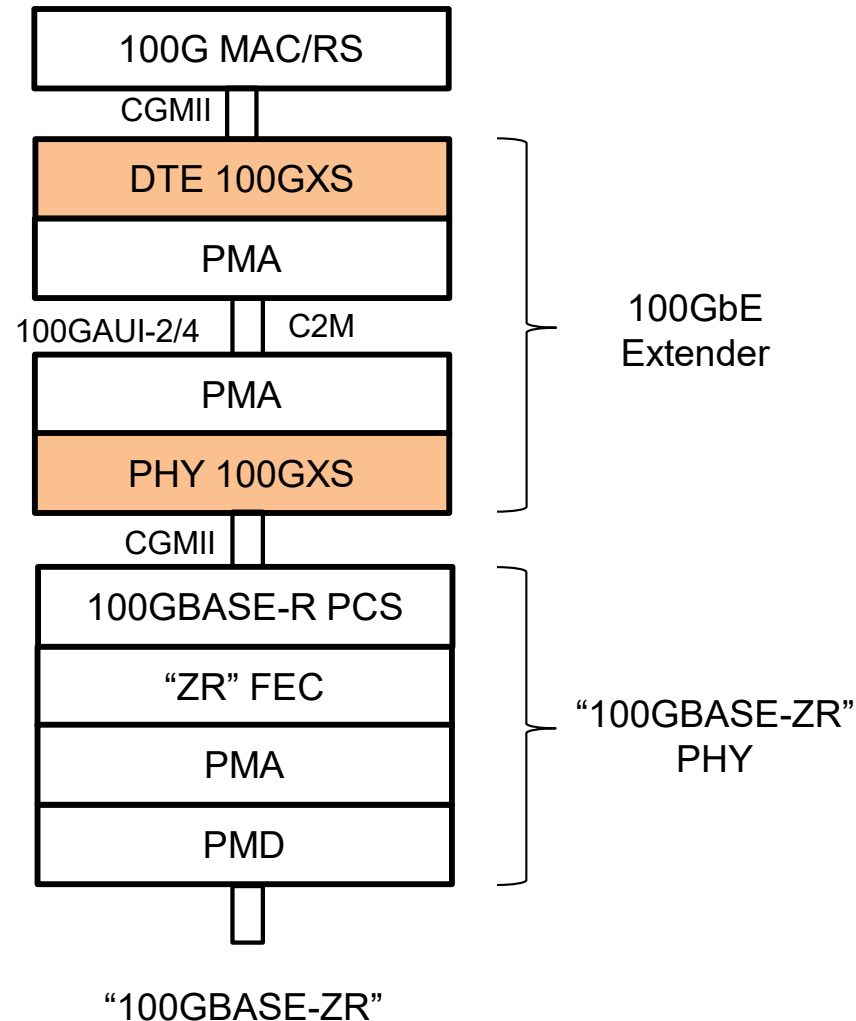
“100GBASE-ZR” PHY Architectural Challenge



100GbE Extender Sublayer

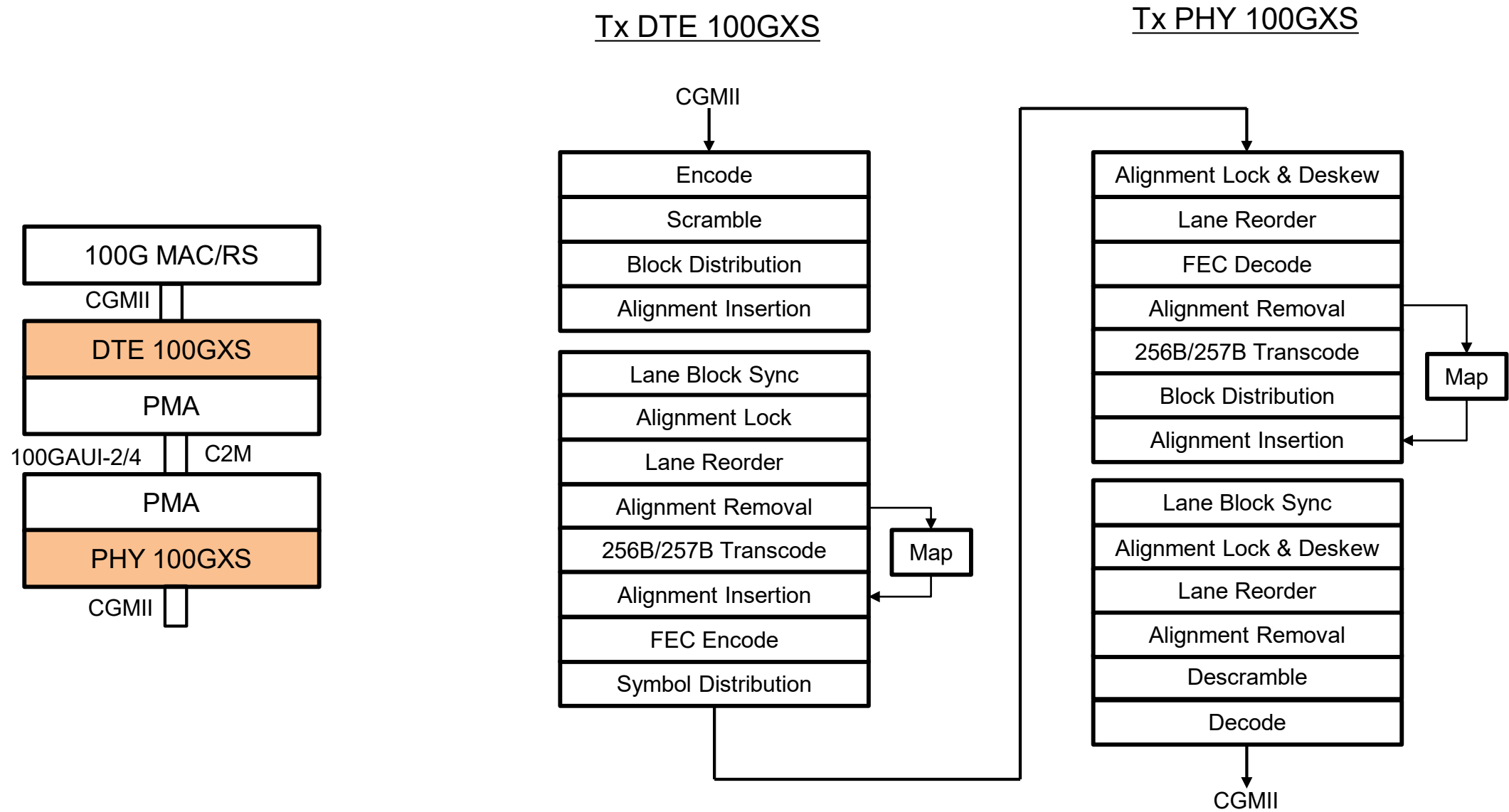
- An Extender Sublayer for 100GbE would solve the architectural challenges on the previous slide.
- An Extender Sublayer for 100GbE would convert each of the C2M AUIs back to the CGMII, and therefore allow a single “100GBASE-ZR” PHY to be defined and used, independent of the C2M AUI it is connected to.

Protocol Stack for 100GbE Extender Sublayer ?

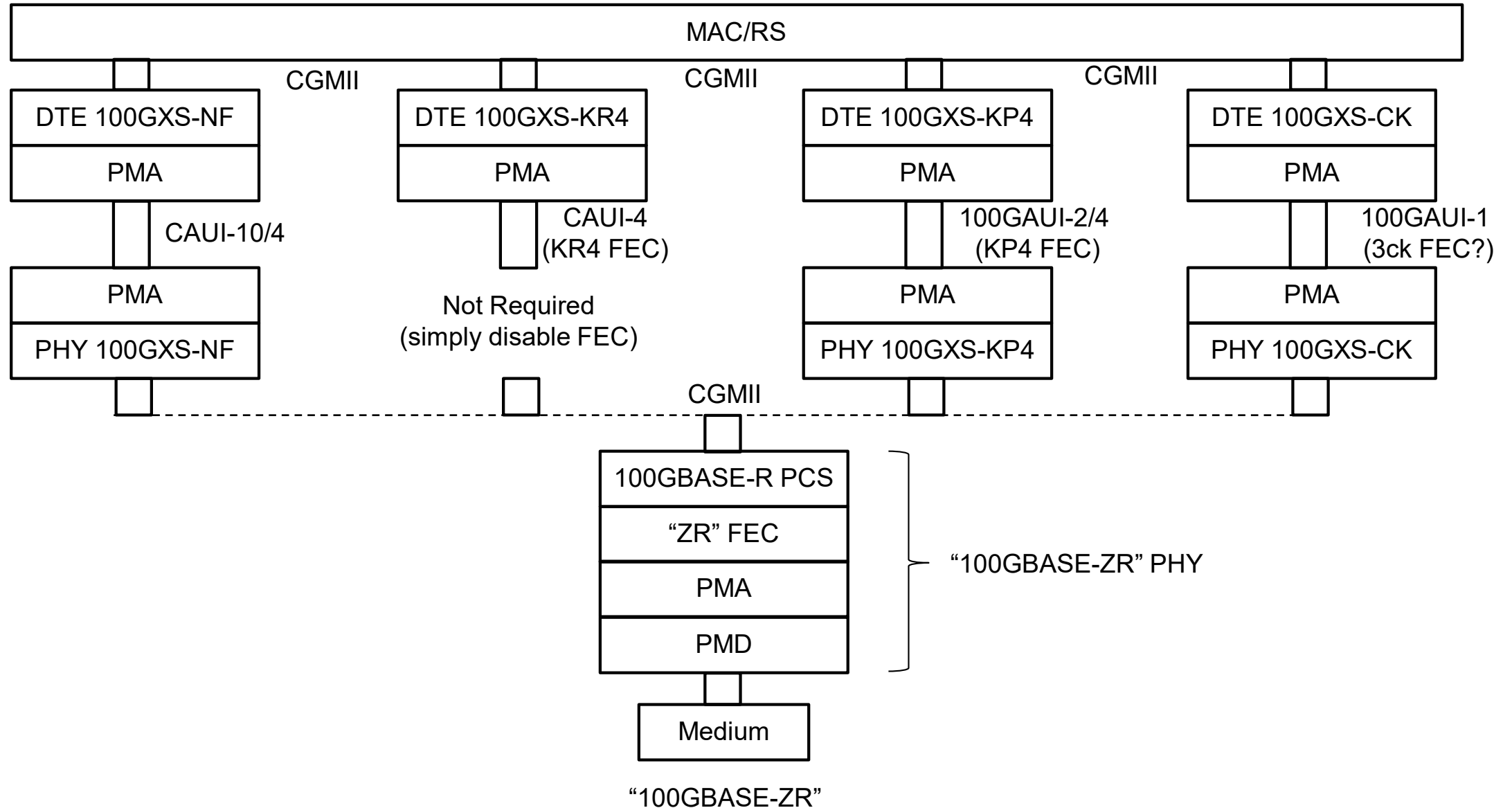


- The 100GbE Extender Sublayer (100GXS) is used to extend the CGMII across a physically instantiated AUI
- The 100GXS is a combination of the functionality of the 100G PCS sublayer and the FEC sublayer associated with a specific AUI interface
- A different 100GXS could be defined for each AUI that uses a different FEC

100GbE Extender Sublayer Functionality (KP4 FEC)



Use of 100GXS for "100GBASE-ZR" PHY



Work to be done

- Nomenclature for 100GXS, i.e. how to describe the different flavors of 100GXS to support the different AUIs
- Do we need/want to define a 100GXS for every 100GbE AUI ?
- Further flush out the proposal with more details

Summary

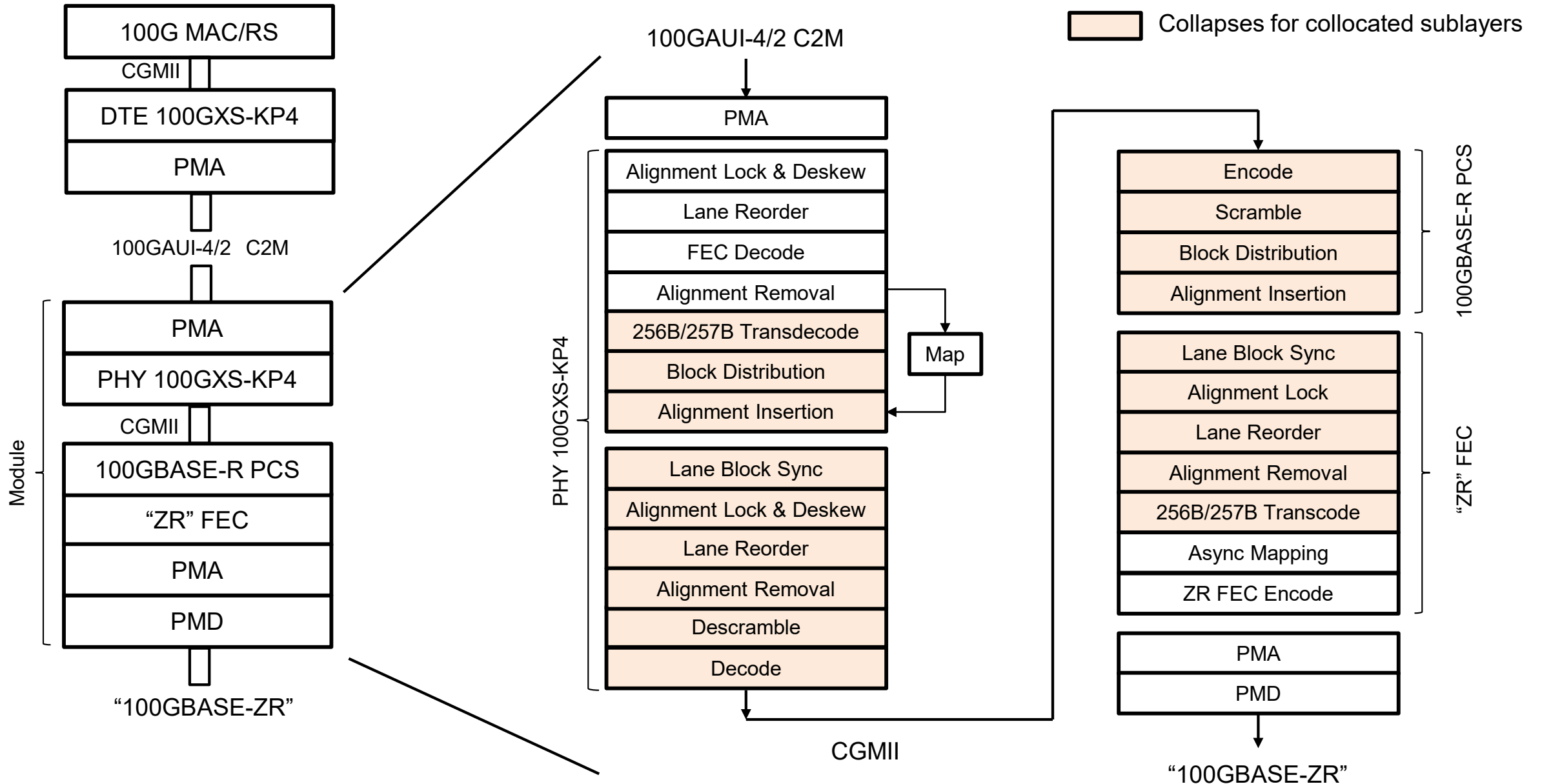
- The introduction of an Extender Sublayer into the 100GbE architecture (100GXS) makes it possible to define a single “100GBASE-ZR” PHY that can be used with multiple different AUI interfaces
- The 100GXS is comprised of a combination of the functionalities of the 100G PCS sublayer and the FEC sublayer associated with a specific AUI interface
- A different 100GXS needs to (could) be defined for each AUI that uses a different FEC
- A 100GXS is also being considered in 802.3ck to convert between AUIs that use different FECs (i.e. between 100GAUI-1 C2C and 100GAUI-1 C2M)

Final Thoughts

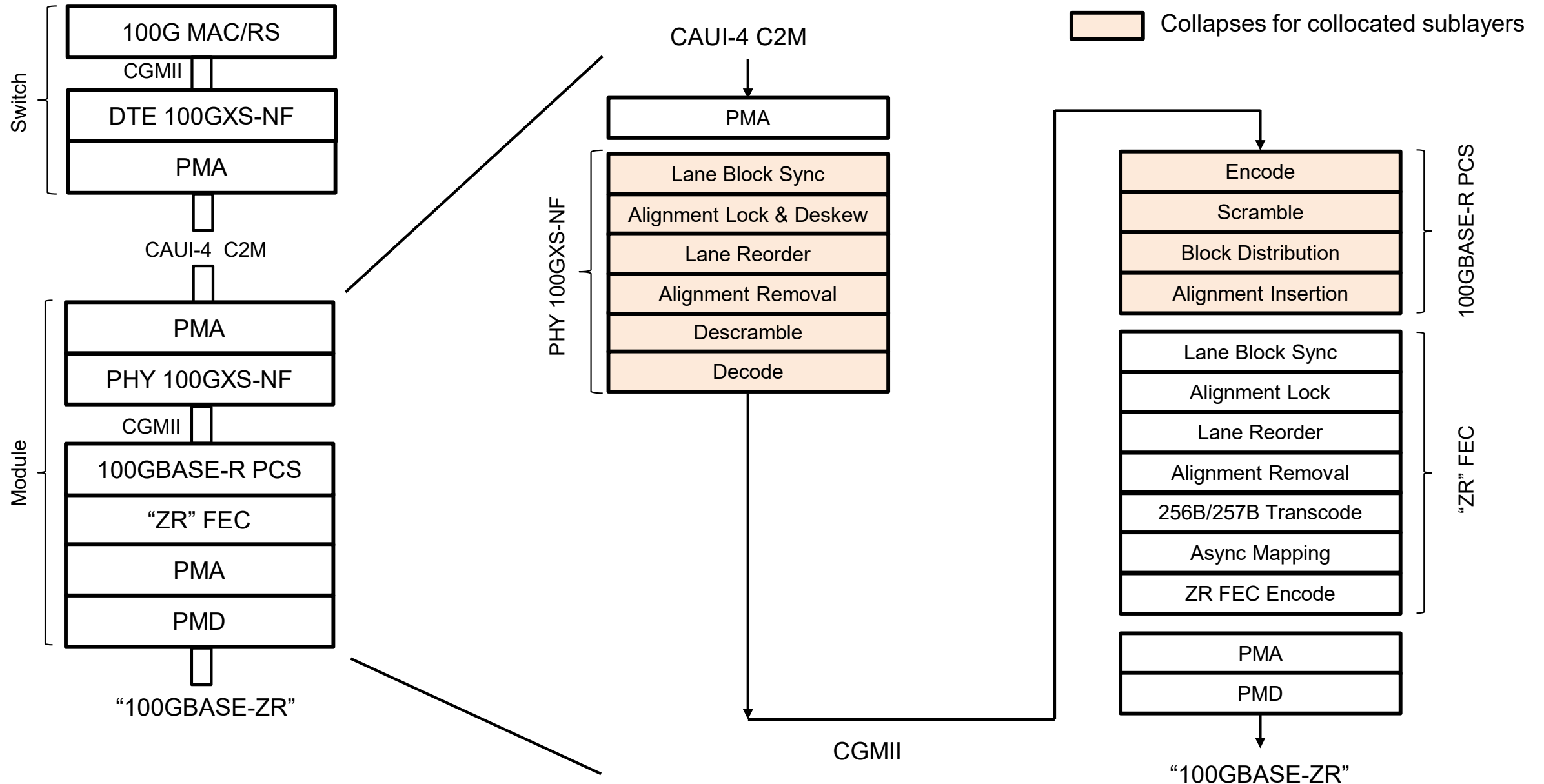
- If P802.3ck ends up reusing the existing KP4 FEC for 100GAUI-1 C2M, then we would only need to define two versions of the 100GXS to cover all known 100G C2M AUIs:
 1. CAUI-10/4 (no FEC)
 2. 100GAUI-4/2/1 (KP4 FEC)
- In fact option (1) may turn out to be a “null” extender as it is essentially just the 100GBASE-R PCS, so we might only need to define a single 100GbE Extender Sublayer for 100GAUI-4/2/1 (see slides 14 and 15)

Backup

“100GBASE-ZR” Module Example (100GAUI-4/2, Tx data path)



“100GBASE-ZR” Module Example (CAUI-4, Tx data path)



“100GBASE-ZR” Module Example (CAUI-4, Tx data path)

In fact for CAUI-4 may not need an extender sublayer at all ?

