

# Consensus Support for 800GbE over 8-Lanes based on 100GEL

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# 100GEL Copper Cables in IEEE today

## *802.3ck Project*

- Define a single-lane 100 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 2 meters
- Define a two-lane 200 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 2 meters
- Define a four-lane 400 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 2 meters

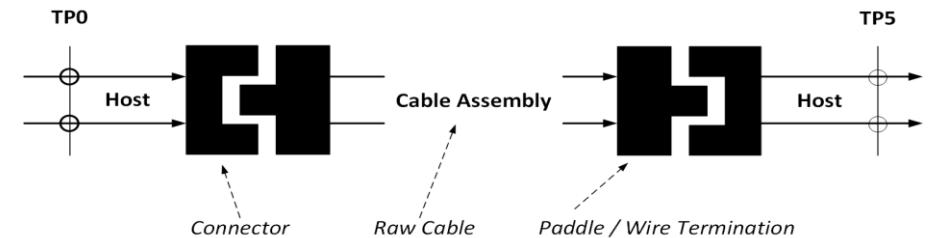
# 100GEL Copper Cables in IEEE today

## 802.3ck Project

- All N-lane, Nx100Gb/s PHY follow the requirements specified in Clause 162 and Annexes 162A-D
- Scope of ck project (400Gb/s) excludes 800GbE even though the increasingly popular 8-lane/octal form factors are included

Number of supported PMDs for each MDI type

MDI types	100GBASE-CR1	200GBASE-CR2	400GBASE-CR4	800GBASE-CR8
SFP+	1	-	-	-
SFP-DD	1,2	1	-	-
DSFP	1,2	1	-	-
QSFP+	1,2,4	1,2	1	-
QSFP-DD800	1,2,4,8	1,2,4	1,2	1
OSFP	1,2,4,8	1,2,4	1,2	1

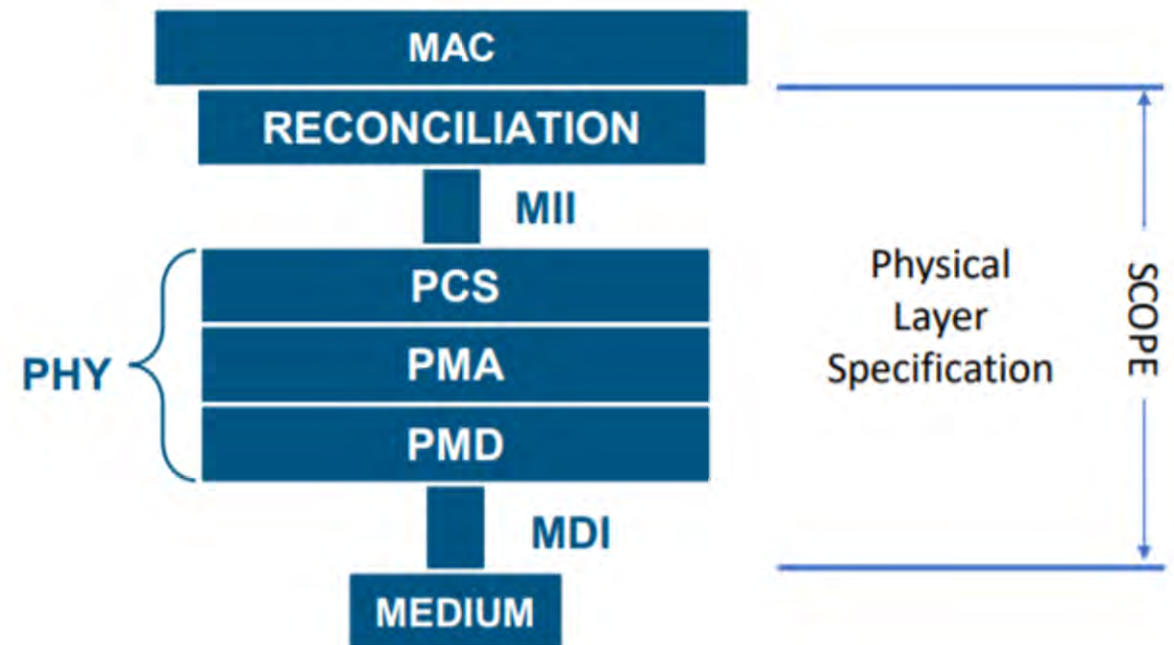


# Opportunities at 800Gb/s

- Copper cables remain cost effective compared to optical interfaces for intra-rack applications
- High-bandwidth switch applications drive volume for maximizing density on a per port basis
- Octal form factors like OSFP and QSFP-DD are well-positioned to take advantage of an eight-lane PHY
- We missed the opportunity at 400Gb/s (400GBASE-CR8/KR8)
  - Eight-lane 400Gb/s PHY are widely deployed today
- Defining the PCS for 1.6Tb/s, and 800Gb/s, provides a convenient window to adopt other objectives for a comprehensive specification

# Compatibility with Current Study Group Objectives

- 400GbE already existed when the 802.3ck project started
- From 3ck PAR
  - 5.2.b: ...specify additions and appropriate modifications of IEEE Std. 802.3 physical layer specifications for 100Gb/s – 400Gb/s
  - Allowed objectives to “Define PHY”
- 800GbE is new and the physical layer specification needs definition



[https://www.ieee802.org/3/cw/public/adhoc/20\\_1202/dambrosia\\_3cw\\_201202.pdf](https://www.ieee802.org/3/cw/public/adhoc/20_1202/dambrosia_3cw_201202.pdf)

# Proposed objective(s) for “Beyond 400G”

## **Already Adopted in B400G (*adopted, but not approved*)**

- Support an eight lane 800 Gb/s attachment unit interface for chip-to-module and chip-to-chip applications

## **Proposed Objective(s):**

- Define a physical layer specification that supports 800 Gb/s operation over eight lanes of twin-axial copper cables with a reach up to at least 2 meters
- Define a physical layer specification that supports 800 Gb/s operation over eight lanes over electrical backplanes supporting an insertion loss  $\leq 28$  dB at 26.56 GHz