

# IEEE P802.3cn Task Force: 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s over Single-Mode Fiber and DWDM

## Potential Splitting of P802.3cn PAR

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# Introduction

This presentation illustrates how the IEEE P802.3cn PAR could be split into two PARS

- Project “A” would target 40km reach objectives for 50GbE, 200GbE, and 400GbE
- Project “B” would target 80km over DWDM system objectives for 100GbE and 400GbE.

This presentation uses language from the approved PAR and is split accordingly.

# 2.1 Title

- P802.3cn: Standard for Ethernet Amendment: Physical Layers and Management Parameters for 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s Operation over Single-Mode Fiber and DWDM (dense wavelength division multiplexing) systems
- Project A: Standard for Ethernet Amendment: Physical Layers and Management Parameters for 50 Gb/s, 200 Gb/s, and 400 Gb/s Operation over Single-Mode Fiber
- Project B: Standard for Ethernet Amendment: Physical Layers and Management Parameters for 100 Gb/s and 400 Gb/s Operation over DWDM (dense wavelength division multiplexing) systems

## 4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:

- P802.3cn: 07/2020
- Project A 11/2019
- Project B: 7/2020

## 4.3 Projected Completion Date for Submittal to RevCom

- P802.3cn: 02/2021
- Project A: 5/2020
- Project B: 2/2021

## 5.2.b. Scope of the project

- P802.3cn: Define physical layer specifications and management parameters for the transfer of Ethernet format frames at 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s at reaches greater than 10 km over single-mode fiber and DWDM systems. Make TDECQ (Transmitter and dispersion eye closure for PAM4) related changes to existing 200 Gb/s and 400 Gb/s physical medium dependent sublayers over single-mode fiber.
- Project A: Define physical layer specifications and management parameters for the transfer of Ethernet format frames at 50 Gb/s, 200 Gb/s, and 400 Gb/s at reaches greater than 10 km over single-mode fiber. Make TDECQ (Transmitter and dispersion eye closure for PAM4) related changes to existing 200 Gb/s and 400 Gb/s physical medium dependent sublayers over single-mode fiber.
- Project B: Define physical layer specifications and management parameters for the transfer of Ethernet format frames at 100 Gb/s and 400 Gb/s at reaches greater than 10 km over DWDM systems.

# 5.5 Need for the Project:

- P802.3cn: Optical solutions targeting greater than 10 km over single-mode fiber will address the bandwidth requirements of mobile backhaul networks fueled by consumer video. Optical solutions targeting greater than 10 km over a DWDM system will address the bandwidth growth and reach requirements of Cable/MSO (multiple system operator) distribution networks, mobile backhaul networks, and interconnect for distributed data centers where reaches greater than 10 km are required, or where fiber availability drives the need for multiple instances of Ethernet over a DWDM system.
- Project A: Optical solutions targeting greater than 10 km over single-mode fiber will address the bandwidth requirements of mobile backhaul networks fueled by consumer video.
- Project B: Optical solutions targeting greater than 10 km over a DWDM system will address the bandwidth growth and reach requirements of Cable/MSO (multiple system operator) distribution networks, mobile backhaul networks, and interconnect for distributed data centers where reaches greater than 10 km are required, or where fiber availability drives the need for multiple instances of Ethernet over a DWDM system.

## 5.6 Stakeholders for the Standard:

- P802.3cn: Users and producers of systems and components for mobile backhaul networks, cable/multi-service operator (MSO) distribution networks, data center interconnect networks, and any other networks needing reaches in excess of 10 km over single-mode fiber or DWDM systems.
- Project A: Users and producers of systems and components for mobile backhaul networks and any other networks needing reaches in excess of 10 km over single-mode fiber.
- Project B: Users and producers of systems and components for mobile backhaul networks, cable/multi-service operator (MSO) distribution networks, data center interconnect networks, and any other networks needing reaches in excess of 10 km over DWDM systems.



# 7.1 Are there other standards or projects with a similar scope?: Yes If Yes please explain:

- P802.3cn: Yes If Yes please explain: While there are no other IEEE standards or projects with a similar scope, the IEEE 802.3 Working Group has received liaisons from two organizations indicating that the respective groups have related efforts underway. ITU-T Study Group 15 has communicated that it is revising Recommendation ITU-T G.698.2 to include multi-vendor interoperable 100 Gb/s single channel optical interfaces that operate over a DWDM system for approximately 80 km distances. The Optical Internetworking Forum (OIF) has communicated that it is developing the 400ZR Implementation Agreement (IA), which is targeted at (passive) single channel and (amplified) short-reach DWDM (dense wavelength division multiplexing) / DCI (data center interconnect) pluggable modules with distances supported from 80-120 km. The effort will support 400 Gb/s Ethernet via the 400GAUI-8 interface that is defined by IEEE 802.3. Stakeholders have expressed the desire for this project, as it will define physical layer specifications and Protocol Implementation Conformance Statements (PICS) for 100 Gb/s and 400 Gb/s Ethernet operation over DWDM systems that are consistent and completely integrated with existing IEEE 802.3 Ethernet specifications.
- and answer the following
  - Sponsor Organization: ITU-T SG15 and OIF
  - Project/Standard Number: Recommendation ITU-T G.698.2 and OIF 400ZR Implementation Agreement
  - Project/Standard Date:
  - Project/Standard Title: Recommendation ITU-T G.698.2 Amplified multichannel dense wavelength division multiplexing applications with single channel optical interfaces and OIF 400ZR Implementation Agreement
- Project A: No
- Project B: Use Current P802.3cn Response

# 8.1 Additional Explanatory Notes:

- P802.3cn:
  - Item 5.2b: PAM4 expands to 4-level pulse amplitude modulation
  - Item 7.1 Project/Standard date: Recommendation ITU-T G.698.2 anticipated 'consent' date of 19th Oct 2018
  - Item 7.1 Project/Standard date: OIF 400ZR Implementation Agreement project start date 3rd Nov 2016
- Project A:
  - Item 5.2b: PAM4 expands to 4-level pulse amplitude modulation
- Project B
  - Item 7.1 Project/Standard date: Recommendation ITU-T G.698.2 ~~anticipated~~ 'consent' date of 19th Oct 2018
  - Item 7.1 Project/Standard date: OIF 400ZR Implementation Agreement project start date 3rd Nov 2016

# Thank You!