# P802.3ct

**Submitter Email:** david_law@ieee.org
**Type of Project:** Amendment to IEEE Standard 802.3-2018
**Project Request Type:** Modify / Amendment
**PAR Request Date:** 17 Nov 2019
**PAR Approval Date:** 12 Feb 2020
**PAR Expiration Date:** 31 Dec 2023
**PAR Status:** Active
**Root PAR:** P802.3ct
**Root PAR Approved on:** 08 Feb 2019
**Root Project:** 802.3-2018

**1.1 Project Number:** P802.3ct
**1.2 Type of Document:** Standard
**1.3 Life Cycle:** Full Use

**2.1 Project Title:** Standard for Ethernet
Amendment: Physical Layers and Management Parameters for 100 Gb/s Operation over DWDM (dense wavelength division multiplexing) systems
**Change To Title:** Standard for EthernetAmendment: Physical Layers and Management Parameters for 100 Gb/s ~~and 400 Gb/s~~ Operation over DWDM (dense wavelength division multiplexing) systems

**3.1 Working Group:** Ethernet Working Group(C/LM/WG802.3)
**3.1.1 Contact Information for Working Group Chair:**
**Name:** David Law
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**3.1.2 Contact Information for Working Group Vice Chair:**
**Name:** Adam Healey
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**3.2 Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee(C/LM)
**3.2.1 Contact Information for Standards Committee Chair:**
**Name:** Paul Nikolich
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**3.2.2 Contact Information for Standards Committee Vice Chair:**
**Name:** James Gilb
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**3.2.3 Contact Information for Standards Representative:**
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**4.1 Type of Ballot:** Individual
**4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot:** Nov 2020
**Change to Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot:** ~~Jul~~ Nov 2020
**4.3 Projected Completion Date for Submittal to RevCom:** Aug 2021
**Change to Projected Completion Date for Submittal to RevCom:** ~~Feb~~ Aug 2021

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 80
**5.2.a Scope of the complete standard:**This standard defines Ethernet local area, access and metropolitan area networks. Ethernet is specified at selected speeds of operation; and uses a common media access control (MAC) specification and management information base (MIB). The Carrier Sense Multiple Access with Collision Detection (CSMA/CD) MAC protocol specifies shared medium (half duplex) operation, as well as full duplex operation. Speed specific Media Independent Interfaces (MIIs) provide an architectural and optional implementation interface to selected Physical Layer entities (PHY). The Physical Layer encodes frames for transmission and decodes received frames with the modulation specified for the speed of operation, transmission medium and supported link length. Other specified capabilities include: control and management protocols, and the provision of power over selected twisted pair PHY types.
**5.2.b Scope of the project:** Define physical layer specifications and management parameters for the

transfer of Ethernet format frames at 100 Gb/s at reaches greater than 10 km over DWDM systems.
**Change to scope of the project:** 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.

**5.3 Is the completion of this standard contingent upon the completion of another standard?** No
**5.4 Purpose:** This document will not include a purpose clause.
**5.5 Need for the Project:** Optical solutions targeting 100 Gb/s operation at reaches in excess of 10 km over a DWDM system will address the bandwidth growth and reach requirements of Cable/MSO (multiple system operator) distribution networks, and mobile backhaul networks where reaches greater than 10 km are required, or where fiber availability drives the need for multiple instances of Ethernet over a DWDM system.
**Change to Need for the Project:** Optical solutions targeting ~~greater~~ 100 Gb/s ~~than~~ operation at reaches in excess of 10 km over a DWDM system will address the bandwidth growth and reach requirements of Cable/MSO (multiple system operator) distribution networks, and 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:** Users and producers of systems and components for mobile backhaul networks, Cable/MSO (multiple system operator) distribution networks and any other networks needing 100 Gb/s operation at reaches in excess of 10 km over DWDM systems.
**Change to Stakeholders for the Standard:** Users and producers of systems and components for mobile backhaul networks, ~~cable~~ Cable / ~~multi-service operator~~ MSO (~~MSO)~~ multiple ~~distribution networks, data~~ system ~~center~~ operator) ~~interconnect~~ distribution networks ~~,~~ and any other networks needing 100 Gb/s operation at reaches in excess of 10 km over DWDM systems.

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**6.1 Intellectual Property**
**6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?** No
**6.1.2 Is the Standards Committee aware of possible registration activity related to this project?** No

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**7.1 Are there other standards or projects with a similar scope?** Yes
**Explanation:** While there are no other IEEE standards or projects with a similar scope, the IEEE 802.3 Working Group has received a liaison from ITU-T Study Group 15 that 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. Stakeholders have expressed the desire for this IEEE project, as it will define physical layer specifications and Protocol Implementation Conformance Statements (PICS) for 100 Gb/s Ethernet operation over DWDM systems that are consistent and completely integrated with existing IEEE 802.3 Ethernet specifications.
**Change to Explanation:** While there are no other IEEE standards or projects with a similar scope, the IEEE 802.3 Working Group has received ~~liaisons from~~ a ~~two~~ liaison ~~organizations indicating that the respective groups have related efforts underway.~~ from ITU-T Study Group 15 ~~has~~ that 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 IEEE 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.
**7.1.1 Standards Committee Organization:** ITU-T SG15
**Project/Standard Number:** Recommendation ITU-T G.698.2
**Project/Standard Date:** 29 Nov 2018
**Project/Standard Title:** Recommendation ITU-T G.698.2 Amplified multichannel dense wavelength division multiplexing applications with single channel optical interfaces
**7.1.2 Standards Committee 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
**7.2 Is it the intent to develop this document jointly with another organization?** No

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**8.1 Additional Explanatory Notes :** Items 2.1, 4.2, 4.3, 5.2.b, 5.5, 5.6, 7.1, 8.1: It became apparent to the

IEEE 802.3 Working Group that the market demands and the state of technology for 100 Gb/s Ethernet and 400 Gb/s Ethernet over DWDM systems are different, and that a faster timeline for the 100Gb/s Ethernet portion of the IEEE P802.3ct project could be achievable. As a result, the 400 Gb/s Operation over DWDM Systems portion of the project has been removed from the IEEE P802.3ct amendment PAR and placed in the new IEEE P802.3cw amendment PAR.

**Changes to Additional Explanatory Notes :** ~~Item~~ Items ~~7~~ 2 .1 , ~~Project/Standard~~ 4.2, 4.3, ~~date:~~ 5.2.b, ~~Recommendation~~ 5.5, ~~ITU-T~~ 5.6, ~~G~~ 7 .~~698~~ 1, 8 .~~2~~ 1: ~~consent~~ It ~~date~~ became apparent to the IEEE 802.3 Working Group that the market demands and the state of ~~19th~~ technology for 100 ~~Oct~~ Gb/s ~~2018Item~~ Ethernet and 400 ~~7~~ Gb/s Ethernet over DWDM systems are different, and that a faster timeline for the 100Gb/s Ethernet portion of the IEEE P802 .~~1~~ 3ct ~~Project~~ project could be achievable. As a result, the 400 Gb/ ~~Standard~~ s ~~date:~~ Operation over DWDM ~~OIF~~ Systems ~~400ZR~~ portion ~~Implementation~~ of ~~Agreement~~ the project~~start~~ has been removed from the IEEE P802.3ct ~~date~~ amendment ~~3rd~~ PAR ~~Nov~~ and placed in ~~2016~~ the new IEEE P802.3cw amendment PAR.