P802.3ca
PAR and Objectives
[Proposed Revision]

July 2018

Previous Objectives

- Support subscriber access networks using point to multipoint topologies on optical fiber
- Provide specifications for physical layers operating over a single SMF strand and supporting symmetric and/or asymmetric MAC data rates of:
  - 25 Gb/s in downstream and less than or equal to 25 Gb/s in upstream
  - 50 Gb/s in downstream and less than or equal to 50 Gb/s in upstream
  - 100 Gb/s in downstream and less than or equal to 100 Gb/s in upstream
- PHY(s) to have a BER better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)
- Support coexistence with 10G-EPON
  - Optical power budgets to accommodate channel insertion losses equivalent to those supported by the 10G-EPON standard
  - Wavelength allocation allowing concurrent operation with 10G-EPON PHYs
- Wavelength allocation allowing concurrent operation of 25G-EPON and G-PON reduced wavelength set (1290nm-1330nm) PHYs

Approved Modifications (in red)

- Support subscriber access networks using point-to-multipoint topologies on optical fiber
- Provide Physical Layer specifications that
  - Operate over a single SMF strand
  - Support symmetric and/or asymmetric MAC data rates of:
    - 25 Gb/s in downstream and less than or equal to 25 Gb/s in upstream (25G-EPON)
    - 50 Gb/s in downstream and less than or equal to 50 Gb/s in upstream (50G-EPON)
    - ~~100 Gb/s in downstream and less than or equal to 100 Gb/s in upstream (100G-EPON)~~
  - Have a BER better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)
  - Support coexistence with select legacy PON technologies
    - Optical power budgets to accommodate channel insertion losses equivalent to PR20 and PR30, as defined in Clause 75.
    - Wavelength allocation allowing concurrent operation with 10G-EPON, XG-PON1, and XGS-PON PHYs (1575nm-1580nm downstream, 1260nm-1280nm upstream)
    - Wavelength allocation allowing concurrent operation of 25G-EPON and G-PON reduced wavelength set (1480nm-1500nm downstream, 1290nm-1330nm upstream) PHYs

Motion #17 from January 2018

- Approve changes to the p802.3ca objectives as shown on slide 3 of kramer_3ca_3b_0118.pdf.

- (Technical, >=75%)

- Moved: Glen Kramer
- Seconded: Alan Brown

- Y:30 N:0 A:1

Proposed Changes

- Support symmetric and/or asymmetric MAC data rates of:
  - 25 Gb/s in downstream and ~~less than or equal to~~ 10 Gb/s or 25 Gb/s in upstream (25G-EPON)
  - 50 Gb/s in downstream and ~~less than or equal to~~ 10 Gb/s, 25 Gb/s, or 50 Gb/s in upstream (50G-EPON)

Proposed Objectives

- Support subscriber access networks using point-to-multipoint topologies on optical fiber
- Provide Physical Layer specifications that
  - Operate over a single SMF strand
  - Support symmetric and/or asymmetric MAC data rates of:
    - 25 Gb/s in downstream and 10 Gb/s or 25 Gb/s in upstream (25G-EPON)
    - 50 Gb/s in downstream and 10 Gb/s, 25 Gb/s, or 50 Gb/s in upstream (50G-EPON)
  - Have a BER better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)
  - Support coexistence with select legacy PON technologies
    - Optical power budgets to accommodate channel insertion losses equivalent to PR20 and PR30, as defined in Clause 75.
    - Wavelength allocation allowing concurrent operation with 10G-EPON, XG-PON1, and XGS-PON PHYs (1575nm-1580nm downstream, 1260nm-1280nm upstream)
    - Wavelength allocation allowing concurrent operation of 25G-EPON and G-PON reduced wavelength set (1480nm-1500nm downstream, 1290nm-1330nm upstream) PHYs

Needed PAR Changes (1/2)

P802.3ca

Submitter Email: david_law@ieee.org
Type of Project: Amendment to IEEE Standard 802.3-2015
PAR Request Date: 29-Sep-2015
PAR Approval Date: 05-Dec-2015
PAR Expiration Date: 31-Dec-2019
Status: PAR for an Amendment to an existing IEEE Standard

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

2.1 Title: Approved Draft Standard for Ethernet
Amendment: Physical Layer Specifications and Management Parameters for 25 Gb/s, 50 Gb/s, and 100 Gb/s Passive Optical Networks

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3.1 Working Group: Ethernet Working Group (C/LM/WG802.3)
Contact Information for Working Group Chair
Name: David Law
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Needed PAR Changes (2/2)

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 07/2018
4.3 Projected Completion Date for Submittal to RevCom: 05/2019

5.1 Approximate number of people expected to be actively involved in the development of this project: 30
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: The scope of this project is to amend IEEE Std 802.3 to add physical layer specifications and management parameters for symmetric and/or asymmetric operation at 25 Gb/s, 50 Gb/s, and 100 Gb/s MAC data rates on point-to-multipoint passive optical networks with distance and split ratios consistent with those defined in IEEE Std 802.3-2015.

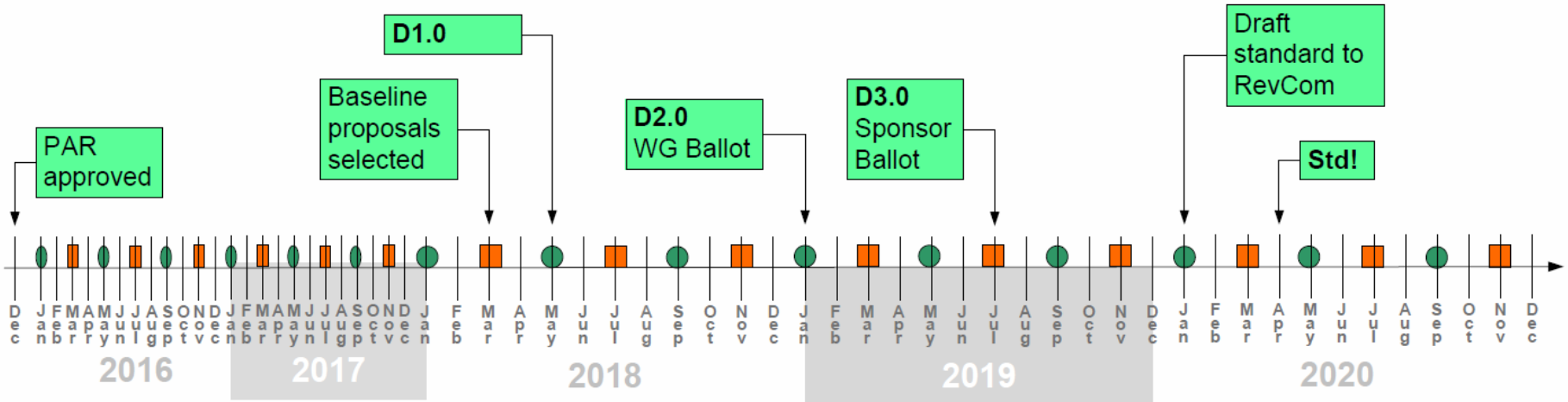
5.3 Is the completion of this standard dependent upon the completion of another standard: No
5.4 Purpose: This document will not include a purpose clause. **Changes in purpose:**

5.5 Need for the Project: The project is applicable to business and residential access environments. The project is needed to enable access network operators to provide advanced bandwidth-intensive services while reducing footprint of network equipment, simplifying service upgrades, reducing network upgrade cost, and reducing fiber deployment costs.

5.6 Stakeholders for the Standard: The stakeholders include access network operators, system suppliers, component suppliers, and subscribers.

Current Timeline

IEEE P802.3ca Timeline



- 802.3 Interim Meeting
- 802.3 Plenary Meeting

Proposed PAR Changes

2.1 Title Approved Draft Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for 25 Gb/s~~,~~ and 50 Gb/s~~, and 100 Gb/s~~ Passive Optical Networks

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 07/~~2018~~2019

4.3 Projected Completion Date for Submittal to RevCom: ~~05/2019~~ 01/2020

Proposed Scope Change

5.2.b. Scope of the project:

The scope of this project is to amend IEEE Std 802.3 to add physical layer specifications and management parameters for ~~symmetric and/or asymmetric operation at 25 Gb/s, 50 Gb/s, and 100 Gb/s MAC data rates on~~ point-to-multipoint passive optical networks supporting MAC data rates of 25 Gb/s or 50 Gb/s in the downstream direction and 10 Gb/s, 25 Gb/s, or 50 Gb/s in the upstream direction, with distance and split ratios consistent with those defined in IEEE Std 802.3-2015.

Motion #3

- Approve PAR modification as presented on slides 10 and 11 of kramer_3ca_9a_0718.pdf and request TF chair to seek approval from 802.3 working group.

- M: Glen Kramer
- S: Marek Hajduczenia

- Technical (Requires >= 75%)

- Y:20 N:0 A:0

Motion #4

- Request the TF chair to seek 1-year extension for P802.3ca PAR.

- M: Glen Kramer
- S: Duane Remein

- Technical (Requires >= 75%)

- Y:16 N:0 A:0

- Motion passed

Motion #5

- Approve modified 802.3ca objectives as shown on slide 6 of kramer_3ca_9a_0718.pdf and request TF chair to seek approval from 802.3 working group.

- M: Bill Powell
- S: Mark Laubach

- Technical (Requires >= 75%)

- Y:16 N:0 A:0
- Motion passed