

IEEE 802.3 Ethernet Working Group  
**DRAFT** Liaison Communication

Source: IEEE 802.3 Working Group<sup>1</sup>

To: Steve Trowbridge Chairman, ITU-T SG15  
[steve.trowbridge@nokia.com](mailto:steve.trowbridge@nokia.com)

Peter Stassar Rapporteur, ITU-T Q6/15  
[Peter.Stassar@huawei.com](mailto:Peter.Stassar@huawei.com)

Steve Gorshe Rapporteur, ITU-T Q11/15  
[steve.gorshe@microsemi.com](mailto:steve.gorshe@microsemi.com)

CC: Konstantinos Karachalios Secretary, IEEE-SA Standards Board  
Secretary, IEEE-SA Board of Governors  
[sasecretary@ieee.org](mailto:sasecretary@ieee.org)

Paul Nikolich Chair, IEEE 802 LMSC  
[p.nikolich@ieee.org](mailto:p.nikolich@ieee.org)

Adam Healey Vice-chair, IEEE 802.3 Ethernet Working Group  
[adam.healey@broadcom.com](mailto:adam.healey@broadcom.com)

Pete Anslow Secretary, IEEE 802.3 Ethernet Working Group  
[panslow@ciena.com](mailto:panslow@ciena.com)

John D'Ambrosia Chair, IEEE 802.3 Beyond 10km Optical PHYs Study Group  
[jdambrosia@ieee.org](mailto:jdambrosia@ieee.org)

From: David Law Chair, IEEE 802.3 Ethernet Working Group  
[dlaw@hpe.com](mailto:dlaw@hpe.com)

Subject: Liaison letter to ITU-T Study Group 15 on Beyond 10km Optical PHYs

Approval: Agreed to at IEEE 802.3 interim meeting, Pittsburgh, PA, USA, 24 May 2018

Dear Dr. Trowbridge and members of ITU-T Study Group 15,

We are pleased to inform you that the IEEE 802.3 Beyond 10km Optical PHYs Study Group has adopted project objectives and prepared project documentation that will be considered by the IEEE 802.3 Working Group in the July 2018 plenary for the creation of **two** new projects for the specification of new optical PHYs with rates of operation of 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s and a reach of greater than 10km.

The **first** of these projects will specify optical PHYs for 40km reach over a duplex fiber pair between the Tx and Rx for rates of operation of 50 Gb/s, 200 Gb/s, and **400 Gb/s**. Feasibility has been demonstrated to use similar approaches for these PHYs as those in the P802.3cd and P802.3bs projects, extending the reach with technologies such as APD Rx and/or higher power Tx. The adopted objectives for the **first** of these proposed projects are:

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<sup>1</sup> This document solely represents the views of the IEEE 802.3 Working Group, and does not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802.

- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve the minimum and maximum FrameSize of current Ethernet standard
- Provide appropriate support for OTN

#### 50 Gb/s Ethernet

- Support a MAC data rate of 50 Gb/s
- Support a BER of better than or equal to  $10^{-12}$  at the MAC/PLS service interface (or the frame loss ratio equivalent) for 50 Gb/s
- Provide a physical layer specification which supports 50 Gb/s operation over at least 40km of SMF

#### 200 Gb/s Ethernet

- Support a MAC data rate of 200 Gb/s
- Support a BER of better than or equal to  $10^{-13}$  at the MAC/PLS service interface (or the frame loss ratio equivalent) for 200 Gb/s
- Provide a physical layer specification which supports four-lane 200 Gb/s operation over at least 40km of SMF

#### 400 Gb/s Ethernet

- Support a MAC data rate of 400 Gb/s
- Support a BER of better than or equal to  $10^{-13}$  at the MAC/PLS service interface (or the frame loss ratio equivalent) for 400 Gb/s
- Provide a physical layer specification which supports eight-lane 400 Gb/s operation over at least 40km of SMF

The companion draft PAR [\(add URL\)](#) and CSD [\(add URL\)](#) for this first project are at the indicated links.

The adopted objectives for the **second** of these proposed projects are:

- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve the minimum and maximum FrameSize of current Ethernet standard
- Provide appropriate support for OTN

#### 100 Gb/s Ethernet

- Support a MAC data rate of 100 Gb/s
- Support a BER of better than or equal to  $10^{-12}$  at the MAC/PLS service interface (or the frame loss ratio equivalent) for 100 Gb/s
- Provide a physical layer specification supporting 100 Gb/s operation on a single wavelength capable of at least 80km over a DWDM system

#### 400 Gb/s Ethernet

- Support a MAC data rate of 100 Gb/s
- Support a BER of better than or equal to  $10^{-13}$  at the MAC/PLS service interface (or the frame loss ratio equivalent) for 400 Gb/s
- Provide a physical layer specification supporting 400 Gb/s operation on a single wavelength capable of at least 80km over a DWDM system

The companion draft PAR [\(add URL\)](#) and CSD [\(add URL\)](#) for this second project are at the indicated links.

We would call your attention to Section 7 of the draft PAR form where it is asked to "Identify any standard(s) or project(s) of similar scope(s), both within or outside of the IEEE, and

explain the need for an additional standard in this area.” Regarding the 100 Gb/s DWDM objectives, we have identified a project of similar scope to be the 80km 100 Gb/s application code currently under development in ITU-T SG15 in revised Recommendation G.698.2. The need for an additional standard in this area has been identified as (copy response from PAR form). Regarding the 400 Gb/s DWDM objectives, we have identified a project of similar scope to be the OIF 400ZR project. The need for an additional standard in this area has been identified as (copy response from PAR form).

We recognize that the first of these projects intends to utilize technologies similar to those of previous 802.3 projects over familiar media with a dedicated fiber pair per Ethernet link, while the second project, intending to use coherent modulation for operation over a DWDM system is new for 802.3. We hope that we can rely on the prior work and experience of ITU-T Q6/15 and continue correspondence and consultation as we move into this new area.

Sincerely,  
David Law  
Chair, IEEE 802.3 Ethernet Working Group