

Approved Minutes

IEEE 802.3 100 Gb/s per lane optical PHYs Study Group

Interim Meeting

Jan 16th, 2019

Long Beach, CA, USA

Prepared by Kenneth Jackson

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IEEE 802.3 100 Gb/s per lane optical PHYs Study Group – January 16, 2019

Prepared by Kenneth Jackson

IEEE 802.3 100 Gb/s per lane optical PHYs Study Group meeting convened at 8:00 a.m., January 16, 2019, by David Law, IEEE 802.3 Work Group Chair.

Mr. Law welcomes attendees to the IEEE 802.3 100 Gb/s per lane optical PHYs Study Group meeting.

David Law appoints Ken Jackson as the recording secretary for the IEEE 802.3 100 Gb/s per lane optical PHYs Study Group.

As announced at the November 2018 Plenary meeting, David Law intends to appoint Mark Nowell as the Chair of the IEEE 802.3 100 Gb/s per lane optical PHYs Study Group.

Mr. Law asked if there was objection to a motion for the confirmation of the Chair for the Study Group. There was no objection.

Motion #1: Move to confirm Mark Nowell as the IEEE 802.3 100 Gb/s per lane optical PHYs Study Group Chair.

- Moved by: Pete Anslow
- Second by: Jeff Maki
- Y: 23 , N: 0 , A: 0

Motion passes!

Mark Nowell asked the audience about familiarity with the Study Group process. No one raised their hand indicating unfamiliarity.

Introductions were made.

Chair reviewed agenda in

http://www.ieee802.org/3/100G_OPTX/public/Jan19/agenda_optx_01a_0119.pdf

Motion #2:

Move to approve the agenda:

- Moved by: Stephen Trowbridge (with noted modifications)
- Second by: Pete Anslow

Passed by voice without opposition

Reviewed Study Group participation/organization.

- Chair: Mark Nowell (Cisco)
- Chief Editor: Gary Nicholl (Cisco)
- Recording Secretary: Kenneth Jackson (Sumitomo)
- Ad Hoc Chair (TBD)

Chair reminded participants to observe meeting decorum. Photography and recording are not permitted.

Chair reviewed the reflector and web information. Chair reviewed the ground rules for the meeting.

Chair reviewed the attendance procedures. Chair reminded participants to sign into the IEEE Attendance Tool and to sign the book.

Chair reviewed the IEEE structure.

Chair reviewed the Bylaws and Rules slides in -

http://www.ieee802.org/3/100G_OPTX/public/Jan19/agenda_optx_01a_0119.pdf

Chair reviewed participation in IEEE 802 Meetings.

Chair read the Guidelines for IEEE-SA Working Group meetings.

Chair reviewed the IEEE 802.3 Standards Process. Chair summarized the documentation necessary to progress to a Task Force.

Chair mentioned the possibility of Ad Hocs.

Chair noted that the November 2018 CFI motion defines the charter of the Study Groups. Chair referenced a crash course on study group goals: Process, criteria and objectives.

Goals for the meeting:

- Develop a set of objectives for the Study Group
- Develop responses for the CSD (Criteria for Standards Development)
- Develop PAR
- Review presentations substantiating the above
- Lay groundwork for the next meeting (if time permits).

Chair reviewed meeting logistics and meeting schedule for the day.

http://www.ieee802.org/3/100G_OPTX/public/Jan19/agenda_optx_01a_0119.pdf

Chair noted that there is an IEEE 802.3 Working Group meeting on Thursday evening.

Future Meetings:

- March 2019 Plenary

- Week of March 11th, 2019 – Vancouver, BC, Canada
- May 2019 Interim
 - Week of May 20, 2019 – Salt Lake City, UT, USA
- July 2019 Plenary
 - Week of July 15, 2019 – Vienna, Austria
- September 2019 Interim
 - Week of September 9, 2019 – Indianapolis, IN, USA
- November 2019 Plenary
 - Week of November 11, 2019 – Waikoloa Village, HI, USA

Anyone interested in hosting a meeting should contact the Chair or Steve Carlson.

Chair asked if anyone wanted to see the Ad Hoc report. No one responded.

http://www.ieee802.org/3/100G_OPTX/public/Jan19/nowell_optx_01a_0119.pdf

Presentation #1:

“Technical Feasibility of 4*100G 10km”, Yu Xu (Helen) (Huawei)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/you_optx_01a_0119.pdf

- Clarifying questions asked and answered
- Comment regarding lack of dispersion penalty, but ok at this point in the process.

Presentation #2:

“Information Input about 2-km/ 10-km Applications and Technologies for Link Budget Increase”, Shuto Yamamoto (NTT)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/yamamoto_optx_01_0119.pdf

- 10km reach covers 50% of inter-building link req'ts
- Author showed example results from a 50Gbaud APD
- No questions.

Presentation #3:

“The Benefit of Matching SerDes Rate to Optical Lane Rate”, Ali Ghiasi (Ghiasi Quantum LLC)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/ghiasi_optx_01_0119.pdf

- Lane signaling matching the ASIC IO rate will allow replacing the more complex & costly Gearbox chips with simple CDR chips
- Clarifying questions asked and answered.

Presentation #4:

“Broad Market Potential & Economic Feasibility: IEEE 802.3 100 Gb/s per lane optical PHYs Study Group”, Justin Abbott presented by David Lewis (Lumentum)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/lewis_optx_01a_0119.pdf

- Clarifying questions asked and answered
- Discussion regarding 10km broad market potential for 100G signaling.

Chair reminded participants to sign into the IEEE Meeting Attendance Tool and to sign the book.

Presentation #5:

“Proposed Foundational Objectives”, Jeff Maki (Juniper Networks)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/maki_optx_01a_0119.pdf

- Presented foundational objectives including MAC data-rates of 100 & 400Gb/s, duplex operation, preserve Ethernet frame size and format, and BER support of 10^{-12} and 10^{-13} for 100 and 400Gb/s operation, respectively.
- No questions

Presentation #6:

“OTN Support for 100 Gb/s per lane Optical PHYs”, Stephen Trowbridge (Nokia)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/trowbridge_optx_01_0119.pdf

- Author recommends including this in the objectives.

Chair reminded participants to sign into IMAT and to sign the attendance book

Break at 9:55 a.m. Resumed at 10:35am

Presentation #7:

“PHY Objectives and Technical Feasibility ”, Brian Welch (Luxtera)

See: http://www.ieee802.org/3/100G_OPTX/public/Jan19/welch_optx_01c_0119.pdf

- No questions or concerns raised

Presentation #8:

“Proposed CSD Responses”, Dave Lewis (Lumentum)

See http://www.ieee802.org/3/100G_OPTX/public/Jan19/lewis_optx_02a_0119.pdf

- Group discussion regarding CSD Responses
- Add additional bullet to Economic Feasibility slide regarding alignment of electrical and optical interface widths resulting in favorable cost trade-offs.
- No concerns raised on rest of presentation

Presentation #9:

“Major PAR form questions”, Mark Nowell (Cisco)

See http://www.ieee802.org/3/100G_OPTX/public/Jan19/nowell_optx_02a_0119.pdf

- Group discussion regarding PAR form questions.
- No concerns raised on currently proposed language

Presentation #10:

“Editorial Considerations”, Gary Nicholl (Cisco)

See http://www.ieee802.org/3/100G_OPTX/public/Jan19/nicholl_optx_01a_0119.pdf

- Review of Amended Clauses and Annexes

Motion #3:

Move to adopt the following objectives:

- Support a MAC data rate of 100 Gb/s
- Support a MAC data rate of 400 Gb/s
- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Provide appropriate support for OTN
- 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 operation
- 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 operation

Moved by: Jeff Maki (Juniper)

Second by: Stephen Trowbridge (Nokia)

Y: 42 N: 0 A: 1

Motion passes!

Motion #4:

Move to adopt the following objectives:

- Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km
- Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 10 km
- Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 2 km
- Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 10 km

Moved by: Brian Welch (Luxtera)

Second by: David Lewis (Lumentum)

Y: 36 , N: 1 , A: 3

Motion passes!

Motion #5:

Move to:

- Adopt the CSD responses for “Managed Objects”, “Coexistence”, “Broad Market Potential”, “Compatibility”, “Distinct Identity”, “Technical Feasibility” and “Economic Feasibility” as written in lewis_optx_02a_0119.pdf
- Moved by: Dave Lewis (Lumentum)
- Second by: Pavel Zivny (Tektronix)
- Y: 39 , N: 0 , A: 1

Motion passes!

Break for lunch 11:45 am Reconvened at 1:30 pm

Chair indicated that David Law has entered the agreed upon PAR language into the ballot tool. The pdf generated was reviewed by the Study Group ahead of a motion to adopt.

http://www.ieee802.org/3/100G_OPTX/public/Jan19/P802_3cu_PAR_Detail.pdf

Motion #6:

Move to adopt the PAR as shown in P802_3cu_PAR_Detail.pdf

- Moved by: Jeff Maki (Juniper)
- Second by: David Lewis (Lumentum)
- Y: 22 , N: 0, A: 0

Motion passes!

Chair discussed next steps and expected timeline of events/milestones. Noted that some comments had been made about market justification of 10 km objectives. The Study has opportunities at either ad hoc meetings or in the March Plenary to review further justification to support the adopted objectives.

At the March meeting the SG will request approval from the Working group to become a Task Force. Chair indicated that he would be open to reviewing technical contributions for the purpose of consensus building ahead of becoming a TF. Technical adoptions are not possible until the group becomes a TF.

Per the Editorial Considerations presentation, it is anticipated that an early version of the draft might be available for preview in March as well to gather feedback on the structure and new clause.

Motion #7:

Move to adjourn the meeting

- Moved by: David Lewis (Lumentum)
- Second by: Brian Welch (Luxtera)

Passed by voice without opposition

Meeting ended at 1:45 p.m.

Attendees

IEEE 802.3 100 Gb/s per lane optical PHYs Study Group, January 2019				16-Jan-19
Last Name	First Name	Employer	Affiliation	Wednesday
Anslow	Pete	Ciena Corporation	Ciena Corporation	X
Baca	Rich	Microsoft	Microsoft	X
Braun	Ralf-Peter	Deutsche Telekom	Deutsche Telekom	X
Brooks	Paul	Viavi Solutions	Viavi Solutions	X
Chang	Frank	Source Photonics	Source Photonics	X
Chen	C. C. David	Applied Optoelectronics	Applied Optoelectronics	X
Choudhury	G. Mabud	OFS	OFS	X
D'Ambrosia	John	FutureWei, Subsidiary of Huawei	FutureWei, Subsidiary of Huawei	X
DeAndrea	John	Finisar	Finisar	X
Ferretti	Vince	Corning	Corning	X
Ghiasi	Ali	Ghiasi Quantum, Huawei	Ghiasi Quantum, Huawei	X
Gorshe	Steve	microchip	microchip	X
Hashardni	Kobi	Dustphotonics	Dustphotonics	X
Isono	Hideki	Fujitsu Optical Components	Fujitsu Optical Components	X
Issenhuth	Tom	Huawei	Huawei	X
Jackson	Ken	Sumitomo	Sumitomo	X
Johnson	John	Broadcom	Broadcom	X
Konno	Ryo	Senko	Senko	X
LeCheminant	Greg	Keysight Technologies	Keysight Technologies	X
Lewis	Dave	Lumentum	Lumentum	X

Liu	Hai-Feng	Intel	Intel	X
Liu	Karen	Lightwave Logic	Lightwave Logic	X
Maki	Jeffery	Juniper Networks	Juniper Networks	X
Nicholl	Gary	Cisco	Cisco	X
Nowell	Mark	Cisco	Cisco	X
Pham	Phong	US Conec	US Conec	X
Piehler	David	Dell EMC	Dell EMC	X
Pimpinella	Rick	Panduit Corp.	Panduit Corp.	X
Quan	Mingran	Huawei	Huawei	X
Rotolo	Salvatore	ST Microelectronics	ST Microelectronics	X
Sambaraju	Rakesh	Nexans	Nexans	X
Shuai	Jia Long	Huawei	Huawei	X
Stassar	Peter	Huawei	Huawei	X
Swanson	Steve	Corning	Corning	X
Takahara	Tomoo	Fujitsu Laboratories	Fujitsu Laboratories	X
Takefman	Michael	Inphi	Inphi	X
Terada	Masaru	OFS	OFS	X
Tooyserkani	Pirooz	Cisco	Cisco	X
Trowbridge	Steve	Nokia	Nokia	X
Umnov	Alexander	Corning	Corning	X
Wang	Xinyuan	Huawei	Huawei	X
Welch	Brian	Luxtera	Luxtera	X
Withey	James	Fluke	Fluke	X
Xu	Qing	Belden	Belden	X
Yamamoto	Shuto	NTT	NTT	X
Young	Adrian	Leviton	Leviton	X

Young	James	Commscope	Commscope	X
Zivny	Pavel	Tektronix	Tektronix	X