IEEE 802.3 Working Group
March 2019 Plenary Week

David Law

Chair, IEEE 802.3 Working Group

dlaw@hpe.com

Web site: www.ieee802.org/3

Current IEEE 802.3 activities

IEEE 802.3 Task Forces
- IEEE P802.3ca 25 Gb/s, and 50 Gb/s EPON
- IEEE P802.3.2 (IEEE 802.3cf) YANG Data Model
- IEEE P802.3cg 10 Mb/s Single Pair Ethernet
- IEEE P802.3ch Multi-Gig Automotive Ethernet PHY
- IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces
- IEEE P802.3cm 400 Gb/s over Multimode Fiber
- IEEE P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s over greater than 10 km of SMF
- IEEE P802.3cp Bidirectional 10 Gb/s, 25 Gb/s and 50 Gb/s Optical Access PHYs
- IEEE P802.3cq Power over Ethernet over 2 Pairs (Maintenance #13) Task Force
- IEEE P802.3cr Isolation (Maintenance #14) Task Force
- IEEE P802.3cs Increased-reach Ethernet optical subscriber access (Super-PON)
- IEEE P802.3ct 100 Gb/s and 400 Gb/s over DWDM systems

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

IEEE 802.3 Call for Interest
- IEEE 802.3 Automotive Ethernet beyond 10 Gb/s Electrical PHYs call for interest

IEEE 802.3 Industry Connection activity
- IEEE 802.3 New Ethernet Applications Ad Hoc

IEEE 802.3 Maintenance

Meeting plan

Consider new maintenance requests

Review status of outstanding maintenance requests

ISO/IEC JTC1 SC6 adoptions under PSDO agreement

Submission of IEEE 802.3 drafts for review

Submission of IEEE 802.3 standards for adoption

Respond to any comments on adoption of IEEE 802.3 standards

Consider any other maintenance business

Web page

http://www.ieee802.org/3/maint/index.html

IEEE P802.3ca 25 Gb/s and 50 Gb/s Passive Optical Networks Task Force

Description

The scope of this project is to amend IEEE Std 802.3 to add physical layer specifications and management parameters for 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. It also extends the operation of Ethernet Passive Optical Networks (EPON) protocols, such as MultiPoint Control Protocol (MPCP) and Operation Administration and Management (OAM)

Web site: <http://www.ieee802.org/3/ca/index.html>

Status

Last met during the January 2019 interim meeting series

Draft D1.5 sent out for 6th Task Force review

Meeting plan

Consideration of comments received against draft D1.5

Continue work towards technically complete draft for working group ballot

IEEE P802.3.2 (IEEE 802.3cf) YANG Data Model Definitions Task Force

Description

Define YANG data models for IEEE Std 802.3 Ethernet

Web site: <http://ieee802.org/3/cf/index.html>

Status

Last met during the January 2019 interim meeting series

Draft D3.2 sent out for 2nd Standards Association recirculation ballot

No comments received

Draft D3.2 pre-submitted to March 2019 RevCom agenda

Meeting plan

Obtain necessary approvals for submittal to remain on March 2019 RevCom agenda

IEEE P802.3cg 10 Mb/s Single Pair Ethernet Task Force

Description

Specify additions to and appropriate modifications of IEEE Std 802.3 to add 10 Mb/s Physical Layer (PHY) specifications and management parameters for operation, and associated optional provision of power, using a single balanced pair of conductors

Web site: <http://ieee802.org/3/cg/index.html>

Status

Last met during a February 2019 Task Force interim

Draft D2.4 sent out for 4th Working Group recirculation ballot

Meeting plan

Consideration of comments received against draft D2.4

Prepare for request to proceed to Standards Association ballot

IEEE P802.3ch Multi-Gig Automotive Ethernet Task Force

Description

Specify additions to and appropriate modifications of IEEE Std 802.3 to add greater than 1 Gb/s Physical Layer (PHY) specifications and management parameters for media and operating conditions for applications in the automotive environment

Web site: <http://www.ieee802.org/3/ch/index.html>

Status

Last met during the January 2019 interim meeting series

Draft D1.1 sent out for 2nd Task Force review

Meeting plan

Consideration of comments received against draft D1.1

Continue work towards technically complete draft for working group ballot

IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces Task Force

Description

This project is to specify additions to and appropriate modifications of IEEE Std 802.3 to add Physical Layer specifications and Management Parameters for 100 Gb/s, 200 Gb/s, and 400 Gb/s electrical interfaces based on 100 Gb/s signaling

Web site: <http://ieee802.org/3/ck/index.html>

Status

Last met during the January 2019 interim meeting series

Selecting set of baseline proposals to satisfy project objectives

Meeting plan

Continue to work on selection of a set of baseline proposals

IEEE P802.3cm 400 Gb/s over Multimode Fiber Task Force

Description

Define Physical Layer specifications (PHY) and management parameters for the transfer of Ethernet format frames at 400 Gb/s over fewer than 16 pairs of multimode fiber physical media

Web site: <http://ieee802.org/3/cm/index.html>

Status

Last met during the January 2019 interim meeting series

Draft D1.2 sent out for 3rd Task Force review

Draft D1.2 also submitted for Working Group preview

Meeting plan

Consideration of comments received against draft D1.2

Continue work towards technically complete draft for working group ballot

IEEE P802.3cn 50Gb/s, 200Gb/s, and 400Gb/s over greater than 10 km of SMF Task Force

Description

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.

Web site: <http://ieee802.org/3/cn/index.html>

Status

Last met during the January 2019 interim meeting series

Draft D1.0 sent out for 1st Task Force review

Draft D1.0 also submitted for Working Group preview

IEEE P802.3cn PAR modification request approved 8th February 2019

Former 100Gb/s and 400 Gb/s Operation over DWDM Systems portion of the project has been removed from the IEEE P802.3cn PAR and placed in the new IEEE P802.3ct amendment PAR

Meeting plan

Consideration of comments received against draft D1.0

Prepare for request to proceed to Working Group ballot

IEEE P802.3cp Bidirectional 10 Gb/s, 25 Gb/s, and 50 Gb/s Optical Access PHYs Task Force

Description

Define physical layer specifications and management parameters for symmetric bidirectional 10 Gb/s, 25 Gb/s, and 50 Gb/s operation over single strand of single mode fiber of at least 10 km

Web site: <http://ieee802.org/3/cp/index.html>

Status

IEEE P802.3cp PAR approved by IEEE-SA Standards Board

Approval date 5th December 2018

First meeting during the January 2019 interim meeting series

Selecting set of baseline proposals to satisfy project objectives

Meeting plan

Continue to work on selection of a set of baseline proposals

IEEE P802.3cq Power over Ethernet over 2 Pairs (Maintenance #13) Task Force

Description

This project will implement editorial and technical corrections, refinements, and clarifications to Clause 33, Power over Ethernet over 2 pairs, and related portions of the standard. No new features will be added by this project.

Web site: <http://ieee802.org/3/cq/index.html>

Status

Last meeting during the November 2018 interim meeting series

Draft D1.1 sent out for 2nd Task Force review

Draft D1.1 also submitted for Working Group preview

Meeting plan

Consideration of comments received against draft D1.1

Continue work towards technically complete draft for working group ballot

IEEE P802.3cr Isolation (Maintenance #14) Task Force

Description

Replace references to the IEC 60950 series of standards (including IEC 60950-1 "Information technology equipment - Safety - Part 1: General requirements") with appropriate references to the IEC 62368 "Audio/video, information and communication technology equipment" series and make appropriate changes to the standard corresponding to the new references

Web site: <http://ieee802.org/3/cr/index.html>

Status

Last met during the January 2019 interim meeting series

Selecting set of baseline proposals to satisfy project objectives

Meeting plan

Continue to work on selection of a set of baseline proposals

IEEE P802.3cs Increased-reach Ethernet optical subscriber access (Super-PON) Task Force

Description

Define physical layer specifications and management parameters for optical subscriber access supporting point-to-multipoint operations using wavelength division multiplexing over an increased-reach (up to at least 50 km) passive optical network (PON)

Web site: <http://ieee802.org/3/cs/index.html>

Status

IEEE P802.3cs PAR approved by IEEE-SA Standards Board

Approval date 5th December 2018

First meeting during the January 2019 interim meeting series

Selecting set of baseline proposals to satisfy project objectives

Meeting plan

Continue to work on selection of a set of baseline proposals

IEEE P802.3ct 100Gb/s and 400Gb/s over DWDM systems Task Force

Description

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

Web site: <http://ieee802.org/3/ct/index.html>

Status

IEEE P802.3ct PAR approved by IEEE-SA Standards Board

Approval date 8th February 2019

Former 100 Gb/s and 400 Gb/s Operation over DWDM Systems portion of IEEE P802.3cn project has been removed from the IEEE P802.3cn PAR and placed in the IEEE P802.3ct amendment PAR

Meeting plan

Consider baselines selected in IEEE P802.3cn for 100 Gb/s and 400 Gb/s over DWDM Systems

Continue to work on selection of a set of baseline proposals

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

Description

Develop a Project Authorization Request (PAR) and Criteria for Standards Development (CSD) responses for "100 Gb/s per lane optical PHYs for 2 km and 10 km for 100 Gb/s Ethernet and 400 Gb/s Ethernet.

Web site: <http://www.ieee802.org/3/100G_OPTX/index.html>

Status

Met during the January 2019 interim meeting series

Completed draft objectives, CSD and PAR for proposed project

Meeting plan

Progress approval of objectives, CSD and NesCom submittal of PAR for IEEE P802.3cu Standard for Ethernet Amendment: Physical Layers and Management Parameters for 100 Gb/s and 400 Gb/s Operation over Single-Mode Fiber

IEEE 802.3 Automotive Ethernet
beyond 10 Gb/s Electrical PHYs Call for Interest

Ethernet data rates in automobiles are being driven by the push to fully-autonomous operation. 100BASE-T1 and 1000BASE-T1 are already in vehicles, and 2.5 Gb/s, 5 Gb/s and 10 Gb/s links (IEEE P802.3ch) are being designed in for model year 2023. With the move from domain-based architecture to zonal-based architecture, 10G+ links (typically redundant) between the electronic control units (ECU) will be required. Latest generation sensors (cameras, lidar, etc.) may transmit uncompressed data at rates greater than 10 Gb/s. "Black-box" data recorders also require 10G+ to handle the greater than 4 TB of data produced per day in autonomous cars. Test vehicles are under development using standard 25 Gb/s and 50Gb/s Ethernet, and will require an automotive Ethernet version for production. In order to meet the design cycles of the auto industry, the time to start this effort is now.

This request for agenda time for this CFI has been received from Steve Carlson <scarlson@hspdesign.com>

IEEE 802.3 New Ethernet Applications (NEA) Ad Hoc

Description

The goal of this activity is to assess requirements for new Ethernet-based applications, identify gaps not currently addressed by IEEE 802.3 standards, and facilitate building industry consensus towards proposals to initiate new standards development efforts

Web site: <http://ieee802.org/3/ad_hoc/ngrates/index.html>

Status

Last met during the January 2019 interim meeting series

Meeting plan

Two sessions on Tuesday evening

Automotive Optical Multigig

Next steps in single-pair ecosystem - consideration of long reach with higher rate

IEEE 802.3 Officers

IEEE 802.3 Chair: David Law <dlaw@hpe.com>

IEEE 802.3 Vice Chair: Adam Healey <adam.healey@broadcom.com>

IEEE 802.3 Secretary: Pete Anslow <panslow@ciena.com>

IEEE 802.3 Executive Secretary: Steve Carlson <scarlson@ieee.org>

IEEE 802.3 Treasurer: Valerie Maguire <valerie_maguire@siemon.com>

IEEE 802.3 Task Force chairs

IEEE P802.3ca 25 Gb/s, and 50 Gb/s EPON: Curtis Knittle <c.knittle@cablelabs.com>

IEEE P802.3.2 (IEEE 802.3cf) YANG Data Model: Yan Zhuang <zhuangyan.zhuang@huawei.com>

IEEE P802.3cg 10 Mb/s Single Pair Ethernet: George Zimmerman <george@cmephyconsulting.com>

IEEE P802.3ch Multi-Gig Automotive Ethernet PHY: Steve Carlson <scarlson@ieee.org>

IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces: Elizabeth Kochuparambil <edonnay@cisco.com>

IEEE P802.3cm 400 Gb/s over Multimode Fiber: Robert Lingle <rlingle@ofsoptics.com>

IEEE P802.3cn 50Gb/s, 200Gb/s, and 400Gb/s over greater than 10 km of SMF: John D'Ambrosia <jdambrosia@ieee.org>

IEEE P802.3cp Bidirectional 10 Gb/s, 25 Gb/s and 50 Gb/s Optical Access PHYs: Frank Effenberger <frank.effenberger@huawei.com>

IEEE P802.3cq Power over Ethernet over 2 Pairs (Maintenance #13) Task Force: Chad Jones <cmjones@cisco.com>

IEEE P802.3cr Isolation (Maintenance #14) Task Force: Jon Lewis <jon_lewis@dell.com>
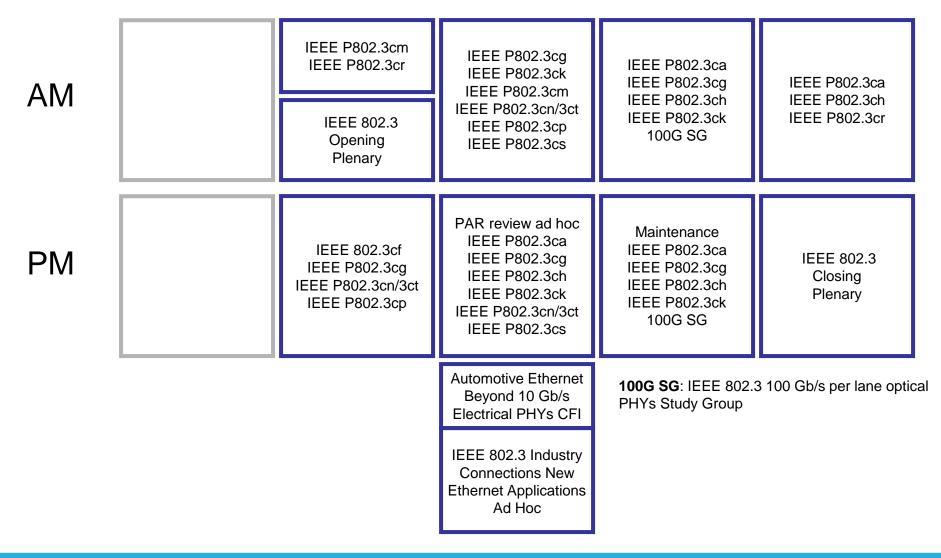
IEEE P802.3cs Increased-reach Ethernet optical subscriber access (Super-PON): Claudio DeSanti <cdssdc@google.com>

IEEE P802.3ct 100Gb/s and 400Gb/s over DWDM systems (acting): John D'Ambrosia <jdambrosia@ieee.org>

IEEE 802.3 Study Group chairs

IEEE 802.3 100 Gb/s per lane optical PHYs: Mark Nowell <mnowell@cisco.com>

Preliminary IEEE 802.3 Meeting Plan
Always check on-line schedule for latest updates

AM		IEEE P802.3cm IEEE P802.3cr	IEEE P802.3cg IEEE P802.3ck IEEE P802.3cm IEEE P802.3cn/3ct IEEE P802.3cp IEEE P802.3cs	IEEE P802.3ca IEEE P802.3cg IEEE P802.3ch IEEE P802.3ck 100G SG	IEEE P802.3ca IEEE P802.3ch IEEE P802.3cr
		IEEE 802.3 Opening Plenary			
PM		IEEE 802.3cf IEEE P802.3cg IEEE P802.3cn/3ct IEEE P802.3cp	PAR review ad hoc IEEE P802.3ca IEEE P802.3cg IEEE P802.3ch IEEE P802.3ck IEEE P802.3cn/3ct IEEE P802.3cs	Maintenance IEEE P802.3ca IEEE P802.3cg IEEE P802.3ch IEEE P802.3ck 100G SG	IEEE 802.3 Closing Plenary

Automotive Ethernet
Beyond 10 Gb/s
Electrical PHYs CFI

IEEE 802.3 Industry
Connections New
Ethernet Applications
Ad Hoc

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

State of the standard
IEEE Std 802.3-2018 Revision

IEEE Std 802.3-2018 Standard for Ethernet 8 Books (Sections) 14-Jun-18/31-Aug-18*							
Section 1 Clause 1 to 20 Annex A to H, 4A	Section 2 Clause 21 to 33 Annex 22A to 33E	Section 3 Clause 34 to 43 Annex 36A to 43C	Section 4 Clause 44 to 55 Annex 44A to 55B	Section 5 Clause 56 to 77 Annex 57A to 76A	Section 6 Clause 78 to 95 Annex 83A to 93C	Section 7 Clause 96 to 115 Annex 97A to 115A	Section 8 Clause 116 to 126 Annex 119A to 120E
CSMA/CD Overview MAC PLS/AUI 10BASE5 MAU 10BASE2 MAU 10BROAD36 MAU 10BASE-T MAU 10BASE-F MAUs 10 Mb/s Repeater 10 Mb/s Topology 10BASE-Te 1BASE5 DTE & MAU Mgmt Repeater Mgmt	100 Mb/s Overview MII 100BASE-T2 100BASE-T4 100BASE-TX 100BASE-FX 100Mb/s Repeater 100Mb/s Topology MAC Control Auto-Negotiation (AN) Management DTE Power	1000 Mb/s Overview GMII 1000BASE-X AN 1000BASE-SX 1000BASE-LX 1000BASE-CX 1000BASE-T 1000 Mb/s Repeater 1000 Mb/s Topology	10 Gb/s Overview MDC/MDIO XGMII XAUI XSBI 10GBASE-SR 10GBASE-LR 10GBASE-ER 10GBASE-SW 10GBASE-LW 10GBASE-EW 10GBASE-LX4 10GBASE-CX4 10GBASE-T	Subscriber Access Networks (SA) Overview OAM MPMC 100BASE-LX10 100BASE-BX10 1000BASE-LX10 1000BASE-BX10 1000BASE-PX10 1000BASE-PX20 10GBASE-PR 10/1GBASE-PRX 10PASS-TS 2BASE-TL SA Topology 10GBASE-LRM Backplane Overview 1000BASE-KX 10GBASE-KX4 10GBASE-KR Backplane AN BASE-R FEC	EEE LLDP TLVs Time Sync RS-FEC 40/100G Overview 40GBASE-KR4 40GBASE-CR4 40GBASE-SR4 40GBASE-FR 40GBASE-LR4 40GBASE-ER4 100GBASE-CR10 100GBASE-SR10 100GBASE-KR4 100GBASE-KP4 100GBASE-CR4 100GBASE-SR4 100GBASE-LR4 100GBASE-ER4	100BASE-T1 1000BASE-T1 Single-Pair AN MAC Merge 10GPASS-XR EPoC PHY Link MPMC for EPoC PoDL 25Gb/s Overview 25GBASE-CR/CR-S 25GBASE-KR/KR-S 25GBASE-SR 25GBASE-LR 25GBASE-ER 25GBASE-T 40GBASE-T 1000BASE-RHA/B/C	200 Gb/s and 400 Gb/s Overview 200GBASE-DR4 200GBASE-FR4 200GBASE-LR4 400GBASE-SR16 400GBASE-DR4 400GBASE-FR8 400GBASE-LR8 2.5 Gb/s and 5 Gb/s Overview 2.5GBASE-T 5GBASE-T

State of the standard
Current amendments and other IEEE 802.3 standards

IEEE Std 802.3-2018 amendments

Other IEEE 802.3 standards

IEEE Std 802.3cb-2018

Physical Layer Specifications and Management Parameters for 2.5 Gb/s and 5 Gb/s Operation over Backplane

27-Sep-18/04-Jan-19*

IEEE Std 802.3bt-2018

Physical Layer and Management Parameters for Power over Ethernet over 4 pairs

27-Sep-18/31-Jan-18*

IEEE Std 802.3cd-2018

Media Access Control Parameters for 50 Gb/s and Physical Layers and Management Parameters for 50 Gb/s, 100 Gb/s, and 200 Gb/s Operation

Approved 5-Dec-18/15-Feb-19*

IEEE Std 802.3.1-2013

IEEE Standard for Management Information Base (MIB) Definitions for Ethernet

14-Jun-13/02-Aug-13*

State of the standard
IEEE 802.3 current status overview

Call for interest

Study Group

Task Force

IEEE 802.3 Automotive Ethernet beyond 10 Gb/s Electrical PHYs

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

IEEE P802.3cr Isolation (Maintenance #14) **Baseline selection**

IEEE P802.3cs Increased-reach Ethernet optical subscriber access (Super-PON) **Baseline selection**

IEEE P802.3ct 100 Gb/s and 400 Gb/s over DWDM systems Task Force **Baseline selection**

IEEE P802.3ck 100 Gb/s, 200 Gb/s, and 400 Gb/s Electrical Interfaces **Baseline selection**

IEEE P802.3cp Bidirectional 10 Gb/s, 25 Gb/s, and 50 Gb/s Optical Access PHYs **Baseline selection**

IEEE P802.3ch Multi-Gig Automotive Ethernet **D1.1 Task Force review**

IEEE P802.3cm 400 Gb/s over Multimode Fiber **D1.2 Task Force review**

IEEE P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s over greater than 10 km of SMF **D1.0 Task Force review**

IEEE P802.3cq Power over Ethernet over 2 Pairs (Maintenance #13) **D1.1 Task Force review**

IEEE P802.3ca 25 and 50 Gb/s Passive Optical Networks **D1.5 Task Force review**

IEEE P802.3cg 10 Mb/s Single Pair Ethernet **D2.4 Working Group ballot**

IEEE P802.3.2 (IEEE 802.3cf) YANG Data Model Definitions **D3.2 Standards Association ballot**

Progress to standard →