IEEE 802.3 Working Group
November 2016 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 P802.3bs 200 Gb/s and 400 Gb/s Ethernet
- IEEE P802.3bt DTE Power via MDI over 4-Pair
- IEEE P802.3bu 1-Pair Power over Data Lines (PoDL)
- IEEE P802.3bv Gigabit Ethernet Over Plastic Optical Fiber
- IEEE P802.3ca 25 Gb/s, 50 Gb/s, and 100 Gb/s Ethernet Passive Optical Networks
- IEEE P802.3cb 2.5 Gb/s and 5 Gb/s Backplane
- IEEE P802.3cc 25 Gb/s Ethernet over Single-Mode Fiber
- IEEE P802.3cd 50 Gb/s, 100 Gb/s, and 200 Gb/s Ethernet
- IEEE P802.3-2015/Cor 1 (IEEE 802.3ce) Multilane timestamping
- IEEE P802.3.2 (IEEE 802.3cf) YANG data models

IEEE 802.3 Study Groups
- IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet

IEEE 802.3 Industry Connection activity
- IEEE 802.3 Next Generation Enterprise/Campus/Data Center Ethernet Ad Hoc

IEEE 802.3 Call for Interest
- IEEE 802.3 Multi-Gig Automotive Ethernet PHY
IEEE 802.3 Maintenance

Meeting plan

Consider new maintenance requests
Reviewing status of outstanding maintenance requests
IEEE P802.3-2015/Cor 1 (IEEE 802.3ce) Multilane timestamping
  Consideration of comments received against draft D1.1
  Prepare for request to proceed to Sponsor ballot
ISO/IEC JTC1 SC6 adoptions under PSDO agreement
  Submission of IEEE 802.3 drafts for review
  Submission of IEEE 802.3 standards for adoption
  Response to comments on adoption of IEEE Std 802.3bw-2015

Consider any other maintenance business

Web page

IEEE P802.3bs 200 Gb/s and 400 Gb/s Ethernet Task Force

Description

Define Ethernet Media Access Control (MAC) parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 200 Gb/s over single-mode fiber and 400 Gb/s over optical physical media


Status

Last met during the September 2016 interim meeting series
Draft D2.1 sent out for 1st Working Group recirculation ballot
Sponsor ballot group formation underway

Meeting plan

Consideration of comments received against draft D2.1
Prepare request for conditional approval to proceed to Sponsor ballot
IEEE P802.3bt DTE Power via MDI over 4-Pair Task Force

Description
Augment the capabilities of the IEEE Std 802.3 standard with 4-pair power and associated power management information. The project will augment the methodology for the provision of power via balanced cabling to connected Data Terminal Equipment with 802.3 interfaces. Optional augmented power limit will be made available for certain structured cabling systems. Improvements introduced for 4-pair systems, excluding raising the power limit, are optionally enabled for 2-pair systems. Compatibility with existing equipment will be maintained.


Status
Last met during the September 2016 interim meeting series
Draft D2.1 sent out for 1st Working Group recirculation ballot

Meeting plan
Consideration of comments received against draft D2.1
IEEE P802.3bu 1-Pair Power over Data Lines (PoDL) Task Force

Description

Single twisted pair Ethernet links are in development (e.g. IEEE P802.3bp) and some applications (e.g., automotive sensors, industrial devices) require power delivery over the link. A new standard is required to provide power over single twisted pair links where IEEE Std 802.3 Clause 33 Data Terminal Equipment (DTE) Power via Media Dependent Interface (MDI) cannot be used.


Status

Last met during a October 2016 Task Force interim
IEEE P802.3bu draft D3.3 sent out for 3rd Sponsor recirculation ballot

  Ballot passed with 100% approval and no comments

Meeting plan

Prepare for request to proceed to RevCom submittal
IEEE P802.3bv Gigabit Ethernet Over Plastic Optical Fiber Task Force

Description
Specify an amendment to the IEEE 802.3 Ethernet standard to add physical layer (PHY) specifications for operation at 1000 Mb/s using standardized plastic optical fiber as the point-to-point data transmission medium.


Status
Last met during the September 2016 interim meeting series
Draft D3.1 sent out for 1st Sponsor recirculation ballot

Meeting plan
Consideration of comments received against draft D3.1
Prepare request for conditional approval of RevCom submittal
IEEE P802.3ca 25 Gb/s, 50 Gb/s, and 100 Gb/s Passive Optical Networks Task Force

Description

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


Status

Last met during the September 2016 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 P802.3cb 2.5 Gb/s and 5 Gb/s Operation over Backplane Task Force

Description

Amend IEEE Std 802.3 to add 2.5 Gb/s and 5 Gb/s Physical Layer (PHY) specifications and management parameters for operation over channels such as backplanes and twinaxial copper cables consistent with current storage interconnect applications within a single rack.


Status

Draft D2.0 sent out for initial Working Group ballot
Last met during the September 2016 interim meeting series
Consideration of comments received against draft D2.0

Meeting plan

Continue consideration of comments received against draft D2.0
IEEE P802.3cc 25 Gb/s Ethernet over Single-Mode Fiber Task Force

Description

Provide an amendment to the IEEE 802.3 Ethernet standard to add point-to-point single-mode fiber Physical Medium Dependent (PMD) options for serial 25 Gb/s operation at reaches greater than 100 m


Status

Last met during a October 2016 Task Force interim
Draft D1.2 sent out for Task Force review
Draft D1.2 also to be submitted for Working Group preview

Meeting plan

Consideration of comments received against draft D1.2
Prepare for request to proceed to Working Group ballot
IEEE P802.3cd 50 Gb/s, 100 Gb/s, and 200 Gb/s Ethernet Task Force

Description
Define Ethernet Media Access Control (MAC) parameters, Physical Layer specifications, and management parameters for the transfer of Ethernet format frames at 50 Gb/s over copper and optical media. Define additional Physical Layer specifications and management parameters at 100 Gb/s over copper and optical media. Define additional Physical Layer specifications and management parameters at 200 Gb/s over copper and multimode fiber physical media.


Status
Last met during the September 2016 interim meeting series
Draft D1.0 sent out for 1st Task Force review

Meeting plan
Consideration of comments received against draft D1.0
Continue 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.

Status

IEEE P802.3.2 PAR approved by IEEE-SA Standards Board
Approved date 22\textsuperscript{nd} September 2016

Meeting plan

Start selection of baseline proposals to satisfy project objectives
IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group

Description

Develop a Project Authorization Request (PAR) and Criteria for Standards Development (CSD) responses for 10Mb/s Single Twisted Pair Ethernet including optional power.


Status

First meeting during the September 2016 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 802.3cg Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for 10 Mb/s Operation over Single Balanced Twisted-pair Cabling and Associated Power Delivery
IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group (con’t)

Scope of proposed project
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 on single balanced twisted-pair copper cabling. Define methodology for the optional provision of power to connected Data Terminal Equipment (DTE) for use with IEEE 802.3 10 Mb/s single-pair interfaces

Draft PAR
https://mentor.ieee.org/802-ec/dcn/16/ec-16-0152-00-00EC-ieee-p802-3cg-draft-par.pdf

Draft CSD
https://mentor.ieee.org/802-ec/dcn/16/ec-16-0153-00-00EC-ieee-p802-3cg-draft-csd.pdf

Draft Objectives
IEEE 802.3 Next Generation Enterprise/Campus/Data Center Ethernet Ad Hoc

Description

The goal of this activity is to assess emerging requirements for enterprise, campus, and data center networks, identify gaps not currently addressed by IEEE 802.3 standards, and facilitate building industry consensus towards proposals to initiate new standards development efforts.


Status

Fifth meeting during the September 2016 interim meeting series

Meeting plan

Meeting 1: Extended reach 400 Gb/s optical PMDs
Provide annual status update to IEEE 802 Executive Commitee
Progress proposed Industry Connections activity modification
IEEE 802.3 Next Generation Enterprise/Campus/Data Center Ethernet Ad Hoc (con’t)

Draft Industry Connections activity modification
Draft modified ICAID: https://mentor.ieee.org/802-ec/dcn/16/ec-16-0156-00-00EC-ieee-802-3-ng-ecdc-industry-connections-activity-modified-icaid.pdf

Explanatory technical background material
To date the IEEE 802.3 NG-ECDC industry connections activity has provided support for multiple efforts: (a) 50GbE, (b) “X” by 50 Gb/s PMDs, (c) 25GbE Singlemode fibre (SMF) Optics, (d) Ethernet YANG Models, (e) Single Pair Extended Reach, (f) Next Generation Automotive, and (g) Extended Reach Optics (50GbE/200GbE/400GbE). To date efforts (a) through (e) resulted in successful IEEE 802.3 Calls For Interest (CFI) and the formation of IEEE 802.3 Study Groups with (a) through (c) now having approved PARs and operating as IEEE 802.3 Task Forces. There will be a IEEE 802.3 CFI for effort (f) at the November 2016 Plenary, and effort (g) continues to meet and build industry connections activity
IEEE 802.3 Next Generation Enterprise/Campus/Data Center Ethernet Ad Hoc (con’t)

Explanatory technical background material (continued)

The success of the IEEE 802.3 NG-ECDC industry connections activity has been noted by IEEE 802.3 participants, who have justified its use for some efforts through non-primary applications that can be envisioned by the same solutions for Next Generation Data Center, Enterprise, and Carrier applications. However, given Ethernet's growing diversity in application areas outside of the noted target area of the Industry Connections activity, there has been support to broaden the scope of the industry connections activity to all 'New Ethernet Applications'
IEEE 802.3 Multi-Gig Automotive Ethernet PHY call for interest

Advanced Electronic Architectures for autos are being designed using 100BASE-T1 and 1000BASE-T1, and PoDL to support Advanced Driver Assist Systems (ADAS) with fully-autonomous operation as the end goal. This level of performance requires supercomputer-levels of processing power with corresponding high-performance sensor networks. 4K and 8K uncompressed video streams for machine vision and infotainment, radar, LIDAR, and ultrasonic sensors must all be "fused" into a coherent picture of the car's external environment. In-vehicle networks supporting operation at multi-gigabit speed will be required to carry this traffic. Due to the long design and qualification cycles, work needs to start now to insure that these solutions will be available when needed.

This request for agenda time for this CFI has been received from Steve Carlson <scarlson@hspdesign.com>
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 P802.3bs 200 Gb/s and 400 Gb/s Ethernet: John D'Ambrosia <jdambrosia@ieee.org>
IEEE P802.3bt DTE Power via MDI over 4-Pair: Chad Jones <cmjones@cisco.com>
IEEE P802.3bu 1-Pair Power over Data Lines (PoDL): Dan Dove <dan_dove@ieee.org>
IEEE P802.3bv Gigabit Ethernet Over Plastic Optical Fiber: Bob Grow <bob.grow@ieee.org>
IEEE P802.3ca 25 Gb/s, 50 Gb/s, and 100 Gb/s EPON: Curtis Knittle <c.knittle@cablelabs.com>
IEEE P802.3cb 2.5 Gb/s and 5 Gb/s Backplane Cables: Dan Smith <daniel.f.smith@seagate.com>
IEEE P802.3cc 25 Gb/s Ethernet over Single-Mode Fiber: David Lewis <David.Lewis@lumentum.com>
IEEE P802.3cd 50 Gb/s, 100 Gb/s, and 200 Gb/s Ethernet: Mark Nowell <mnowell@cisco.com>
IEEE 802.3.2 (IEEE 802.3cf) YANG Data Model: Yan Zhuang <zhuangyan.zhuang@huawei.com>

IEEE 802.3 Study Group chairs
IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet: George Zimmerman <george@cmephyconsulting.com>
### Preliminary IEEE 802.3 Meeting Plan

<table>
<thead>
<tr>
<th>Sun AM</th>
<th>Mon AM</th>
<th>Tue AM</th>
<th>Wed AM</th>
<th>Thu AM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3bs</td>
<td>IEEE P802.3bv</td>
<td>IEEE P802.3bv</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3bt</td>
<td>IEEE P802.3bt</td>
<td>IEEE P802.3bt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3ca</td>
<td>IEEE P802.3ca</td>
<td>IEEE P802.3ca</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3cb</td>
<td>IEEE P802.3cb</td>
<td>IEEE P802.3cb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3cd</td>
<td>IEEE P802.3cd</td>
<td>IEEE P802.3cd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3.2</td>
<td>IEEE P802.3.2</td>
<td>IEEE P802.3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10SPE SG</td>
<td>10SPE SG</td>
<td>10SPE SG</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sun PM</th>
<th>Mon PM</th>
<th>Tue PM</th>
<th>Wed PM</th>
<th>Thu PM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3bs</td>
<td>IEEE P802.3bv</td>
<td>IEEE P802.3bv</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3bt</td>
<td>IEEE P802.3bt</td>
<td>IEEE P802.3bt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3ca</td>
<td>IEEE P802.3ca</td>
<td>IEEE P802.3ca</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3cb</td>
<td>IEEE P802.3cb</td>
<td>IEEE P802.3cb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IEEE P802.3cd</td>
<td>IEEE P802.3cd</td>
<td>IEEE P802.3cd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10SPE SG</td>
<td>10SPE SG</td>
<td>10SPE SG</td>
</tr>
</tbody>
</table>

**AM:** IEEE 802.3 Opening Plenary

**PM:**
- IEEE 802.3bs
- IEEE 802.3bt
- IEEE 802.3ca
- IEEE 802.3cb
- IEEE P802.3.2
- ECDC 400G ER
- 10SPE SG

**PM (Multi-Gig Automotive Ethernet PHY CFI)**

**10SPE SG:** IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group

**ECDC 400G ER:** IEEE 802.3 Industry Connections Next Generation Enterprise / Campus / Data Center Ethernet - Extended Reach 400G PMD PHYs