# IEEE 802.3 Working Group November 2015 Plenary Week

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Web site: www.ieee802.org/3

# Current IEEE 802.3 activities

IEEE 802.3 Task Forces

> IEEE P802.3bn EPON Protocol over Coax (EPoC)
>
> IEEE P802.3bp 1000BASE-T1
>
> IEEE P802.3bq 25G/40GBASE-T
>
> IEEE P802.3br Interspersing Express Traffic
>
> IEEE P802.3bs 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 P802.3by 25 Gb/s Ethernet
>
> IEEE P802.3bz 2.5G/5GBASE-T

IEEE 802.3 Study Groups

> IEEE 802.3 Next Generation Ethernet Passive Optical Network (NG-EPON)
>
> IEEE 802.3 2.5 Gb/s and 5 Gb/s Backplane and Short Reach Copper

IEEE 802.3 Call for Interest

> Single lane 50 Gb/s, next generation 100 Gb/s and 200 Gb/s Ethernet
>
> 25Gb/s single mode fibre

IEEE 802.3 proposed Industry Connection activity

> Next Generation Enterprise/Campus/Data Center Ethernet draft ICAID

# IEEE 802.3 Maintenance

Meeting plan

    Consider new maintenance requests

    Reviewing status of outstanding maintenance requests

    Consider any other maintenance business

Web page

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

# IEEE P802.3bn EPON Protocol over Coax (EPoC) Task Force

## Description

Provide an amendment to the IEEE 802.3 Ethernet standard to add physical layer specifications and management parameters for symmetric and/or asymmetric operation of up to 10 Gb/s on point-to-multipoint Radio Frequency (RF) distribution plants comprising either amplified or passive coaxial media. 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/bn/index.html>

## Status

Last met during the September 2015 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 P802.3bp
# 1000BASE-T1 Task Force

## Description

Specify additions to and appropriate modifications of IEEE Std 802.3 to add a point-to-point 1 Gb/s Physical Layer (PHY) specifications and management parameters for operation over a single twisted pair copper cables.

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

## Status

Last met during the September 2015 interim meeting series

Draft D2.1 sent out for 1st Working Group recirculation ballot

## Meeting plan

Consideration of comments received against draft D2.1

Prepare for request to proceed to Sponsor ballot

# IEEE P802.3bq
# 25G/40GBASE-T Task Force

## Description

Specify Physical Layers (PHYs) for operation at 25 Gb/s and 40 Gb/s on balanced twisted-pair copper cabling, using existing Media Access Control, and with extensions to the appropriate physical layer management parameters.

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

## Status

Last met during the September 2015 interim meeting series

Draft D2.3 sent out for 3rd Working Group recirculation ballot

## Meeting plan

Consideration of comments received against draft D2.3

Prepare for request to proceed to Sponsor ballot

# IEEE P802.3br
# Interspersing Express Traffic Task Force

Description

Specify additions to and appropriate modifications of IEEE Std 802.3 to add support for interspersing express traffic over a single physical link.

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

Status

Last met during the September 2015 interim meeting series

Draft D2.3 sent out for second Working Group 1st recirculation ballot

Meeting plan

Consideration of comments received against draft D2.3

Prepare for request to proceed to Sponsor ballot

# IEEE P802.3bs
# 400Gb/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 400 Gb/s

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

## Status

Last met during the September 2015 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 P802.3bt
# 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. Compatibility with existing equipment will be maintained.

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

Status

Last met during an October 2015 Task Force interim

Draft D1.4 sent out for 7th Task Force review

Meeting plan

Consideration of comments received against draft D1.4

Continue towards technically complete draft for working group ballot

# 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.

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

Status

Last met during an October 2015 Task Force interim

Draft D1.4 sent out for 6th Task Force review

Draft D1.4 also to be submitted for Working Group preview

Meeting plan

Consideration of comments received against draft D1.4

Prepare for request to proceed to Working Group ballot

# 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.

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

## Status

Last met during the September 2015 interim meeting series

Draft D1.3 sent out for 4th Task Force review

## Meeting plan

Consideration of comments received against draft D1.3

Continue towards technically complete draft for working group ballot

# IEEE P802.3by
# 25 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 25 Gb/s for server to switch interconnections.

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

## Status

Last met during an October 2015 Task Force interim

Draft D2.2 sent out for 2nd Working Group recirculation ballot

## Meeting plan

Consideration of comments received against draft D2.2

Prepare for request to proceed to Sponsor ballot

# IEEE P802.3bz
# 2.5G/5GBASE-T Task Force

## Description

Define Ethernet Media Access Control (MAC) parameters, physical layer specifications, and management objects for the transfer of Ethernet format frames at 2.5 Gb/s and 5 Gb/s over balanced twisted pair transmission media used in structured cabling.

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

## Status

Last met during the September 2015 interim meeting series

Draft D1.1 sent out for 3rd Task Force review

## Meeting plan

Consideration of comments received against draft D1.1

Continue towards technically complete draft for working group ballot

# IEEE 802.3 Next Generation Ethernet Passive Optical Network Study Group

## Description

Develop Project Authorization Request (PAR), Criteria for Standards Development (CSD) and Objectives for Next Generation EPON

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

## Status

First meeting during the September 2015 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 P802.3ca Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for 25 Gb/s and 100 Gb/s Passive Optical Networks

# IEEE 802.3 Next Generation Ethernet Passive Optical Network Study Group (con't)

Scope of proposed project

The scope of this project is to amend IEEE Std 802.3 to add physical layer specifications and management parameters for operation at 25 Gb/s and 100 Gb/s MAC data rate on point-to-multipoint passive optical networks.

Draft PAR

http://ieee802.org/3/NGEPONSG/documents/P802_3ca_PAR_290915.pdf

Draft CSD

http://ieee802.org/3/NGEPONSG/documents/100gepon_CSD.pdf

Draft Objectives

http://ieee802.org/3/NGEPONSG/documents/100gepon_objectives.pdf

# IEEE 802.3 2.5 Gb/s and 5 Gb/s Backplane and Short Reach Copper Study Group

## Description

Develop PAR and CSD for 2.5 Gb/s and 5 Gb/s Ethernet over Backplane and Copper Cable

Web site: <http://ieee802.org/3/CU4HDDSG/index.html>

## Status

First meeting during the September 2015 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 P802.3cb Standard for Ethernet Amendment: Physical Layer Specifications and Management Parameters for 2.5 Gb/s and 5 Gb/s Operation over Backplane and Copper Cables

# IEEE 802.3 2.5 Gb/s and 5 Gb/s Backplane and Short Reach Copper Study Group (con't)

Scope of proposed project

> The scope of this project is to specify additions to and appropriate modifications of 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.

Draft PAR

> http://ieee802.org/3/CU4HDDSG/P802_3cb_PAR_280915.pdf

Draft CSD

> http://ieee802.org/3/CU4HDDSG/CU4HDD%20SG-CSD-v1-1.pdf

Draft Objectives

> http://ieee802.org/3/CU4HDDSG/CU4HDD%20SG%20Objectives-v1-1.pdf

# Proposed IEEE 802.3 Next Generation Enterprise/Campus/Data Center Ethernet Industry Connections Activity

The growing diversity of applications within enterprise, campus, and data center networks requires new Ethernet standards to be developed at a rapid pace. This is evident by recent standardization activities related to 2.5Gb/s, 5Gb/s and 25 Gb/s Ethernet, as well as subsequent conversations related on introducing new Ethernet solutions at these rates. Furthermore, with recent decisions in the IEEE P802.3bs 400GbE Task Force on 50Gb/s and 100Gb/s electrical and optical signaling, there is growing discussion of how to leverage these new signaling technologies for new Ethernet projects.

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.

# IEEE 802.3 Single lane 50 Gb/s, 100 Gb/s and 200 Gb/s Ethernet Call for Interest

Ethernet has a successful track record of reusing technology in order to enable new cost-optimized solutions for broad market adoption. Recently, the IEEE 802.3bs 400 Gb/s Ethernet project has begun development of new higher rate optical and electrical signaling technologies beyond 25 Gb/s. Hyper-scale data centers, being aggressive adopters of cost effective solutions for both switch and server applications, are looking to enable the next generation of higher speed solutions, such as new 50 Gb/s Ethernet, a new 200 Gb/s Ethernet, and a denser 100 Gb/s Ethernet solutions.

Two areas of study exist. One to study single lane 50 Gb/s Ethernet applications, and one to study 100 Gb/s and 200 Gb/s Ethernet applications. This Call For Interest is a request for the formation of these two study groups to jointly study the market requirements to address these server and switch applications and to provide the appropriate Ethernet specifications. It is expected that the study groups will work together to generate the appropriate project documentation to address market needs.

This request for agenda time for this CFI has been received from Mark  Nowell <mnowell@cisco.com>

# IEEE 802.3 25Gb/s single mode fibre Call for Interest

The IEEE 802.3by Task Force is developing standards that utilize 25 Gb/s technology for cost optimized serial solutions. As adoption of ASIC IO becomes more common across networking silicon, the opportunity to leverage low-cost serial technologies extends beyond the large scale data centers and into enterprise applications. A gap exists in the family of 25 Gb/s Ethernet PMDs which would be needed to fully address the enterprise application and the inclusion of single-mode fiber PMD(s) are needed. There is growing interest from enterprise and cloud services providers in extending 25 GE serial technology to reaches greater than 100 m for applications such as metro network access and building-to-building interconnects.

This Call For Interest is a request for the formation of a study group to 1) explore the development of new 25 Gb/s Ethernet single mode fiber PMDs, and 2) evaluate the market requirements supporting the longer-reach 25 Gb/s Ethernet interface.

This request for agenda time for this CFI has been received from David Lewis <David.Lewis@lumentum.com>

# IEEE 802.3 Officers

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

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

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IEEE P802.3bp 1000BASE-T1: Steve Carlson <scarlson@hspdesign.com>

IEEE P802.3bq 25G/40GBASE-T: Dave Chalupsky <david.chalupsky@intel.com>

IEEE P802.3br Interspersing Express Traffic: Ludwig Winkel <ludwig.winkel@siemens.com>

IEEE P802.3bs 400 Gb/s Ethernet: John D'Ambrosia <john_dambrosia@dell.com>

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): Dave Dwelley <ddwelley@linear.com>

IEEE P802.3bv Gigabit Ethernet Over Plastic Optical Fiber: Bob Grow <bob.grow@ieee.org>

IEEE P802.3by 25 Gb/s Ethernet: Mark Nowell <mnowell@cisco.com>

IEEE P802.3bz 2.5G/5GBASE-T: Dave Chalupsky <david.chalupsky@intel.com>

**IEEE 802.3 Study Group chairs**

IEEE 802.3 Next Generation Ethernet Passive Optical Network: Curtis Knittle <c.knittle@cablelabs.com>

IEEE 802.3 2.5 Gb/s and 5 Gb/s Backplane and Short Reach Copper: Yong Kim <ybkim@broadcom.com>

# Preliminary IEEE 802.3 Meeting Plan

| | Sun | Mon | Tue | Wed | Thu |
|---|---|---|---|---|---|
| **AM** | | IEEE 802.3 Opening Plenary | IEEE P802.3bn<br>IEEE P802.3bp<br>IEEE P802.3bq/bz<br>IEEE P802.3bs<br>IEEE P802.3bt<br>IEEE P802.3bv<br>IEEE 802.3 CU4HDD | IEEE P802.3bq/bz<br>IEEE P802.3br<br>IEEE P802.3bs<br>IEEE P802.3bt<br>IEEE P802.3bv<br>IEEE P802.3by<br>IEEE 802.3 CU4HDD<br>IEEE 802.3 NG-EPON | IEEE P802.3br<br>IEEE P802.3bs<br>IEEE P802.3bt<br>IEEE P802.3bv<br>IEEE P802.3by<br>IEEE 802.3 NG-EPON |
| **PM** | | IEEE P802.3bn<br>IEEE P802.3bp<br>IEEE P802.3bq/bz<br>IEEE P802.3bs<br>IEEE P802.3bu | IEEE P802.3bp<br>IEEE P802.3bq/bz<br>IEEE P802.3bs<br>IEEE P802.3bt<br>IEEE P802.3bv<br>IEEE 802.3 CU4HDD<br>IEEE 802.3 NG-EPON<br>Maintenance | IEEE P802.3bq/bz<br>IEEE P802.3br<br>IEEE P802.3bs<br>IEEE P802.3bt<br>IEEE P802.3bv<br>IEEE P802.3by<br>IEEE 802.3 CU4HDD<br>IEEE 802.3 NG-EPON | IEEE 802.3 Closing Plenary |
| | | Quick Walk Around the Block with PoDL | Next Gen Enterprise/ Campus/Data Center Ethernet IC activity | | |
| | | Perspectives on IEEE 802.11 in NGMN/5G | Single lane 50 Gb/s, next gen 100 Gb/s and 200 Gb/s Ethernet CFI | | |
| | | Object Storage, a new architectural partitioning in Storage | 25Gb/s single mode fibre CFI | | |

**IEEE 802.3 CU4HDD**: IEEE 802.3 2.5 Gb/s and 5 Gb/s Backplane and Short Reach Copper Study Group

**IEEE 802.3 NG-EPON**: IEEE 802.3 Next Generation Ethernet Passive Optical Network (NG-EPON) Study Group

# IEEE 802.3 Standards

IEEE Std 802.3™-2015 (3rd Sep 15 / TBD)

IEEE Std 802.3bw™-2015 (26th Oct 15 / TBD)

IEEE Std 802.3.1™-2013 (14th Jun 13 / 2nd Aug 13)*

* Available through Get IEEE 802
http://standards.ieee.org/getieee802/802.3.html

Note 1: Dates are Approval date / Publication date

# Current project drafts

IEEE P802.3bn/D2.1 EPoC

   1st Working Group recirculation ballot draft

IEEE P802.3bp/D2.1 1000BASE-T1

   1st Working Group recirculation ballot draft

IEEE P802.3bq/D2.3 25G/40GBASE-T

   3rd Working Group recirculation ballot draft

IEEE P802.3br/D2.3 Interspersing Express Traffic

   Second 1st Working Group recirculation ballot draft

IEEE P802.3bu/D1.4 Power over Data Lines (PoDL)

   Working Group ballot preview draft

IEEE P802.3by/D2.2 25Gb/s Ethernet

   2nd Working Group recirculation ballot draft