

# **Summary of Comments Submitted Against IEEE P802.3df and IEEE P802.3dj PARs**

**IEEE P802.3df Task Force  
IEEE 802 Nov 2022 Plenary**

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Bangkok, Thailand**

**John D'Ambrosia,  
Chair, IEEE P802.3df Task Force  
Futurewei, U.S. Subsidiary of Huawei**

# Consideration of comments submitted against proposed IEEE P802.3df PAR Modification and IEEE P802.3dj PAR

## ■ Against Proposed Modified IEEE P802.3df PAR

### – From IEEE 802.1

- <https://www.ieee802.org/1/files/public/docs2022/admin-PAR-CSD-comments-802-3-1122-v01.pdf> Slide 2

### – From IEEE 802.11

- <https://mentor.ieee.org/802.11/dcn/22/11-22-1711-01-0PAR-par-review-sc-meeting-agenda-and-comment-slides-november-2022-mixed-mode-plenary.pptx>, Slides 18-20

## ■ Against Proposed IEEE P802.3dj PAR

### – From 802.1

- <https://www.ieee802.org/1/files/public/docs2022/admin-PAR-CSD-comments-802-3-1122-v01.pdf> Slide 3 - 4

### – From IEEE 802.11

- <https://mentor.ieee.org/802.11/dcn/22/11-22-1711-01-0PAR-par-review-sc-meeting-agenda-and-comment-slides-november-2022-mixed-mode-plenary.pptx>, Slide 21-22

### ▪ From IEEE 802.15

- <https://ieee802.org/secmail/msg27813.html>

# IEEE P802.3df COMMENTS

# Comment Explanation (802.1 and 802.11)

**PAR Item 4.2: Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot**

**Missing date for 4.2 – the “Sept 2024” has been crossed out, and a date is needed.**

## Explanation

**For Item 4.2 the IEEE P802.3df Task Force adopted date was Nov 2023. Due to issues with the Myproject system, a date earlier than 2024 could not be entered. Post processing by IEEE SA was required after submission of the PAR to NesCom.**

# Comment Explanation (802.11) – 1 of 2

## PAR: Title (2.1) / Scope (5.2) Observation

**5.2 and 2.1** The title seems to have described the features in a different fashion than the Scope. The Scope is not written in complete sentences, but rather in phrase after phrase. Consider rewriting the Scope to clearly state what the scope is in complete sentences and remember that the title may be used as a guide for the order of description in the scope with complete sentences.

**Title “Amendment: Media Access Control Parameters for 800 Gb/s and Physical Layers and Management Parameters for 400 Gb/s and 800 Gb/s Operation”**

**Scope: “Define Ethernet MAC parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s over copper, multi-mode fiber, and single-mode fiber based on 100 Gb/s signaling technology, and use this work to define physical layer specifications and management parameters for the transfer of Ethernet format frames at 400 Gb/s.**

**How we read the Scope: “This amendment defines Ethernet MAC parameters for 800 Gb/s and PHY layers and Management for 400 Gb/s and 800 Gb/s operation over copper, multi-mode fiber, and single mode fiber based on 100 Gb/s signaling technology. This amendment will also define PHY specification and management parameters for the transfer of Ethernet format frames at 400 Gb/s.**

# Comment Explanation (802.11) – 2 of 2

## Proposed Scope Rewording

**Scope: “Define Ethernet MAC parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s over copper, multi-mode fiber, and single-mode fiber based on 100 Gb/s signaling technology, and use this work to define physical layer specifications and management parameters for the transfer of Ethernet format frames at 400 Gb/s.**

**Change to “Scope: “Define Ethernet MAC parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s over copper, multi-mode fiber, and single-mode fiber based on 100 Gb/s per lane signaling technology.**

**Using the new definitions for 800 Gb/s to define physical layer specifications and management parameters for the transfer of Ethernet format frames at 400 Gb/s.**

## Additional Comments

**CSD – Technical Feasibility – in the 4<sup>th</sup> bullet 1<sup>st</sup> sub-bullet**

**Make the “lane” definition usage consistent with the introduction.**

## Explanation

The submitted documentation and its language is not adequately conveying how the project is being split into IEEE P802.3df and IEEE P802.3dj. Language and documentation can be improved and use of consistent language, i.e “100 Gb/s per lane” will improve the understanding of non 802.3 participants to distinguish between Ethernet rates and signaling rates per lane.

# IEEE P802.3dj COMMENTS

# Comments Overview (802.1)

## CSD – Distinct Identity

Are both the 800 Gb/s and 1.6 Tb/s Ethernet based on the same 'greater than 100 Gb/s signaling'? The current text makes it sound like only 800 Gb/s Ethernet is based on greater than 100 Gb/s signaling. "The proposed amendment will be the first IEEE 802.3 standard defining 800 Gb/s Ethernet physical layer specifications based on greater than 100 Gb/s signaling and 1.6 Tb/s Ethernet,.."  
Recommend using similar wording from the PAR 5.2.b

## CSD – "Backup Slides"

There appears to be another complete CSD in the backup slides. Will these be removed? Which set of CSD slides are to be used? There are inconsistencies with the Distinct Identity. Recommendation: delete the backup slides



# Comment Overview (802.11) – 1 of 2

## Scope / Title Observation

The use of “Greater than 100” is also confusing and ambiguous.

**2.1 and 5.2 – The title and the scope do not seem to align. The title has MAC parameters for 1.6 Tb/s and PHY and Management parameters for 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s operation. The scope seems to say that something different. The phrase “Use of this work” should be reworded to avoid the ambiguity of what “this work” is.**

**The Signaling technologies that are to be used seems ambiguous in that there are many frequencies over 100 Gb/s.**

**Is there a single technology being developed for “greater than 100” then define a name that is something without “greater” in the name?**

**CSD: Maybe a table to help understand what the scope of 802.3dj and 802.3df are trying to indicate. Put in Distinct identity to help those not in 802.3 understand what seems to be ambiguous.**

**CSD: There seems to be a constant ambiguity on what the MAC speed vs PHY speed being used are and the interaction at which layer is being indicated. Also “lane” is introduced for the first time in the introduction and that seems different from what is in the PAR**

# Comment Overview (802.11) – 2 of 2

## Proposed Scope Rewording

**Original Scope: Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper, multi-mode fiber, and single-mode fiber physical medium dependent (PMD) sublayers, based on greater than 100 Gb/s signaling technologies. Use this work to define derivative physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s.**

**Proposed Scope: Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper, multi-mode fiber, and single-mode fiber physical medium dependent (PMD) sublayers, based on greater than 100 Gb/s per lane signaling technologies.**

**Using the new definitions define for 1.6 Tb/s, define physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s.**

## Explanation

The submitted documentation and its language is not adequately conveying how the project is being split into IEEE P802.3df and IEEE P802.3dj. Language and documentation can be improved, and use of consistent language will improve the understanding of non 802.3 participants to distinguish between Ethernet rates and signaling rates per lane.

# Comments Overview (802.15)

## PAR

5.2.b Scope of the project: Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper, **multi-mode fiber**, and single-mode fiber physical medium dependent (PMD) sublayers, based on greater than 100 Gb/s signaling technologies. Use this work to define derivative physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s.

## CSD

### Distinct Identity

The proposed amendment will define derivative physical layer specifications from those developed for 800 Gb/s and 1.6 Tb/s Ethernet to address copper, **multi-mode fiber**, and single-mode fiber specifications, based on a reduced number of physical lanes, for 200 Gb/s and 400 Gb/s Ethernet.

### Economic Feasibility

In consideration of installation costs, the project is expected to use proven and familiar media, including ~~electrical backplanes~~, twin-axial copper cables, ~~multi-mode optical fiber cabling~~, and single-mode optical fiber cabling.

Under “Economic Feasibility”, *multi-mode optical fiber cabling* is struck out. Is this intentional and, if so, why?

# IEEE P802.3df Proposed Changes

# PAR Item 5.2.b “Scope of the project” Modification

.3df  
Proposed  
Change

## Change Current Scope:

Define Ethernet MAC parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s over copper, multi-mode fiber, and single-mode fiber based on **100 Gb/s signaling** technology, **and use this work to** define physical layer specifications and management parameters for the transfer of Ethernet format frames at 400 Gb/s.

## To:

Define Ethernet MAC parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s over copper, multi-mode fiber, and single-mode fiber **physical medium dependent (PMD) sublayers** based on 100 Gb/s **per lane** signaling technology.

**Using these new definitions for 800 Gb/s**, define physical layer specifications and management parameters for the transfer of Ethernet format frames at 400 Gb/s.

# PAR Item 8.1: “Additional Explanatory Notes” Modification

.3df Proposed  
Change

## Change 8.1:

It became apparent to the IEEE 802.3 Working Group that a portion of the project would leverage existing **100 Gb/s signaling** technologies developed for existing standards and projects, while the other portion of the project would leverage new **greater than 100 Gb/s** signaling technologies. It was also recognized that the development of a standard based on existing technologies would occur on a faster timeline than a standard based on the development of new signaling technologies. As a result, the portion of the project that would leverage new **greater than 100 Gb/s** signaling technologies has been removed from the IEEE P802.3df amendment PAR and placed in the new IEEE P802.3dj amendment PAR.

## To

Items 2.1, 4.2, 4.3, 5.2B, 7.1: It became apparent to the IEEE 802.3 Working Group that a portion of the project would leverage existing 100 Gb/s **per lane** signaling technologies developed for existing standards and projects, while the other portion of the project would leverage new **200 Gb/s or greater per lane** signaling technologies. It was also recognized that the development of a standard based on existing technologies would occur on a faster timeline than a standard based on the development of new signaling technologies. As a result, the portion of the project that would leverage new **200 Gb/s or greater per lane** signaling technologies has been removed from the IEEE P802.3df amendment PAR and placed in the new IEEE P802.3dj amendment PAR.

# CSD Modification

.3df Proposed  
Change

- **CSD Introduction Slide #2 updated to indicate “marked up” CSD and section slides added to divide them.**

# IEEE P802.3dj PROPOSED CHANGES



# PAR Item 5.2.b: “Scope of the project” Modification

.3dj Proposed  
Change

Change current scope:

Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper, **multi-mode fiber**, and single-mode fiber physical medium dependent (PMD) sublayers, based on **greater than 100 Gb/s** signaling technologies. **Use this work to** define derivative physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s.

To:

Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper, ~~multi-mode fiber~~, and single-mode fiber physical medium dependent (PMD) sublayers based on **200 Gb/s or greater per lane** signaling technologies.

**Using these new definitions for 800 Gb/s and 1.6 Tb/s**, define physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s, **when applicable**.

# CSD Modifications

.3dj Proposed  
Change

## ■ Distinct Identity

### – Replace

The proposed amendment will be the first IEEE 802.3 standard defining 200 Gb/s, 400 Gb/s, and 800 Gb/s Ethernet physical layer specifications based on **greater than 100 Gb/s signaling**.

### With

The proposed amendment will be the first IEEE 802.3 standard defining 200 Gb/s, 400 Gb/s, and 800 Gb/s Ethernet physical layer specifications based on **200 Gb/s or greater per lane signaling technologies**.

# CSD Modifications

.3dj Proposed  
Change

## ■ Technical Feasibility

### – Modify 4<sup>th</sup> Main bullet – 1<sup>st</sup> sub bullet

Contributions have been made that presented data at 800 Gb/s and 1.6 Tb/s over copper and single-mode fiber based on **greater than 100 Gb/s** signaling technologies. Proposals, which either leverage existing technologies or employ new technologies, have been provided.

To

Contributions have been made that presented data at 800 Gb/s and 1.6 Tb/s over copper and single-mode fiber based on **200 Gb/s or greater per lane** signaling technologies. Proposals, which either leverage existing technologies or employ new technologies, have been provided.

# PROPOSED RESPONSES

# Proposed Response to 802.1 (1 of 2)

The IEEE P802.3df Task Force would like to thank IEEE 802.1 WG for its review. Based on input received from groups in IEEE 802, it has become apparent that more confusion was caused by our efforts to be transparent regarding the division of work within the currently approved IEEE P802.3df PAR.

To help correct that situation, two steps are being taken:

1. Attached, please find a copy of a chart that illustrates the multiple IEEE P802.3df PMDs being targeted by the current IEEE P802.3df PAR, and how they would be divided into the modified IEEE P802.3df PAR and the new IEEE P802.3dj PAR.
2. The introductory text of the proposed CSD files has been updated to better describe the contents of each file.

**Regarding your input on the IEEE P802.3df PAR: Item 4.2 “Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot” :**

The IEEE P802.3df Task Force adopted date is Nov 2023. Due to issues with the Myproject system, a date earlier than 2024 could not be entered. Post processing by IEEE SA was required after submission of the PAR to NesCom.

**Regarding your input on the IEEE P802.3dj CSD - “Distinct Identity”**

The intended Distinct Identity Response is on page 17 of the submitted CSD File.

The second bullet, which addresses the distinct identity is related to 800Gb/s Ethernet, is being modified to read: The proposed amendment will be the first IEEE 802.3 standard defining 200 Gb/s, 400 Gb/s, and 800 Gb/s Ethernet physical layer specifications based on 200 Gb/s or greater per lane signaling technologies.

# Proposed Response to 802.1 (2 of 2)

Based on these comments and issues raised during the IEEE 802.3df Task Force on 16 Nov 2021:

- The IEEE P802.3df CSD was updated and can be accessed at <URL>
- The IEEE P802.3dj CSD was updated and can be accessed at <URL>

Best Regards,  
John D'Ambrosia

# Proposed Response to 802.11 (1 of 3)

The IEEE P802.3df Task Force would like to thank IEEE 802.11 WG for its review. Based on input received from groups in IEEE 802, it has become apparent that more confusion was caused by our efforts to be transparent regarding the division of work within the currently approved IEEE P802.3df PAR.

To help correct that situation, two steps are being taken:

1. Attached, please find a copy of a chart that illustrates the multiple IEEE P802.3df PMDs being targeted by the current IEEE P802.3df PAR, and how they would be divided into the modified IEEE P802.3df PAR and the new IEEE P802.3dj PAR.
2. The introductory text of the proposed CSD files has been updated to better describe the contents of each file.

Regarding your input on the IEEE P802.3df PAR:

**Item 4.2 "Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot"**

The IEEE P802.3df Task Force adopted date is Nov 2023. Due to issues with the Myproject system, a date earlier than 2024 could not be entered. Post processing by IEEE SA was required after submission of the PAR to NesCom.

**Item 5.2 "Scope of the Project" has been modified to:**

Define Ethernet MAC parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s over copper, multi-mode fiber, and single-mode fiber physical medium dependent (PMD) sublayers based on 100 Gb/s per lane signaling technology.

Using these new definitions for 800 Gb/s, define physical layer specifications and management parameters for the transfer of Ethernet format frames at 400 Gb/s.

**Item 8.1: "Additional Explanatory Notes" has been modified to:**

Items 2.1, 4.2, 4.3, 5.2B, 7.1: It became apparent to the IEEE 802.3 Working Group that a portion of the project would leverage existing 100 Gb/s per lane signaling technologies developed for existing standards and projects, while the other portion of the project would leverage new 200 Gb/s or greater per lane signaling technologies. It was also recognized that the development of a standard based on existing technologies would occur on a faster timeline than a standard based on the development of new signaling technologies. As a result, the portion of the project that would leverage new 200 Gb/s or greater per lane signaling technologies has been removed from the IEEE P802.3df amendment PAR and placed in the new IEEE P802.3dj amendment PAR.

# Proposed Response to 802.11 (2 of 3)

Regarding your input on the IEEE P802.3dj PAR:

**Item 5.2 “Scope of the Project” has been modified to:**

**Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper and single-mode fiber physical medium dependent (PMD) sublayers based on 200 Gb/s or greater per lane signaling technologies.**

**Using these new definitions for 800 Gb/s and 1.6 Tb/s, define physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s, when applicable.**

**Based on these changes to the P802.3dj PAR, subsequent changes were made to the P802.3dj CSD**

**Distinct Identity, 2<sup>nd</sup> Bullet has been modified to:**

**The proposed amendment will be the first IEEE 802.3 standard defining 200 Gb/s, 400 Gb/s, and 800 Gb/s Ethernet physical layer specifications based on 200 Gb/s or greater per lane signaling technologies.**

**Technical Feasibility, 4<sup>th</sup> Main bullet – 1<sup>st</sup> sub bullet has been modified to:**

**Contributions have been made that presented data at 800 Gb/s and 1.6 Tb/s over copper and single-mode fiber based on 200 Gb/s or greater per lane signaling technologies. Proposals, which either leverage existing technologies or employ new technologies, have been provided.**



# Proposed Response to 802.11 (3 of 3)

Based on these comments and issues raised during the IEEE 802.3df Task Force on 16 Nov 2021:

- The IEEE P802.3df CSD was updated and can be accessed at <URL>
- The IEEE P802.3dj CSD was updated and can be accessed at <URL>

Best Regards,

John D'Ambrosia

# Proposed Response to 802.15 (1 of 2)

The IEEE P802.3df Task Force would like to thank IEEE 802.15 WG for its review. Based on input received from groups in IEEE 802, it has become apparent that more confusion was caused by our efforts to be transparent regarding the division of work within the currently approved IEEE P802.3df PAR. To help correct that situation, two steps are being taken:

1. Attached, please find a copy of a chart that illustrates the multiple IEEE P802.3df PMDs being targeted by the current IEEE P802.3df PAR, and how they would be divided into the modified IEEE P802.3df PAR and the new IEEE P802.3dj PAR.
2. The introductory text of the proposed CSD files has been updated to better describe the contents of each file.

Regarding your input on the IEEE P802.3dj PAR:

Item 5.2 “Scope of the Project” has been modified to:

**Define Ethernet MAC parameters for 1.6 Tb/s. Define physical layer specifications, and management parameters for the transfer of Ethernet format frames at 800 Gb/s and 1.6 Tb/s over copper and single-mode fiber physical medium dependent (PMD) sublayers, based on 200 Gb/s per lane or greater signaling technologies.**

**Using the new definitions for 800 Gb/s and 1.6 Tb/s, define physical layer specifications and management parameters for the transfer of Ethernet format frames at 200 Gb/s and 400 Gb/s, when applicable.**

# Proposed Response to 802.15 (2 of 2)

**Regarding your input on the IEEE P802.3dj CSD, Distinct Identity:**

**The intended Distinct Identity Response is on page 17 of the submitted CSD File.**

**Multi-mode fiber was not intended to be part of the project, therefore it is not mentioned.**

**Regarding your input on the IEEE P802.3dj CSD, Economic Feasibility:**

**The intended Distinct Identity Response is on page 19 of the submitted CSD File.**

**Multi-mode fiber was not intended to be part of the project, therefore it is not mentioned.**

**Based on these comments and issues raised during the IEEE 802.3df Task Force on 16 Nov 2021:**

- The IEEE P802.3df CSD was updated and can be accessed at <URL>
- The IEEE P802.3dj CSD was updated and can be accessed at <URL>

**Best Regards,**

**John D'Ambrosia**

# IEEE P802.3df Target PMDs

Ethernet Rate	Assumed Signaling Rate per lane	BP	Cu Cable	MMF 50m	MMF 100m	SMF 500m	SMF 2km	SMF 10km	SMF 40km
200 Gb/s	200 Gb/s		1 pair			1 pair	1 pair		
	100 Gb/s						4 pairs		
400 Gb/s	200 Gb/s		2 pairs			2 pairs			
	100 Gb/s	8 lanes	8 pairs	8 pairs	8 pairs	8 pairs	8 pairs		
800 Gb/s	200 Gb/s		4 pairs			4 pairs	1) 4 pairs 2) 4 λ's		
	TBD							Over single SMF in each direction	Over single SMF in each direction
1.6 Tb/s	100 Gb/s								
	200 Gb/s		8 pairs			8 pairs	8 pairs		

## Technology Reuse

Leverage existing or work-in-progress 100 Gb/s per lane (e.g. 3cu, 3ck, 3db) to higher lane counts

Develop 200 Gb/s per lane electrical signaling for 1/2/4/8 lane variants of electrical PMDs

Develop 200 Gb/s per optical fiber for 1/2/4/8 fiber based optical PMDs and per lambda for 4 lambda WDM optical PMD

Potential for either direct detect and / or coherent signaling technology

P802.3df

P802.3dj