IEEE P802.3cz
Splitting a PAR – The Path Forward

John D'Ambrosia, Futurewei, US Subsidiary of Huawei

David Law, HPE

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Agenda

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- Consideration of Objectives

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- Summary

"Splitting the PAR" is a known process in 802

❑ PER IEEE 802 Operations Manual, Section 9.2 IEEE 802 LMSC approval

> At the discretion of the IEEE 802 LMSC Chair, PARs for ordinary items (e.g., Maintenance PARs) and PAR changes essential to the orderly conduct of business (e.g., division of existing work items or name changes to harmonize with equivalent ISO JTC-1 work items) may be placed on the IEEE 802 LMSC agenda if delivered to IEEE 802 LMSC members 48 hours in advance

❑ Most recent example: IEEE Beyond 10km Study Group

- Initial PAR – 802.3cn (Mar 2018)
  - 50GBASE-ER, 200GBASE-ER4, 400GBASE-ER8, 100GBASE-ZR, 400GBASE-ZR
- 802.3cn PAR split (Feb 2019)
  - 802.3cn (PAR Modification) - 50GBASE-ER, 200GBASE-ER4, 400GBASE-ER8
  - 802.3ct (New PAR) - 100GBASE-ZR, 400GBASE-ZR
- 802.3ct PAR split (Feb 2020)
  - 802.3ct (PAR Modification) - 100GBASE-ZR
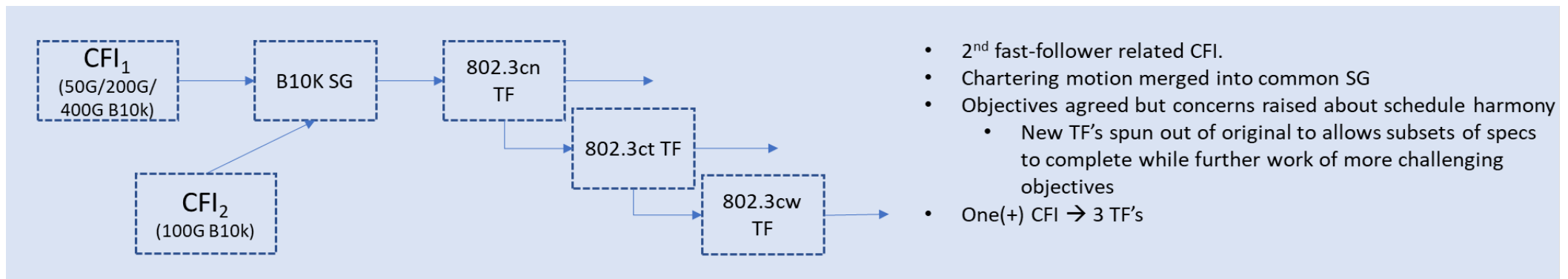 - 802.3cw (New PAR) - 400GBASE-ZR

By Media — ERx PHYs were ahead of ZR PHYs

By Rate — 100GBASE-ZR PHY ahead of 400GBASE-ZR PHYs

CFI₁ (50G/200G/400G B10k) → B10K SG → 802.3cn TF → 802.3ct TF → 802.3cw TF

CFI₂ (100G B10k)

- 2nd fast-follower related CFI.
- Chartering motion merged into common SG
- Objectives agreed but concerns raised about schedule harmony
  - New TF's spun out of original to allows subsets of specs to complete while further work of more challenging objectives
- One(+) CFI → 3 TF's

Consideration of P802.3cz Key Objectives

5. Support data rates of 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s, and 50 Gb/s at the MAC/ PLS service interface

9. Define the performance characteristics of an automotive link segment and an optical PHY to support 2.5 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling

10. Define the performance characteristics of an automotive link segment and an optical PHY to support 5 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling

11. Define the performance characteristics of an automotive link segment and an optical PHY to support 10 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling

12. Define the performance characteristics of an automotive link segment and an optical PHY to support 25 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling

13. Define the performance characteristics of an automotive link segment and an optical PHY to support 50 Gb/s point-to-point operation over this link segment supporting up to 2 inline connectors for at least 15 m on at least one type of automotive optical cabling

What Would an Objective Enable?

- The form of objectives 9 – 13 is similar:

  Define the performance characteristics of an automotive link segment and an optical PHY to support *RATE* Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least *REACH* m on at least one type of automotive optical cabling

- For a given rate / reach objective, the TF must develop a single PHY that meets the stated Rate / Reach targets over at least one type of automotive optical cabling.

- For a single objective, the TF ***CAN*** develop a single PHY that:

  a) meets the stated Rate / Reach targets over at least one type of automotive optical cabling;

  and

  b) meets the same or different reach over another type of automotive optical cabling.

- For a single objective, the TF ***CAN'T*** develop two PHYs!

Summary of Current P802.3cz Proposals

▣ **The following is based on input from Bob Grow, the P802.cz Task Force Chair**

	2.5 Gb/s	5 Gb/s	10Gb/s	25 Gb/s	50 Gb/s	
P802.3cz reach objectives	40 m	40 m	40 m	40 m	15 m	
OM3/980nm	40 m	40 m	40 m	40 m	40 m	
OM3/1310nm	-	-	40 m	40 m	-	Media #1 – OM3
OM3/850nm	40 m	40 m	40 m	40 m	40 m	
GIPOF/short	15 m	15 m	15 m	15 m	-	Media #2 – GIPOF

- The authors do not believe that proposed OM3 solutions address GIPOF media.
- GIPOF proposals: 1) are in scope of the PAR; 2) do not meet any current P802.3cz reach objectives; and 3) are not supported by the existing the CSD

What about Distinct Identity?

- **IEEE 802 LMSC Operations Manual –**

  14.2.3 Distinct Identity

  Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

- **Project Scopes or Objectives in a single project have been distinct by:**
  - Different media
  - Different reaches
  - Different number of either fibers or differential pairs of the same media
  - Different number of optical wavelengths

Proposed Change to Objectives Form

- ## Present Form
  - Define the performance characteristics of an automotive link segment and an optical PHY to support **_RATE_** Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least **_REACH_** m **on at least one type of automotive optical cabling**

- ## Assumption that the split of P802.3cz PAR is based on different media–
  - OM3 Cabling (or MMF?)
  - GIPOF

- ## For a given rate objective create two objectives:
  - Define the performance characteristics of an automotive link segment and an optical PHY to support **_RATE_** Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least **_REACH_** m **of automotive OM3 optical fiber cabling**
  - Define the performance characteristics of an automotive link segment and an optical PHY to support **_RATE_** Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least **_REACH_** m **of automotive GIPOF cabling**

- The two projects' objectives are distinct, and a PAR split could be built around them.

Consideration of PAR

❑ Current IEEE P802.3cz Scope

  ❑ Specify additions to and appropriate modifications of IEEE Std 802.3 to add Physical Layer specifications and management parameters for multi-gigabit optical Ethernet for application in the automotive environment.

❑ Proposed Modified P802.3cz PAR Scope

  ❑ Specify additions to and appropriate modifications of IEEE Std 802.3 to add Physical Layer specifications and management parameters for multi-gigabit optical Ethernet for application in the automotive environment using MMF cabling.

❑ Proposed New P802.3dh PAR Scope

  ❑ Specify additions to and appropriate modifications of IEEE Std 802.3 to add Physical Layer specifications and management parameters for multi-gigabit optical Ethernet for application in the automotive environment using GIPOF cabling.

❑ All fields for both PARs will need to be considered and reviewed to reflect the intended Project

Comments Regarding CSD

◩ The current existing P802.3cz CSD is based on current objectives that is believed by authors to be met by OM3 proposals. GIPOF proposals do not meet any reach P802.3cz objectives, and therefore not supported by the current CSD.

◩ If the P802.3cz PAR is split (modified P802.3cz PAR / new P802.3dh PAR) –

  – A new CSD per PAR will need to be created

    ▪ The proposed IEEE P802.3cz modified PAR will need to be reviewed

  – All responses of each CSD will need to be reviewed to ensure they support the proposed objectives of the respective new project.

◩ Example –

  – During the .3ct / 3cw PAR split, the projects' different objectives targeted different applications.

    ▪ IEEE P802.3ct 100GBASE-ZR addressed MSO Applications

    ▪ IEEE P802.3cw 400GBASE-ZR addressed DCI Applications

  – Unique "BMP" and "Distinct Identity" statements were created for each project.

Summary

◩ GIPOF proposals: 1) are in scope of the PAR; 2) do not meet any current P802.3cz reach objectives; and 3) are not supported by the existing the CSD.

◩ This presentation provides a potential path forward for the IEEE P802.3cz Task Force. The TF will need to consider generation of the responses and consensus building within both the P802.3cz TF and the 802.3WG.

◩ However, the IEEE P802.3cz TF is the ***errand child*** of the WG. Any decision (or in-decision) is subject to review by the IEEE 802.3WG.