Conceptual issues in 802.3dm drafts

(Comments: 189, 158, 159, 187, 159, 167, 185, & 186)

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Overview

This presentation outlines some conceptual issues that need discussion and probably some time before we make decisions – hopefully they will create proposals for the next draft

Questions revolve around:

- What level of specification will we have for powering in 802.3dm?
- If we have 2 PHY clauses, how do the two of them relate to each other? Is there auto-negotiation?
- Do we have one PMA/PCS type per speed (and per direction) (+ 1 PMD per media type), or do we have a multi-speed PMA/PCS?

George's big question #1: Powering (comment 189)

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To what extent do we want to specify powering?

- Voltage levels & current tolerance?
- Above + noise generated/noise tolerance?
- Impedance & electrical interface expectations?
- Power detection protocol?
  - Don't apply power until you confirm some signature
- Power classificiation protocol?
  - Negotiate power required (and police whether more is drawn)

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Powering - discussion

Suggest we DO NOT want a power detection or classification protocol
- Power protocol projects are big and deceptively complicated
- Either clause 104 or clause 189 might be amended and used?

We do need to specify voltage & current tolerance

Noise specifications – noise put on the line
- Transmitter distortion/noise test specifies all noise out – including power
- Do we need to separate out power noise and spectral content?

Noise specifications – receiver tolerance
- Broadband noise – “alien crosstalk” – renamed.
- Do we need other noise sources? – line spectra (PMIC), transient CW, or impulsive?
- Do we specify all the noise lumped together?

Electrical interface and impedance– these are related to MDI return loss – is that sufficient?
- Do we need another test point and a more full set of S-parameters?

George's big question #2: Clause Relationships (comments 158, 159, 187)

If we choose one, then it's easy – the other 2 go away.

Assuming we don't choose only one – then how do they relate:

- Autoneg between types?
- Separate families?
- What is the scope of the 'common' clause – 200?
- Once we figure out the relationship of Clause 201 to Clause 202 (and possibly Clause 98), we can consider whether and how to document, e.g., do we want in an overview clause similar to Clauses 34, 44, 56, 69, 80, 105, 116, 125, or 131 (and which structure)

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Clause Relationships - discussion

802.3 has a matrix of families of PHYs
- By speed, by medium, evolving by application (e.g., automotive)

A separate Auto-Negotiation sublayer may allow PHYs within a medium type to be built within the same port, select common capabilities & interoperate
- Multi-speed capable PHYs use this, but each PHY is it's own type

These two PHYs use the same two media
- The –T1 variants use the same medium as the existing –T1 PHYs – do they use clause 98?
- For –V1, do we adapt clause 98 to coax? Do we want a new clause 98 for coax?

Do we want TDD & ACT to be part of the same family joined by auto-neg enabling multi-protocol parts??

Are they (each) part of a new, separate family?

George's big question #3: # of PHY types (comments 159, 167, 185, 186)

Independent of whether we choose 1 or have 2 PHYs:

How many PCS/PMA types do we have?

- Do we have a multi-speed PHY type, or do we have separate single-speed PHY types?
- Do both approaches have differentiated PMA/PCS types on each end of the link?

PMA/PCS Types - Discussion

Do we have 2, 4, or 6 PCS/PMA types? (x2 for the PMD types, x2 for direction)

Do we have single-speed or multi-speed PHY Types?

- 2 would be one ACT & one TDD – both internally speed-selectable, but only a single phy type (each compliant phy would need to be capable of all 3 speeds – OR – we declare 2 of the 3 speeds as options, with one mandatory)
- 4 would be one TDD PHY type (it seems to be written internally speed-selectable, not through autoneg), and 3 ACT (auto-neg or link-sync selectable for speed)
- 6 would be each selected as its own phy type. (so you could build single-speed-capable PHYs.

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Anything Else? (Discussion)

PLEASE CONSIDER THESE ISSUES FOR COMMENTS/CONTRIBUTIONS TO THE NEXT REVIEW DRAFT