

Nomenclature: An Ethernet Naming Adventure

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Supporters and Contributors

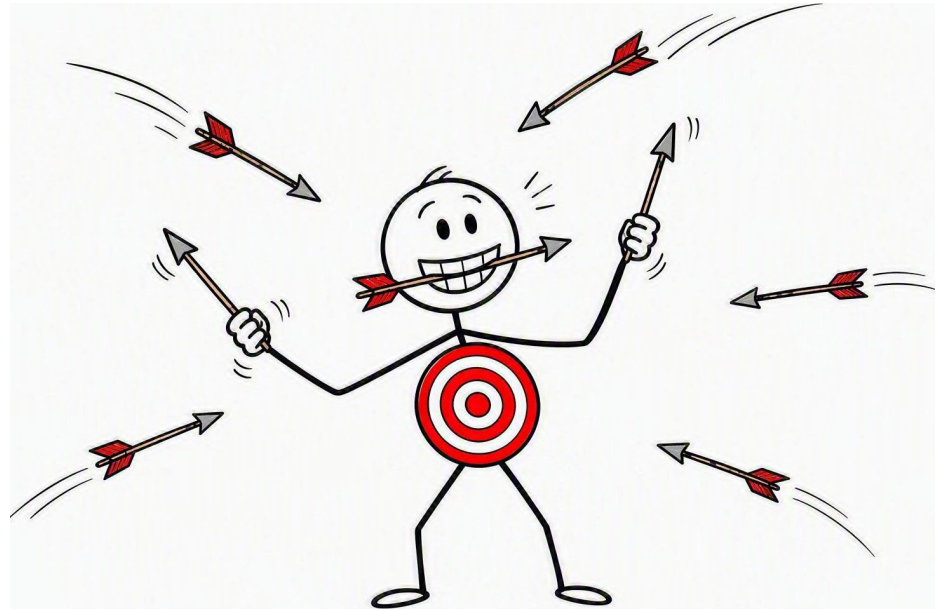
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- Matt Brown, Qualcomm
- Guangcan Mi, Huawei

Supporters:

Nomenclature

- Goal: Align on the nomenclature to enable effective communication during foundational discussions in the 400GPL Study Group and P802.3dv Task Force



Nomenclature References

- Participants are invited to reference the following previous contributions related to nomenclature
 - 3db naming related:
 - https://www.ieee802.org/3/db/public/March-04-2021/parsons_3db_01_030421.pdf
 - 3cu naming related:
 - https://www.ieee802.org/3/cu/public/Nov19/cole_3cu_01a_1119.pdf
 - 3df/3dj naming related:
 - https://www.ieee802.org/3/df/public/22_01/lusted_3df_01_220111.pdf
 - https://www.ieee802.org/3/df/public/22_05/22_0602/lusted_3df_02_220602.pdf
 - 3ds naming related:
 - https://www.ieee802.org/3/ds/public/Interim_Mar_25-2026/mi_3ds_01a_260325.pdf

Key Assumptions

- #1: It is assumed that participants want to preserve the BASE-R PCS names and the naming conventions from the 1/2/4-lane versions of the PHYs in IEEE Std. 802.3-202x, P802.3dj, etc
- #2: There may be a need to define more versions of the AUIs or new interface names for new use cases (e.g. CPO, NPO), as noted in [mi 400GPL 01a 2605](#)
 - Discussion of these cases is beyond the scope of this specific presentation
 - Can add more nomenclature in the future, if needed

Rates and Lanes for Consideration

- The proposed P802.3dv TF would have three Ethernet MAC rates
 - 400 GbE, 800 GbE, 1.6 TbE
- There are multiple lane widths in the project to address these Ethernet rates
 - 1/2/4 lanes

400GPL SG Objectives (2/4)

400 Gb/s Related

- Support a MAC data rate of 400 Gb/s
- Support optional single-lane 400 Gb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
- Define a physical layer specification that supports 400 Gb/s operation over 1 pair of SMF with lengths up to at least 500 m
- Define a single-lane, 400 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 1 meter

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400GPL SG Objectives (3/4)

800 Gb/s Related

- Support a MAC data rate of 800 Gb/s
- Support optional two-lane 800 Gb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
- Define a physical layer specification that supports 800 Gb/s operation over 2 pairs of SMF with lengths up to at least 500 m
- Define a two-lane, 800 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 1 meter

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400GPL SG Objectives (4/4)

1.6 Tb/s Related

- Support a MAC data rate of 1.6 Tb/s
- Support optional four-lane 1.6 Tb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
- Define a physical layer specification that supports 1.6 Tb/s operation over 4 pairs of SMF with lengths up to at least 500 m
- Define a four-lane, 1.6 Tb/s PHY for operation over twin-axial copper cables with lengths up to at least 1 meter

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https://www.ieee802.org/3/400GPL/public/project_docs/400GPL_Objectives_260610.pdf

AUIs

- Optional 400 Gb/s/lane AUI objectives exist for chip-to-module (C2M) and chip-to-chip (C2C)
 - Possible new AUI use cases for CPO and NPO were called out in [mi 400GPL 01a 2605](#) and are not addressed at this time
- Propose:
 - 400GAUI-1 C2M and 400GAUI-1 C2C
 - 800GAUI-2 C2M and 800GAUI-2 C2C
 - 1.6TAUI-4 C2M and 1.6TAUI-4 C2C

Copper Cable

Propose for (passive) copper cable:

- 400GBASE-CR1
- 800GBASE-CR2
- 1.6TBASE-CR4

Note: If an active solution is chosen, then this nomenclature should be revisited.

Optics

Propose for 1/2/4 pairs of SMF with lengths up to at least 500m:

- 400GBASE-DR1
- 800GBASE-DR2
- 1.6TBASE-DR4

Note: if two optical loss budgets are selected, then this nomenclature should be revisited.

Proposal in Table Form

Ethernet Rate	# of Lanes	AUI	Cu Cable	SMF 500m
400 Gb/s	1	400GAUI-1	400GBASE-CR1	400GBASE-DR1
800 Gb/s	2	800GAUI-2	800GBASE-CR2	800GBASE-DR2
1.6 Tb/s	4	1.6TAUI-4	1.6TBASE-CR4	1.6TBASE-DR4

Open Items

- If >1 modulation is selected for the same electrical interfaces or PHYs, then additional nomenclature should be considered
 - One potential path is to use the approach of “KR” (NRZ) and “KP” (PAM4) PHYs from IEEE Std. 802.3bj
- If an active copper cable solution is chosen, then the “CR” nomenclature should be revisited
- If two optical loss budgets are selected, then the “DR” nomenclature should be revisited
 - One potential path is to use the approach of “DR” and “DR-2”. Another path is to use a new letter or add a letter

Straw Polls

Potential Straw Poll

- At this time, I would support the proposed AUI, copper cable, and optical nomenclature on slide 10 of `lusted_400GPL_xx_2609`
- Y: N: A:



THANKS!