Nomenclature

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Version ’01a’ changes in this color

Nomenclature

- Goal: Agree on the nomenclature to enable effective communication

Adopted in May 2016

- Definitions:
  - 50GBASE, 50GBASE-R
  - 50GBASE-KR, 100GBASE-KR2, 200GBASE-KR4
  - 50GBASE-CR, 100GBASE-CR2, 200GBASE-CR4
  - 50GBASE-SR, 100GBASE-SR2, 200GBASE-SR4
  - 50GAUI, 50GMII
- Abbreviations:
  - 50GAUI
  - 50GMII

No new nomenclature was adopted in July 2016 Plenary meeting, only discussed

More for consideration

- Need a definition for the:
  - 50GBASE-FR
    - “IEEE 802.3 Physical Layer specification for 50 Gb/s using 50GBASE-R encoding and 4-level pulse amplitude modulation over one lane on single-mode fiber, with reach up to at least 2 km. (See IEEE Std 802.3, Clause TBD.)”
  - 50GBASE-LR
    - “IEEE 802.3 Physical Layer specification for 50 Gb/s using 50GBASE-R encoding and 4-level pulse amplitude modulation over one lane on single-mode fiber, with reach up to at least 10 km. (See IEEE Std 802.3, Clause TBD.)”

For 100 Gb/s two-lane SMF 500m

- 100GBASE-DR2
  - “IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding and 4-level pulse amplitude modulation over two lanes of single-mode fiber, with reach up to at least 500 m. (See IEEE Std 802.3, Clause TBD.)”

For 100 Gb/s single lane SMF 500m

- 100GBASE-DR
  - “IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding and 4-level pulse amplitude modulation over one lane of single-mode fiber, with reach up to at least 500 m. (See IEEE Std 802.3, Clause TBD.)”

For 100 Gb/s SMF 2km

- There are two potential choices, subject to the Task Force discussion of the baseline proposals:

- “100GBASE-FR2: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding and 4-level pulse amplitude modulation over two WDM lanes on single-mode fiber, with reach up to at least 2 km.”

- “100GBASE-FR: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding and 4-level pulse amplitude modulation over one lane of single-mode fiber, with reach up to at least 2 km.”

Fun with AUIs!

- In this Task Force, there are several different types of AUI due to differing signaling rates, FEC encoding, and lane widths
- AUI nomenclature traditionally has been mAUI-N, where m = PHY speed in Roman or Arabic numerals and N = number of Lanes
- Considerations I used for names:
  - Keep terms used in the IEEE Std 802.3-2015 as they are.
  - Need a unique identifier to distinguish between the different AUI types with the same data rate and width
- A partial list of ways to distinguish the types:
  - By generic letters, such as: A/B/C,
  - By lane rate
  - By RS-FEC codeword size
  - Klingon (not shown for brevity)

P802.3cd AUI rates and lane widths comparison chart

Class	Lane Rate (bits/s)	FEC	Basis derived from	Letters*	Lane Rate	RS-FEC CW size
100 Gb/s	25.78G	RS-FEC(528) or no FEC	CAUI-4 (=)	CAUI-4 (=)		
100 Gb/s	26.56G	RS-FEC(544)	CDAUI-16	100GAUI-4		
100 Gb/s	53.125G	RS-FEC(544)	CDAUI-8	100GAUI-2		
50 Gb/s	25.78G	no FEC	CAUI-4	50GAUI-2A	50GAUI-2-25	50GAUI-2-N
50 Gb/s	26.56G	RS-FEC(544)	CDAUI-16	50GAUI-2B	50GAUI-2-26	50GAUI-2-544
50 Gb/s	53.125G	RS-FEC(544)	CDAUI-8	50GAUI-1		

* Provisional names to be used in the initial draft, if consensus is not reached at this meeting (consistent with the direction discussed in July Plenary)

(=) the same at CAUI-4 per IEEE Std. 802.3-2015

100 Gb/s AUI

- Leveraging the definition from CAUI-n:
- “100 Gb/s Attachment Unit Interface (100GAUI-n): A physical instantiation of the PMA service interface using RS(544,514) FEC to extend the connection between 100 Gb/s capable PMAs over n lanes, used for chip-to-chip or chip-to-module interconnections. Two widths of 100GAUI-n are defined: a four-lane version (100GAUI-4) and a two-lane version (100GAUI-2). (See IEEE Std 802.3, Annex TBD for 100GAUI-4 and Annex TBD for 100GAUI-2).”

The currently adopted 50GAUI definition

- From May 2016:
- “50 Gigabit Attachment Unit Interface (50GAUI): A physical instantiation of the PMA service interface to extend the connection between 50 Gb/s capable PMAs over one lane, used for chip-to-chip or chip-to-module interconnections. (See IEEE Std 802.3, Annex TBD).”

50 Gb/s AUI – classified by letters

- Change the 50 Gb/s AUI definition to be:
- “50 Gb/s Attachment Unit Interface (50GAUI-n): A physical instantiation of the PMA service interface to extend the connection between 50 Gb/s capable PMAs over n lanes, used for chip-to-chip or chip-to-module interconnections. Two widths of 50GAUI-n are defined: two-lane versions of different FEC encoding (50GAUI-2A and 50GAUI-2B) and a single-lane version (50GAUI-1). (See IEEE Std 802.3, Annex TBD for 50GAUI-2A, Annex TBD for 50GAUI-2B, and Annex TBD for 50GAUI-1).”

50 Gb/s AUI – classified by rate

- Change the 50 Gb/s AUI definition to be:
- “50 Gb/s Attachment Unit Interface (50GAUI-n-m): A physical instantiation of the PMA service interface to extend the connection between 50 Gb/s capable PMAs over n lanes with a signaling rate of m, used for chip-to-chip or chip-to-module interconnections. Two widths of 50GAUI-n-m are defined: two-lane versions of different FEC encoding (50GAUI-2-25 and 50GAUI-2-26) and a single-lane version (50GAUI-1). (See IEEE Std 802.3, Annex TBD for 50GAUI-2-25, Annex TBD for 50GAUI-2-26, and Annex TBD for 50GAUI-1).”

50 Gb/s AUI – classified by RS-FEC CW Size

- Change the 50 Gb/s AUI definition to be:
- “50 Gb/s Attachment Unit Interface (50GAUI-n-m): A physical instantiation of the PMA service interface to extend the connection between 50 Gb/s capable PMAs over n lanes with a RS-FEC codeword size of m, used for chip-to-chip or chip-to-module interconnections. Two widths of 50GAUI-n-m are defined: two-lane versions of different FEC encoding (50GAUI-2-N and 50GAUI-2-544) and a single-lane version (50GAUI-1-544). (See IEEE Std 802.3, Annex TBD for 50GAUI-2-N, Annex TBD for 50GAUI-2-544, and Annex TBD for 50GAUI-1).”

100 Gb/s MMF

- At the May 2016 interim, a definition for 100 Gb/s MMF was adopted in motion #5. That definition assumed a two lane MMF PMD.
  - "100GBASE-SR2: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over two lanes of multimode fiber. (See IEEE Std 802.3, Clause TBD.)"
  - Consistent with 200GBASE-SR4
- The 100 Gb/s MMF definition may need to be adjusted based on which PMD proposal is adopted by the Task Force
  - See next slide

100 Gb/s with WDM

- Leveraging 200G-FR4/400G-FR8 in P802.3bs:
- “100GBASE-SR2: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over two WDM lanes of multimode fiber. (See IEEE Std 802.3, Clause TBD.)”

THANKS!

IEEE-SA Standards Style Manual Guidance

- Guidance from IEEE-SA is as follows
- 10.6.3:
  - “Each definition should be a brief, self-contained description of the term in question and shall not contain any other information, such as requirements or elaborative text. The term should not be used in its own definition.”
- 10.7
  - “Acronyms and abbreviations can be used to save time and space in the document.”
- B.1
  - “a) New terms and definitions included in IEEE standards should be written in plain English using clear and concise descriptions. Terms themselves should not be used in their own definitions.”
  - “b) Needless customization should be avoided so that definitions have as broad an application as appropriate. Definitions that are too specific should be avoided.”
  - “c) New definitions that serve to add a new definition to an existing term(s) of the same name should be different enough from the other term(s) so as to justify the addition. Having more than two or three acceptable definitions for any term is discouraged.”