IEEE P802.3dj Electrical Ad Hoc Report

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Electrical Track Ad Hoc Chair
Report

- 3 ad hoc calls since March 2023 meeting
  - 6 April, 20 April, 4 May 2023
  - 50+ attendees each time
  - 16 contributions, 2 straw polls
    - 2 additional channel contributions
- Next meeting TBD:
  - Announced over the electrical track email reflector
Presentations (1/2)

• Meeting minutes and presentation materials: https://www.ieee802.org/3/dj/public/adhoc/electrical/index.html

• 6 April
  – “State of IEEE P802.3dj and Future Schedule”, John D’Ambrosia
  – “Supporting Channel Analysis for a Backplane Objective”, Nathan Tracy and Megha Shanbhag
  – “212Gb/s Per Lane PAM4 KR Cabled Backplane Channels”, Jim Weaver
  – “200 Gb/s PAM4 Channel Sweep Designs for “Near Package Connector (NPC) KR Cabled Backplane” and “C2C with 1 Connector” Topologies ”, Rich Mellitz
  – “BER considerations for 200 Gb/s per lane AUIs”, Matt Brown
  – “COM MLSE and DFE Simulation”, Bill Kirkland
Presentation (2/2)

• 20 April
  – “BER budget allocation for AUIs”, Adee Ran
  – “AUI BER and MAC link latency considerations recap”, Matt Brown
  – “Food for thought on active copper cables”, Adee Ran

• 4 May
  – “Action Item: Project Scope Issues: Active Cables”, John D’Ambrosia
  – “Analysis of Noise Coloring Effect on MLSE COM Using Error Events”, Hossein Shakiba
  – “Error Propagation Analysis of MLSE”, Hossein Shakiba
  – “212 Gb/s PAM4 per Lane C2M Channels Frequency Range and Rx Filter”, Rick Rabinovich
  – “200 Gb/s PAM4 Channel Sweep Designs for “Near Package Connector (NPC) KR Cabled Backplane” and “C2C with 1 Connector” Topologies with crosstalk update”, Rich Mellitz
  – “200 Gbps/lane AUI C2M Channel Selection Criteria”, Kent Lusted
Straw Polls

• 20 April 2023

Straw Poll #1 and 2 -- directional

At this time, I prefer the 200 Gbps/lane AUI BER target option per brown_3dj_elec_01_230420 slide 18:

a. Option A: C2M and C2C AUI BER 1E-5
b. Option B: C2M and C2C AUI BER 2E-5
c. Option C: C2M and C2C AUI BER 5E-5
d. Option D: C2M and C2C AUI BER 1E-4
e. Option E: C2M AUI BER 8E-5 and C2C AUI BER 2E-5

SP#1 Results (Chicago rules):  A: 29  B: 19  C: 25  D: 8  E: 24
SP#2 Results (Choose one):  A: 12  B: 4  C: 17  D: 0  E: 12  NMI: 11
Key Themes

• If active cables are considered by the TF, a potential path and challenges were conveyed
• AUI BER targets are prickly
  – More dependent on inputs from Logic and Optic tracks than in the past
  – Whole link tradeoffs
• MLSE noise and error propagation effects were studied, and COM changes outlined
• Backplane objective consensus norming to 40 dB die-die.
  – No objection on objective expressed
  – Much more work needed to get to baseline proposals
• A relative comparison of AUI C2M channels using COM shows:
  – Some channels work with medium complexity EQ assumed for medium loss AUI C2M
  – Almost all channels work with higher complexity EQ assumed for high loss AUI C2M
THANKS!