IEEE 802.3ap
Signaling Ad Hoc Report Out

IEEE 802.3ap Task Force

Nov'04

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Summary

- Signaling ad hoc work item review
  - Established August'04
  - To work toward a simulation and evaluation model for 10Gb serial BP signaling solutions
- Work Items for ad hoc to address
  - Channel elements for simulation
    - Channel ad hoc defines link between TP1 and TP4
    - Define component edge to TP1, TP4 to component edge
    - Incorporation of channel loss, reflections, NEXT & FEXT
  - Solution Comparison Metrics
    - Power consumption
    - BER and Reach performance
    - Complexity & relative cost
    - Robustness
  - Treatment & modeling of aggressors
    - NEXT, FEXT
    - Noise

Conf Calls

- The Signaling ad hoc held three conference calls to address the outstanding work items
- Conf Call Overview
  - 22 Oct
    - Discussed link quality metrics and the calculation of BER
    - Defined voltage and timing margin as signaling quality requirements
    - Defined basic metrics for a signaling comparison spreadsheet
  - 29 Oct
    - Discussion was on treatment of aggressors (NEXT,FEXT)
    - Agreed that both random and deterministic qualities of XT were critical
    - General agreement that XT contribs were 10Gb serial, with some support for other 802.3ap sources (serial GbE and 4x3.125Gb)
  - 5 Nov
    - Discussed scaling mechanism to increase XT to the mask levels, general agreement that this was good
    - General agreement on a random thermal noise contribution to use for performance calculations

Straw Polls

- **Several straw polls were held to clarify the preferences of the ad hoc group.**

- **Straw poll details**

22 Oct Conf Call

#1: Should we establish a detailed power and complexity reporting matrix?

Yes: 27 No: 0 Abstained: 0

#2(a): Should we establish BER as a signaling quality metric?

Yes: 19 No: 2 Abstained: 0

#2(b): Should we establish a min BER target?

Yes: 7 No: 9 Abstained: 5

#3: Should we require reporting voltage and timing margin at the BER levels of 10^{-12}, 10^{-15} and 10^{-18}?

Yes: 18 No: 0 Abstained: 3

29 Oct Conf Call

#1: Next/Fext treatment should be : A. Random, B. Deterministic, C. Both

A = 9 B = 1 C = 16

#2: Should we use Next/Fext mask to determine total xtalk effects (yes) or should we use measured data (no)?

Yes: 2 No: 21 Abstained: 2

Straw Polls

29 Oct Conf Call (cont'd)

#3 : dropped

#4 : Aggressor signaling types:

A. Aggressors are 10 G serial (14)
B. Aggressors are 802.3ap types (5)
C. Treat Next/Fext to encompass wider signal universe (1)
D. Abstained (1)

#5: For the purpose of Next/Fext transmitter definition use same equalization settings as forward path (A) or something else (B):

A. 14 B. 0

5 Nov Conf Call

#1: Do we want to linearly scale next and fext to the next and fext mask defined by the task force?

Yes: 13 no: 4 abstain: 4

#2: Do we want to linearly scale next and fext until a given solution fails (to meet the BER requirement) and report the result?

Yes: 9 no: 6 abstain: 6

#3: Should we use a value of 4*365uV (1.46mV)RMS in a 5GHz band as the random, thermal noise input for our simulations?

yes: 18 no: 0 abstain: 0 (Passed by acclamation)