

PHY Baseline Proposal Ad Hoc Report

Contribution to IEEE 802.3: 40GBASE-T Task Force

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Summary

- PHY Baseline Proposal Ad Hoc chartered by Chair of 802.3bq at November meeting
 - Identify elements necessary to form a baseline proposal
 - Signaling bandwidth (bounds)
 - Modulation, EQ, coding, etc.
- Two telephonic meetings held
 - 13 February 2014: 1 contribution
 - 27 February 2014: 2 contributions
- Strawman refined, refinements proposed

Strawman Progress

- zimmerman_3bqah_02_1213.pdf:
 - Strawman based on 10GBASE-T @ 3.2Gbd
 - In 'sweet spot' of Grimwood power curve
 - Easy to standardize, well known technology
 - Several improvements to consider
- Power analysis contributed to January Task Force
- Two new contributions discussed refinements, one discussed time-to-link
- No proposals for alternative modulations
 - Convergence

Refinements - PBO

- Potential simplification of Power Back Off (Peter Wu, Marvell)
 - Wu_01a_0214_802.3bq_adhoc.pdf
 - Usefulness of PBO for 40G may be more related to power savings than crosstalk considerations which were the focus of the 100 meter 10GBASE-T PBO
 - Concluded not to drop PBO, but potentially simplify to 2 or 3 settings

Refinements - General

- Potential Improvements to Strawman for PHY Baseline Proposal (G. Zimmerman)
 - zimmerman_3bqah_01_0214.pdf
 - Reviewed impacts and benefits of several options for update:
 - Simplified PBO
 - FEC for uncoded bits
 - THP update
 - Faster PHY training (vs. time to link)
 - ‘Direct attach’ mode, and whether it needed standardization
 - Most require further study or specific proposals to change, PBO is easiest and most well known.

Time-to Link

- User Perception of 10GBASE-T Training time/Time-To-Link (P. Cibula, Intel)
 - cibula_01_0227_40GBT_PHY_Baseline_proposal_ad_hoc_v0p3.pdf
 - Reviewed issues seen with time to link in 10GBASE-T
 - Time to link is sum of autoneg (CI 28) & PHY training (CI 55), and 7 seconds interfered with WHCL
 - Also includes multiple training attempts
 - At least a small improvement was desired, not dramatic, but further work would indicate how much faster would be sufficient

Next Steps

- Begin to adopt pieces baseline PHY proposal
 - (or present alternatives)
- Propose specific improvements
 - Time-to-link improvements
 - FEC on uncoded bits
 - THP backchannel
- Incorporate background noise when available
- Consider impacts on higher layers, & alternatives (recall barrass_3bq_01_0713)
- Next ad hoc meeting: Thursday April 3, 10AM PST
 - General time slot is 10AM Thursdays, due to conflicts