IEEE 802.3ap
Signaling Ad Hoc Report Out

IEEE 802.3ap Task Force

Sept'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
- Ad hoc conf calls
  - 5 conf calls held to date
- Work to-date
  - Overall slow progress
  - Simulation methodology discussion
    - Proposals have consumed most of the ad hoc discussion
    - Three proposals to date:
      - Hspice-based transient sim method with pathological WC NEXT/FEXT
      - StatEye – time domain analysis with equalization
      - Generalized Matlab based evaluation of channel
- Next work items
  - Converge on a concrete simulation model
  - Treatment & modeling of aggressors

Backup

Signaling Ad Hoc Topics - 1

Simulation

- **Set a common simulation methodology**
  - **So that results can be compared directly**
  - **Minimize simulation and result reporting uncertainty**
- **Common sim platform**
  - **Low priority - methodology more important than sim platform**
- **Channel ad hoc spec usage in simulations**
  - **Channel ad hoc defines link between TP1 and TP4**
  - **Define component edge to TP1, TP4 to component edge**
    - **Depends on *exact* TP1 and TP4 location**
  - **Incorporation of channel loss, reflections, NEXT & FEXT**
  - **Incorporate time variations of channel**

Signaling Candidates

- **Current proposals: NRZ, PAM4, Duobinary (PR2)**
- **Are there other candidates?**
- **Signaling & equalization proposals must be connected**
- **Test Patterns**
  - **PCS and line code dependent**

Signaling Ad Hoc Topics - 2

Solution Comparison Metrics

- Power consumption
- BER and Reach performance
  - Need assessment methodology and metrics
- Latency
- Complexity & relative cost
- Robustness
  - Measurement metric
  - Against crosstalk and decision errors
- RFI/EMI considerations
- Compatibility with 4-lane (10Gb) and serial GbE

Signaling Ad Hoc *NON-TOPICS*

- Implementation-specific requirements (ESD, etc)
- Specific training and power-up requirements
- Controls and OOB signaling requirements

Initial Work Item Schedule

- Thursday, August 5 (8:00AM PDT)
  - Signaling ad hoc introduction
  - Discuss initial work items for group
- Monday, August 23 (8:00AM PDT)
  - Channel simulation model draft - for early sims
  - Solution comparison criteria
- Thursday, September 2 (8:00AM PDT)
  - Continuation of channel simulation model details
  - Define link model, test points, and test patterns
  - Define sections of the link model not covered by the channel ad hoc
  - Review NEXT / FEXT considerations (definition of aggressors)
- Thursday, September 9 (8:00AM PDT)
  - Added meeting to increase simulation / modeling progress
- Thursday, September 16 (8:00AM PDT)
  - Finalize channel simulation models for studies
  - Use data from channel model ad hoc when available
  - Run sims and report results