802.3an Task Force

March 16-18, 2004, Orlando, FL
Unconfirmed Minutes

Tuesday, March 16, 2004

The meeting was called to order by Brad Booth at 8:30am. Mike McConnell volunteered as secretary for the meeting.

The first order of business was to accept the agenda prepared by the chair.

      Motion: Move to accept the agenda as presented
      Mover: Alan Flatman
      Second: Bert Armijo

Bob Grow then solicited nominations for the position of Task Force Chair. Brad Booth stated that he was willing to continue to serve as chair of the group and was nominated by Mr. Grow. Hearing no other nominations Mr. Grow called for a vote for Task Force Chair for 802.3an.

      Candidate: Brad Booth
      For: 60   Against: 0   Abstain:1

Since there were no other candidates Mr. Grow declared Mr. Booth as the winner of the election. Mr. Booth then formally accepted the position of Task Force Chair for 802.3an.

The chair then reviewed the voting rules for the task force. These are:
- 802.3 Rules apply
  - Foundation based upon Robert's Rules of Order
- Anyone in the room may speak
- Anyone in the room may vote
- RESPECT… give it, get it
- NO product pitches
- NO corporate pitches
- NO prices!!!
  - This includes costs, ASPs, etc. no matter what the currency
- NO restrictive notices

Additional usual and customary rules for 802.3 task force groups will apply. Specifically all technical votes will require a 75% majority to pass. Non-technical votes require greater than 50%. Anyone present in the room may vote however the chair will ask for and record a second vote of the 802.3 voters present in the room at the time on all technical matters where there is less than a 75% majority in favor of the motion. The voting rules may be changed at the discretion of the chair at any time. IEEE structure and organization was reviewed. Information on the Bylaws and Rules of 802 were noted. All the material referred to is publicly available via the 802 web site. Other operating (ground) rules and guidelines for the task force we also reviewed.

At 9:04am the chair presented and read the IEEE Patent Policy:

"IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent becomes known after initial approval of the standard). This assurance shall be a letter that is in the form of either

a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement the proposed IEEE standard against any person or entity using the patent(s) to comply with the standard or

b) A statement that a license will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination

This assurance shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal and is irrevocable during that period."

Additional material on IEEE patent policy can be found on the 802.3 web site at http://grouper.ieee.org/groups/802/3/10GBT/public/jan04/index.html.

Material presented by the Task Force Chair referenced above is available for the web site for the Task Force (http://grouper.ieee.org/groups/802/3/10GBT/public/jan04/index.html)

The chair then reviewed inappropriate topics for the group.
– Don't discuss licensing terms or conditions
– Don't discuss product pricing, territorial restrictions or market share
– Don't discuss ongoing litigation or threatened litigation
– Don't be silent if inappropriate topics are discussed… do formally object.

The then presented the standards process and provided his report and observations from the ISO/IEC WG3 (cabling group).
– Agreed to adopt upper frequency of 625 MHz as proposed by 10GBASE-T Study Group
  o Would appreciate information on what the final frequency range is
– Agreed to adopt a single formula for each parameter
  o Remove the cable and component values
  o Permits WG3 to determine those values later
– Agreed to consider extrapolating Class E and F
  o Data to be gathered for the June meeting
– Agreed to study PS ANEXT of 90-15log(f)
  o For new cabling installations
– Ran out of time before liaison letter could be crafted

The next agenda item was a review of the Objectives for the Task Force.

- Preserve the 802.3/Ethernet frame format at the MAC Client service interface
- Preserve min. and max. frame size of current 802.3 Std.
- Support full duplex operation only
- Support star-wired local area networks using point-to-point links and structured cabling topologies
- Support a speed of 10.000 Gb/s at the MAC/PLS service interface
- Select copper media from ISO/IEC 11801:2002, with any appropriate augmentation to be developed through work of
- 802.3 in conjunction with SC25/WG3
- Support Clause 28 auto-negotiation
- Support coexistence with 802.3af
- To not support 802.3ah (EFM) OAM unidirectional operation
- Meet CISPR/FCC Class A
- Support operation over 4-connector structured 4-pair, twisted-pair copper cabling for all supported distances and Classes
- Define a single 10 Gb/s PHY that would support links of:
  – At least 100 m on four-pair Class F balanced copper cabling
  – At least 55 m to 100 m on four-pair Class E balanced copper cabling
- Support a BER of 10^-12 on all supported distances and Classes

The overall timeline for the Task Force Objective was presented and reviewed. Next on the agenda were liaison letters. Mr. Bob Jensen reported on the TIA TR-42 activities. His complete report is available on the 802.3 web site.

Mr. Alan Flatman noted his report from ISO/IEC JTC/SG25/WG3 is also posted on the 802.3 web site.

The chair then adjourned the meeting for a 15 minute break.

Mr. Luc Adriaenssens presented A closer look at Channel Insertion Loss and responded to questions.
Mr. Olindo Savi presented Alien FEXT Characterization: Class E UTP Link and responded to questions.
Mr. Terry Cobb presented Alien NEXT Test and responded to questions.

The meeting was adjourned until 1pm for Lunch.

The chair called the meeting order and resumed the presentations.
Mr. Trent Hayes presented Crosstalk Integration and responded to questions.
M.r Henri Koeman presented Alien Crosstalk Modeling and responded to questions.
Mr. Sterling Vaden presented AXTIR Calculations for Discussion and responded to questions.

The chair adjourned the meeting for a 20 minute break.

Mr. Larry Cohen presented Alien Crosstalk Specifications and responded to questions.

Mr. Terry Cobb presented Link Segment Characteristics Proposal and responded to questions.
Mr. Chris Di Minico presented 10GBASE-T Link Segment Baseline Proposal and responded to questions.
Mr. Dan Dove presented Cat 6e Concept and responded to questions.

A question was raised during the presentation about any potential patents on RC grounding in connectors that may exist. Mr. Dove responded that such patents may exist in Europe, and he will investigate this further if this proposal is pursued.

Mr. Shimon Muller presented Latency Considerations for 10GBASE-T PHYs and responded to questions.
Mr. Mike McConnell presented Latency Proposal and responded to questions.

Concluding presentations the chair adjourned the meeting for the day and indicated that we would resume at 8:30am March 17, 2004.

Wednesday, March 17, 2004

The called the meeting to order at 8:36am to resume the presentations.

Mr. Jose Tellado presented Shannon capacity targets: Effects of coding loss and margin and responded to questions.
Mr. Katsutoshi Seki presented Channel Coding for 10GBASE-T and responded to questions.
Mr. Hiroshi Takatori presented A Low Power / Low Latency 10G AFE in CMOS and responded to questions.

The chair adjourned the meeting for a 20 minute break.

Mr. Albert Vareljian presented Performance vs. Complexity and Line Code Proposal and responded to questions.
Mr. George Eisler presented Non line-code elements for the 10GBASE-T standard and responded to questions.
Mr. Gottfried Ungerboeck presented Coding for 10GBASE-T: Performance of RS and TCM and responded to questions.

The meeting was adjourned until 1pm for Lunch.

Mr. Sailesh Rao presented Refinements of the LDPC 4D-PAM8 proposal and responded to questions.
Mr. Darisuh Dabiri presented Modifications to LDPC Proposal offering Lower Symbol Rate and Lower Latency and responded to questions.
Mr. Scott Powell presented 10GBASE-T Architecture Proposal: IIR/FFE Compromise DLP Precoder and responded to questions.

The chair adjourned the meeting for a 20 minute break.

Mr. Yuji Kasai and Mr. Tetsuya Higuchi presented 10GBASE-T new proposal for improving PAM performance with OFDM technique and responded to questions.
Mr. George Zimmerman presented Transmission Proposal for 10GBASE-T and responded to questions.
Mr. Shadi AbuGhazaleh presented Channel Parameter considerations for 10GBASE-T operation on Augmented/Extended Class E (C6) and responded to questions.
Mr. Sanjay Kasturia presented Channel Model Proposal and responded to questions.

Electronic reference copies of all presentation were circulated and are available publicly from the 802.3an March 2004 meeting web site at
http://www.ieee802.org/3/an/public/mar04/index.html

The chair called for straw poll to support adopting the channel models proposed in slide #3 for the purpose of evaluating PHY proposals contained in the Channel Model Proposal presentation made by Mr. Kasturia. The vote was not counted but carried by acclamation.

The chair then presented an example of the Liaison Letter to be sent to ISO WG3. A copy of the letter will be added to the Task Force Web site.

Mr. Luc Adriaenssens presented 2 slides on ANEXT Requirement Straw Poll and ask for a straw poll. Q&A followed without any poll.

Mr. Flatman made a motion to adjourn. Seconded by Ron Cates. The motion carried.

The chair adjourned the meeting for the day to resume at 8:30am 3/18/04.

Thursday, March 18, 2004

The chair called the meeting to order at 8:30am

The item was the Channel Model as presented by Mr Kasturia was discussed.

Motion: Adopt channel models proposed in kasturia_2_0304 (slide #3) for the purpose of evaluating PHY proposals and adopt as the baseline for link segment model for draft 1.0.
Moved: Sanjay Kasturia
Seconded: Luc Adriaenssens
This is technical and requires 75% approval to pass.

The motion was called by Paul Vanderlaan. Hearing no objections the chair held the vote.
Task Force Group: Yes: 50   No:0   Abstain: 2
The motion carried.

Mr. Chris DiMinico then discussed adding additional specifications to the draft from his presentation diminico_1_0304.

Motion: Move that the Task Force approve
Moved: Chris DiMinico
Seconded: Luc Adriaenssens
This is technical and requires 75% approval to pass.

Shadi AbuGhazaleh made a friendly amendment to note that these models do not include self next only alien next the next values from AbuGhazaleh_1_0304.

Motion: Move the Task Force Group approve the Link Segment Baseline Proposal presented in diminico_1_0304 for the coupling parameters, Pair-to-pair NEXT, Power sum NEXT, Pair-to-pair ELFEXT, and Power sum ELFEXT (page 8), insertion loss (page 10) as the basis for the D1.0 Clause 55, link segment specifications.

After some discussion the Mover modified the motion as follows:

Motion: Move to set the starting performance requirements for 10GBASE-T cabling to: ISO/IEC 11801-2002 Class E specifications extrapolated by using the formulas in this standard up to TBD <=625Mhz as the baseline link segment proposal for the D1.0 Clause 55, link segment specifications.

Task Force Group: Yes: 41   No: 4   Abstain: 4
The motion passes

There was a request from Wayne Larsen to request a vote of the .3 voters. After some discussion Paul Vanderlaan motioned that the request be denied. The chair denied the request from Mr. Larsen.

Terry Cobb made a motion to add Class F to the previous motion.

Motion: Move that the Task Force Group to add Class F ISO/IEC 11801-2002 IL specification extrapolated to 625Mhz to the baseline text.

Moved: Terry Cobb
Seconded: Luc Adriaenssens

After hearing some discussion and hearing no objections the mover modified the motion to:

Motion: Move that the Task Force Group to add Class F ISO/IEC 11801-2002 IL specification as required extrapolated to 625Mhz to the baseline text.

Additional discussion objecting to the necessity of such motion as it would be covered by inclusion in the previously approved parameters was heard. After hearing the objection the Mover withdrew the motion without objection.

The chair then presented the Liaison Letter to WG3 which incorporates the text from the channel model voted and approved in the kasturia_2_0304 presentation. Paul Vanderlaan then suggested certain columns be removed. Mr Kasturia suggested the actual formula be added to the letter in favor of tables. The chair then suggested that all interested parties collectively make the necessary modifications during break and re-present the TIA Liaison Letter after the break. Hearing no objections the Chair then adjourned the meeting for a 20 minute break.

The chair called the meeting to order and presented the revised proposed TIA Liaison Letter. Chris DiMinico requested some text be added for clarification for the benefit of the TIA and added they don't normally use equations. Sterling Vaden commented that the equations need to be modified to reflect that scaling should be limited to the horizontal sections and not include the patch cords. Additional discussion followed regarding question of scaling the patch cords with final resolution of accepting the letter as presented. This letter is available on the 802.3an web site.

Barring a formal motion on the letter the chair held a straw poll on the acceptability of channel model information contained in the letter.
The results of the straw poll were unanimously in favor of moving forward with the letter.

Alan Flatman suggested adding the date for the next meeting and adding the word "request" to the letter. Shadi A. suggested adding the May meeting date and the July date and a minor editorial change to one sentence.

Motion: Move that the Task Force Group accept the TIA Liaison Letter, tia_1_0304.pdf and forward the letter to the 802.3 Working Group for editing and approval.
Moved: Wayne Larsen
Seconded: Paul Vanderlaan
This is procedural and requires 50% approval to pass.
The chair called for objections against the motion. Hearing none the chair declared the motion passed by unanimous acclamation.

The chair then presented the ISO Liaison Letter which was an exact copy of the just approved TIA letter with the address line changed. He also thanked them for the previously supplied EM performance data.

Motion: Move that the Task Force Group accept iso_1_0304.pdf liaison letter to ISO/IEC JTC 1/SC25/WG3 and forward the letter to the 802.3 Working Group for editing and approval.
Moved: Joseph Babanezhad
Seconded: Wayne Larsen
This is procedural and requires 50% approval to pass.
The chair called for objections against the motion. Hearing none the chair declared the motion passed by unanimous acclamation.

Mr George Zimmerman then made the following motion:

Motion: That the 10GBASE-T baseline baud rates consistent with 3 information bits/baud/pair, specifically a range from 2.5 to 3.5 bits/baud/pair.

Mover: G Zimmerman
Second: Sanjay Kasturia

J. Babanezhad spoke against the motion. The objection was on the range of 2.5-3.5 not being definitive and being too early as new proposals are just coming in should be given a fair chance. Hiroshi Takatori pointed out that we just reached a consensus on the channel model and we need time to study all these proposals and evaluate them properly. The advantages and disadvantages of some of the other proposals have not been evaluated by everyone properly. Scott Powell stated that he felt it was a bit premature to specifically exclude OFDM and PAM4. S. Kasturia stated that setting the bit/baud doesn't specifically exclude OFDM. He also expressed concern about the channel frequency to support. The mover stated he was willing to accept a friendly amendment to lower the frequency. J. Babanezhad spoke in opposition to the proposal again. H. Takatori asked for clarification on how this would not preclude OFDM. G. Eisler stated that the technical work had started a year ago and stating there has not been enough time to evaluate proposals is not an appropriate justification for additional delay. S. Rao noted that he would like to see objective criteria for selection. He added additional comments about his concern the Nyquist frequency for 2 bits/baud being too high. H. Takatori noted that his analysis of 2 bits/baud vs 3 bits/baud yielded different results that those presented by G Zimmerman. C DiMinico spoke on behalf of the proposal and noted that we started in November 2002 and that our schedule compels us to start making some decisions. S Kasturia noted that 2 bits/baud will require re-opening the channel model discussions to increase the upper frequency. J.Babanezhad noted that the Study Group was formed in January 2003 and that since we just approved a channel model it doesn't make sense to ignore other proposals. A. Vareljian suggested that modification to the channel model would not be required. S. Rao countered again that the Nyquist frequency for 2 bits/symbol is above the 625 Mhz range currently agreed to. H Taktaori commented that the 50m requirement is between 2 and 3 bits/symbol and he thinks we should have the opportunity to verify their results. G. Zimmerman called the question.
No opposition to calling the question was voiced.

The revised motion: That 10GBASE-T baseline baud rates consistent with 3 information bits/baud/pair, specifically a range from 2.5 to 3.5 information bits/baud/pair, or 1 Gbaud to 714 Mbaud
This is a technical vote and requires 75%.

TF Voters	Y: 24	N: 15	A: 19
802.3 Voters	Y: 21	N: 5	A: 9

The task force failed to meet the 75% requirement thus the motion failed.

G. Zimmerman made a motion.

Motion: That 10GBASE-T adopt a power backoff mechanism adapted on startup for use on shorter lines – levels and metrics TBD

Mover: G. Zimmerman
Second; L. Adriaenssens

L Adriaenssens spoke in favor of the motion. S. Powell stated that he does not see an advantage to tying this down at this time. T Cobb also spoke in favor of this motion. A Vareljian spoke in favor of this motion. The chair offered a friendly amendment to change the word "adopt" to "consider" and remove the words "adapted on startup". It was accepted by the mover and second. J Babanezhad questioned the reason for the motion and he felt it doesn't move us forward. C DiMinco spoke in favor of this motion. W. Larsen also spoke in favor of this proposal. The chair also suggested a second friendly amendment to change the wording from "10GBASE-T" to "the Task Force". It was accepted by the Mover and Seconder.

Motion: That the Task Force consider a power backoff mechanism for use on shorter lines – levels and metrics TBD

The chair called the question:

This was a technical vote and required 75%.
TG Voters   Y: 45   N: 0   A: 12

Since it was unanimous the chair declared the motion passed.

The chair asked for any additional motions. There were none.

The chair then presented information on the web site and reflector URLs.

At 11:47am the chair presented and read the IEEE Patent Policy:

"IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent becomes known after initial approval of the standard). This assurance shall be a letter that is in the form of either

a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement the proposed IEEE standard against any person or entity using the patent(s) to comply with the standard or

b) A statement that a license will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination

This assurance shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal and is irrevocable during that period."

The next interim meeting will be in Long Beach or Monterey the week of May 24. Additional detail will be posted on the reflector and the web site.

Motion to adjourn Mike McConnell
Second Shadi AbuGhazaleh

The motion carried and chair declared the Task Force meeting adjourned.