IEEE P802.3ae – 10 Gigabit Ethernet Minutes
Task Force Interim Meeting
January 10th – 12th, 2001
Irvine, CA.

Prepared by: Jeff Warren

Administrative

The meeting convened at 8:35am, January 10th, 2001. Jonathan Thatcher, the 10 GE Task Force chairman, opened the meeting with a presentation of the agenda. Approximately 32 (11%) of 285 individuals attending this 10 GE Task Force meeting are new attendees. The agenda was reviewed and modified. A motion by Bob Grow to approve the agenda passed by acclamation. Jonathan then reviewed all the administrative items such as reflector and web locations, membership, voting, future meeting locations, call for patents and sign-in rules.

This three day meeting was organized with general presentations and organization during the 1st half of Wednesday, followed by detailed clause by clause ballot comment resolution during the afternoon session of Wednesday, all day Thursday and the first half of Friday. Reference the meeting room schedule below. The typical motion madness and wrap up of this week's accomplishments occurred during the afternoon session on Friday.

The IEEE802.3ae standards time line targets a 1Q02 completion date for the final standard. At this point in time the 10GbE standards effort is 61 % complete, i.e. 22 of 36 months has passed. During the next 10 months the 10 GbE standard shall go through one or two more task force and a few working group comment resolution ballot cycles.

Some important links:

- Agenda = http://grouper.ieee.org/groups/802/3/ae/public/jan01/index.html
- E-mail Reflector = http://grouper.ieee.org/groups/802/3/10G_study/email/thrd1.html
- Voting Rules = www.ieee802.org/3/rules/member.html
- Typical Plenary Meeting = www.ieee802.org/3/plenary.html
- 802.3ae 5 Criteria = www.ieee802.org/3/ae/criteria.pdf
- 802.3ae PAR = www.ieee802.org/3/rules/member.html
- 802.3 Presentation Policy = www.ieee802.org/3/public/presentproc.html
- Current 10GbE Draft Standard = http://www.ieee802.org/3/ae/private/index.html
- 802.3 Patent Policy www.ieee802.org/3/patent.html
- 10GbE Ballot Comments http://www.ieee802.org/3/ae/comments/index.html

The P802.3ae 10 Gigabit Ethernet Task Force meeting was adjourned at 4:46pm on January 12th, 2000.

Goals for this Meeting

This meeting was dedicated to the resolution of more than 1,400+ D2.0 IEEE802.3ae task force ballot comments and resolution or plans for resolution to the various big-ticket items. The big ticket items include MDIO electrical, loop back, remote fault, local fault, XAUI jitter, XAUI electrical, test patterns, jitter impacts to all PMA's & PMD's, and technical feasibility plans. The individual clause breakout meeting focus shall be complete resolution of the technical comments or a best-can-do plan for closure. Time permitting, the editorial comments shall be dealt with. The higher level goal coming out of this meeting is to draft a D2.1 draft standard for balloting between this interim meeting and the March plenary meeting. The PMD and PMA technical feasibility will be discussed. There is one year left to verify technical feasibility for clauses 51 – 54, this means all PMA & PMD technology. During this interim meeting several ad-hoc groups shall continue their efforts with difficult topics such as PMA/PMD jitter, equalization, XAUI jitter, and serial PMD.

Meeting Accomplishments

A total of 48 people returned comments on D2.0. The detailed clause minutes shall now be recorded in the actual comment database. The comments received during balloting can be found at the IEEE802.3ae comment web page, for example the 261 page D2.0 comment database is located at, http://www.ieee802.org/3/ae/comments/d2.0/index.html All 1420 comments were resolved. The next draft standard, D2.1 and comment period for D2.1 will start on Feb. 9th. Some of the more significant motions dealt with items such as test generator/checker logic being added to the standard, authorization for the addition of Annex 48A, Jitter Test Patterns, and the adoption of the serial LAN & WAN Jitter Test Patterns. See motions 5, 6, and 7 for more details. Most clause editors ended the interim session no outstanding comments and their sections of the standard in good shape for further work. However Clause 45, the intro section needs to resolve a few things (such as interoperation with clause 22, selected electricals based on JESD8-11, confusing TX/RX/IN/OUT, plus a number of fault and loop-back modes). Clause 46, XGMII needs to resolve remote and local fault detection rules, XGMII timing (slide setup/hold window), and XGMII electricals (testing under load). Clause 47, XAUI did not close on two issues dealing with compliance channel and jitter, but did make significant progress in these areas. There still remains a lot of work to do on Jitter, this work will continue through the next comment balloting phase on D2.1. Clause 50, WIS had a request to remove superfluous overhead for supported point-to-point links. This was ultimately defeated during the afternoon session of the final day. Additional drafts are planned for 2001, D3 by 4/01, D4 by 8/01, and D5 by 12/01. The last technical change target date is fast approaching, just 3 months away. A new ad-hoc was created to study the effects of Interferometric Noise (IN) and provide a means of measuring IN. A revised link model and spreadsheet was adopted and shall be used as the basis for future PMD work. During the wrap up meeting an open comment from Brad Booth was dealt with. It deals with a request to remove superfluous overhead for supported point-to-point links. This is comment number 1394. The suggested remedy was basically to delete a lot of WIS features, such as all LCD-P defect support, unsupported overhead bytes can have random

values, all Line-BIP, AIS, REI, RDI are eliminated, Path-AIS is removed, Section trace removed and Path trace removed. The WIS clause editor suggested rejection of this comment because the committee at large voted these WAN features into the standard and they are in the Blue Book. The additional overheads were added to the 10 GbE standard because a number of the vendors here have customers requesting this subset of overhead bytes. This is a minimum set needed for interoperability of the ELTE – Ethernet Line Termination Equipment. Brad is objecting to these overhead bytes because our standard is not structured in a way to terminate the Section / Line / Path at a service interface. Steve Haddock stated the 10GbE group NEVER had an agreement to manage our Ethernet gear from a SONET management platform attached to the SONET infrastructure. Steve also suggested we may want to implement more of the T1-416 ANSI spec. There was a suggestion to make these overhead bytes optional. Tom Dineen spoke in favor of keeping the overhead bytes in the standard. The IEEE802.3ae standard is not specifying the ELTE device. Brad felt the ELTE functions are outside the scope of the standard and ANSI T1-416 is required for implementation specific designs that want this level of functionality. Paul stated the carrier infrastructure needs these overhead bytes to manage the end to end Ethernet link.

 # 1394 *Cl* **50** *SC* **all** *P* *L*
Booth, Brad Intel

Comment Type **T** *Comment Status* **R** *High*

I have some serious concerns about the information contained in this clause and its application to the standard development. It is considered outside of the scope of this standard to provide connection other that point-to-point or WAN MAC-PHY to WAN MAC-PHY. Upon reading this clause, I get the impression that there have been a lot of "SONET cloud" overhead bytes and bits that have creeped into this clause with the intent of providing capabilities that are outside of the scope of this standard.

SuggestedRemedy

Figure 50-2, remove the signal FRAME_LOCK and the LAYER MANAGEMENT block. Layer management is inferred and the only layer management should be via the MDIO/MDC.
In 50.2, delete the FRAME_LOCK service primitive. This is not provided by clause 49, and is a duplication of the information encoded in LF and RF.
Delete 50.2.3 and its subclauses.
Table 50-1, 50-2 and 50-3, unsupported overhead should be undefined, not forced to a specific value.
Table 50-4, remove all the line error reports.
Delete last paragraph in 50.3.5.
Delete 50.3.5.3 as this is handled by RF/LF and should not be duplicated here.
Delete 50.3.7.1.3 and associated register.
Delete third and last paragraphs in 50.3.7.1.5.
Delete 50.3.7.1.6 and associated register.
Delete 50.3.7.1.7 and associated register.
Delete 50.3.7.1.9 and associated register.
Delete 50.3.7.1.10 and associated register.
Delete 50.3.7.1.11 and associated register.

Proposed Response *Response Status* **C**

REJECT.

The comment and suggested remedy amount to a sweeping change to the WIS clause and the usability of the WAN-PHY that it defines.

The specific functions affected by the suggested remedy are:
1) All LCD-P defect support eliminated
2) Unsupported overhead can have random values rather than customary defaults
3) All Line-BIP, Line-AIS, Line-REI and Line-RDI functionality eliminated

4) Path-AIS defect reporting eliminated
5) Section trace functionality eliminated
6) Path trace functionality eliminated

The WIS clause explicitly, and in great detail, states that there is no intention of facilitating direct connection to standard SONET equipment. As per many previous presentations, an ELTE device must always be used for this purpose. The purpose of providing a minimum subset of management functions in the WIS is to enable management of the link to the ELTE, via the management platforms and practices commonly used in WAN networks. Deletion of the above functions will render this difficult or impossible and is clearly undesirable.

It should be noted, finally, that the functionality described above has been accepted by the task force at large as being part of the minimum set required to meet the objectives of the standard with respect to the WAN-PHY.

Motion to accept the comment and suggested remedy.

Moved: S. Haddock
Seconded: B. Quackenbush
Vote:
Y: 8
N: 49
A: 23

FAILED

Outline for these Minutes

Future IEEE Meetings

Month	Days	Year	Meeting Type	City	State/Country
TBD		2001	Interim		
March	12th – 16th	2001	Plenary	Hilton Head	South Carolina
May	23rd – 25rd	2001	Interim	St. Louis	Missouri
July	9th – 13th	2001	Plenary	Portland	Oregon
September	1st half	2001	Interim	Copenhagen	Denmark

Link to the next meeting location: http://grouper.ieee.org/groups/802/meeting/index.html

The next IEEE meeting (a plenary meeting) will be held in Hilton Head, SC. from March 12th – 16th, 2001 at the Hyatt Regency Hilton Head (843) 785-1234. Please note this hotel will be changing from a Hyatt to the Hilton Head Island Marriott Beach and Golf Resort on the 11th of January. The phone number will change to (843) 686-6400. Any reservations previously made with Hyatt will be automatically switched over to the Marriott. The St. Louis, Missouri May meeting shall be held at the Adams Mark Hotel.

IEEE P802.3ae Objectives

- Preserve the 802.3/Ethernet frame format at the MAC Client service interface.
- Meet 802 Functional Requirements, with the possible exception of Hamming Distance.
- Preserve minimum and maximum FrameSize 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.
- Specify an optional Media Independent Interface (MII).
- Support proposed standard P802.3ad (Link Aggregation)
- Support a speed of 10.000 Gb/s at the MAC/PLS service interface
- Define two families of PHYs
    - A LAN PHY, operating at a data rate of 10.000 Gb/s
    - A WAN PHY, operating at a data rate compatible with the payload rate of OC-192c/SDH VC-4-64c
- Define a mechanism to adapt the MAC/PLS data rate to the data rate of the WAN PHY
- Provide Physical Layer specifications which support link distances of:
    - At least 65 meters over MMF**
    - At least 300 meters over installed MMF*
    - At least 2 km over SMF
    - At least 10 km over SMF
    - At least 40 km over SMF

LEGEND:
* Installed = all MMF specified in 802.3z (62.5 micron 160/500 MHz*km FDDI-grade is the worst case).
** Implies that the solution is cost optimized for this distance.

- Support fiber media selected from the second edition of ISO/IEC 11801 (802.3 to work with SC25/WG3 to develop appropriate specifications for any new fiber media).

P802.3ae Contacts

- For the latest list of key P802.3ae contacts please reference the IEEE P802.3ae 10Gb/s Ethernet Task Force Chairs and Editors web page located at http://grouper.ieee.org/groups/802/3/contacts.html this web page is maintained by David Law.

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Walt Thirion	PMD Track Chair	wthirion@jatotech.com
Ben Brown	Logic Track Chair	bbrown@amcc.com
Jeff Warren	Task Force Secretary	jwarren@extremenetworks.com
Shimon Muller	Clause 1, 2, 4, 6, 22, 31, 31B and 35 Editor	Shimon.Muller@Eng.Sun.Com
David Law	Clause 30 (Management) Editor	David_Law@3Com.com
Ed Turner	Clause 44 (MDC/MDIO) Editor	Edward_Turner@3Com.com
Brad Booth	Clause 45 (intro) Editor	bradley.booth@intel.com
Bob Grow	Clause 46 (XGMII) Editor	Bob.Grow@Intel.com
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David Cunningham	Clause 54 (WWDM PMD) Editor	david_cunningham@agilent.com
Bill Lane	Technical Writer	bill_lane@ieee.org

Agenda

- Welcome and Introductions
- Review / Approve Agenda

- Chairs Introductory Comments
- Call for Patents
- Schedule Review & Meeting Objectives
- Document Distribution
- Liaison Reports
- Ad Hoc Reports
  - Piers Dawe: Serial PMD
  - Anthony Sanders: XAUI Jitter
  - Oscar Agazzi: Equalization
  - Ed Turner: MDIO
  - Bill Reysen: Serial Jitter
- Presentations
  - General Session
    - Brad Booth; Editor's Report
    - Dawson Kesling; XAUI Channel for Compliance Test; 20 min
    - Paul Bottorff; 10GBASE-LR4 as alternative to LX4; 20 min

---------- Split into tracks; Wednesday noon ----------

  - PMD Track
    - Rich Taborek; Annex 48A - Jitter Test Patterns; 15 min
    - Eric B. Grann; Bandpass Specs for 1300nm WWDM; 15 min
    - Peter Öhlen; Dispersion penalty test, 1550 serial; 25 min.
    - Peter Öhlen; RIN specifications for 1550 serial; 5 min
    - Krister Fröjdh; Interferometric noise - 1300 serial; 15 min
    - Krister Fröjdh; Using peak pwr for max spec -1550; 10 min
    - Ken Herrity; Defining Technical Feasibility; 15 minutes
  - Logic Track I
    - Bill Woodruff; XGMII Transit Direction Timing; 25 min
    - Joel Goergen ; XGMII: HSTL and/or SSTL; 15 minutes
  - XAUI Ad Hoc???
    - Bill Woodruff; XAUI Driver and Rxcr Amplitudes; 25 minutes

---------- Recombine; Friday pm ----------

- Presentations / Reports
  - Oscar Agazzi and Tom Lenosky; Interim report on optical channel characterization; 30 minutes
  - Bill Reysen; Jitter Specification & Measurement; 1 hour
  - Editor Reports (1…30;45;46;47;48;49;50;51;52;53;54; Brad)
  - May Meeting: report
  - Sept Meeting: report
  - Ad-hoc updates / plans / meetings?
- Presentation upload check
- New Business / Other Motions
- Approve Minutes of Tampa Meeting (approved by acclimation)
- Adjourn

Meeting Room Breakout Details

	Salon ABC	Salon D	Premier	Conference

	(300)	(150)	(20)	Theatre (20)
Wednesday 8:30 – 12:00	Presentations			
1:30 – 6:00	RF / LF 46(59)	52 (109)	1…(46) 44 (6)	
Thursday 8:30 – 12:00	48 (146)	52 51 (27)	30 (22) 45 (?)	XAUI Jitter Ad-hoc
1:30 – 6:00	49 (61)	PMD LPBK 54 (18)	PMD LPBK 45 (96)	XAUI Compliance
Friday 8:30 – 12:00	47 (38)	53 (45)	50 (32)	
1:00 – 6:00 (1:00 – 4:00)	Motion Madness	Note: number in () represents # of technical comments		

Open Clause Issues and Document Status at the start of this Meeting

Prior to the start of this interim meeting the clause editors were polled for clause status, that status follows:

- **Misc. Clauses** (Shimon Muller)
  The current status for the miscellaneous clauses Shimon Muller covers is as follows. There are no open issues, no changes to the document since 2.0 was published, and no Task Force ballot comments received to date.

- Clause 30 **Management** (David Law)
  The Management Clause is complete in Draft D2.0, there are no major outstanding open issue with a few minor ones mostly related to cross referencing the correct sub-clause. The changes to Annex 30A and 30B were added as part of draft D2.0.

- Clause 33 **MDC/MDIO** (Ed Turner)
  The only open issue is the selection of a buffer for the electrical interface (ad hoc in progress). As for the document, there are no technical issues, but there are some editorial comments, which have been put in.

- Clause 46 **XGMII** (Bob Grow)
  Clause 46 had no big opens following the closing 802.3 plenary. Subsequent email discussion indicates areas for technical comment likely to include: (1) clarify fault signaling with a state machine, (2) move some end delimiter robustness check from PCS to RS (would require significant rewrite of clause to add columns), and (3) possible refinement to lane alignment requirements.

- Clause 47 **XAUI** (Dawson Kesling)

The XAUI document status is unchanged from the D2.0 release. Open Issues include compliance channel specification, jitter specification (generation, tolerance, measurement), transmit and receive eyes (refine current definitions), load impedance specification, and informative link budget information

- Clause 48 **8b/10b PCS/PMA** (Rich Taborek)
  This PMD track clause is moving along very well with most sections near completion, for example the PCS state diagrams and functions are over 90 % complete, many other sections are 100 % completed. The issues coming out of the November meeting are all resolved. Clause 48 has been essentially complete except for PICS information as of D2.0 creation. All the open issue from the November status have been resolved. It is ready for Task Force Ballot. One additional item to add to the issue list is Annex 48A, which contains test patterns. This annex will look a lot like Annex 36A.

- Clause 49 **64b/66b PCS** (Pat Thaler)
  When D2.0 went out for comments there were no open issues in the 64b/66b PCS Clause 49 section. A couple of comments pointing out editing mistakes regarding the finer details of the frame error checking have surfaced. That could be classed as an open issue but a pretty minor one – it will work either way. Overall clause 49 is in good shape. An issue has recently surfaced, it deals with test pattern support.

- Clause 50 **WIS** (Tom Alexander)
  The only open item regarding the WIS relates to the jitter test business currently being discussed, which may or may not result in modifications to Clause 50. All other open issues were closed with Draft 2.0, and no new items have come up on the reflector since the Tampa plenary meeting. The general Big-Ticket item "Test Patterns" impacts this clause.

- Clause 51 **XSBI Serial PMA** (Justin Chang)
  Open issues: items that are being discussed offline or on the reflector.
  - table 51-6: TD spec ... there is a discussion about whether it should be reduced (most likely) from the present 10us and to what number present number being proposed is 2us
  - I/O specifications: Presently no I/O type defined for Sync_Err and LOS. I have asked for inputs on the reflector. Present thought is to not have large swings on LOS as it is near the TIA circuits. Sync_Err can still be either.
  - PCS output and PMA input timing budgets: There is a concern that present margin for PC board designers of 500ps is not enough margin. Request has been made to get more inputs from systems designers on this.
  - Loopback mode: The optional loopback mode was accepted. It was not concluded as to what the serial output data should be ... logic one, zero or don't care. A loopback control input was also not specified in the motion, i.e. I/O type.

Document Status: Revision 2.0 was recently posted. I have no major diagrams or sections to include. Still waiting for clarifications on open issues above. There may still be some nomenclature work to be done as well. Will have to poll helpers to put in technical comments for any and all changes, including minor ones. The general Big-Ticket item "Test Patterns" impacts this clause. The Big-Ticket items "Jitter & Technical Feasibility" will impact this clause.

- Clause 52 **Serial PMD** (David Kabal)
  Open Clause 52 issues include replacement of the current jitter specification with results of jitter ad hoc (led by Reysen), add MGC/MDIO and register information to clause (as per Thatcher), add OMA specification to clause (as per Dudek), add triple tradeoff curves (as per Dudek) and add Golden Test for dispersion penalty at 1550 nm (as per Ohlen). The document status includes changes that were voted in or previously noted have been incorporated into D2.0 with a few exceptions. Notably absent are: OMA, MGC/MDIO and management registers, triple tradeoff curves, and golden dispersion test for 1550 nm. Jitter is still the major item hanging over Clause 52, and a quick resolution from the jitter ad hoc is anticipated, as the material in Clause 52 needs to be completely overhauled. Jonathan Thatcher and David Law are working to solve the management, MGC and MDIO issues. The OMA and triple tradeoff curves are minor items requiring many comments from Mike Dudek that will likely be approved. Similarly, the golden dispersion test for 1550 nm requires detailed comments from Peter Ohlen. The general Big-Ticket item "Test Patterns" impacts this clause. The Big-Ticket items "Jitter & Technical Feasibility" will impact this clause.

- Clause 53 **WWDM PMA** (Paul Bottorff)
  The WWDM PMA issues include; only a single service interface - should be defined for both clause 51 and 53, it is unclear how the jitter budget should be allocated and documented, and the skew budget should be reviewed. The general Big-Ticket item "Test Patterns" impacts this clause. The Big-Ticket items "Jitter & Technical Feasibility" will impact this clause.

- Clause 54 WWDM PMD (David Cunningham)
  TBD ???? The general Big-Ticket item "Test Patterns" impacts this clause. The Big-Ticket items "Jitter & Technical Feasibility" will impact this clause.

Motions

Motion # 1 General Motion

Description: Move to amend the agenda to include Paul Bottorff's presentation to include a 10Gbase-LR4 as an alternative to LX4.

Motion Type: Technical > 50% required

Moved By: Paul Bottorff

Seconded By: Tom Mathey

Results: All Attendees Y 63 N 46 A 61

Time: 9:12am 01/10/01

P/F: **Passed**

Discussion: The general agenda was modified to include Paul's presentation.

Motion # 2 General Motion

Description: Move to add Piers Dawes presentation to the Wednesday AM agenda.

Motion Type: Technical > 50 % required

Moved By: Thatcher

Seconded By: Dineen

Results: All Attendees by acclimation

Time: 10:03am 01/10/01

P/F: **Passed**

Discussion: none

Motion # 3 General Motion

Description: Move that a 2 sec/year statistic is a reasonable design point for PMD pulse splitting (at 19 ps).

Motion Type: Technical > 75% required

Moved By:

Seconded By:

Results: All Attendees by acclimation

Time: 1:43pm 01/12/01

P/F: **Passed**

Discussion: none

Motion # 4 Logic Motion

Description: Accept comment # 1394 and the suggested remedy.

Motion Type: Technical > 75% required

Moved By: Steve Haddock

Seconded By: Bill Quackenbush

Results: All Attendees Y - 8 N - 49 A - 23

Time: 2:49pm 01/12/01

P/F: **Failed**

Discussion: none

 # 1394 *Cl* **50** *SC* **all** *P* *L* Booth, Brad Intel

Comment Type **T** *Comment Status* **R** *High*

I have some serious concerns about the information contained in this clause and its application to the standard development. It is considered outside of the scope of this standard to provide connection other that point-to-point or WAN MAC-PHY to WAN MAC-PHY. Upon reading this clause, I get the impression that there have been a lot of "SONET cloud" overhead bytes and bits that have creeped into this clause with the intent of providing capabilities that are outside of the scope of this standard.

SuggestedRemedy

Figure 50-2, remove the signal FRAME_LOCK and the LAYER MANAGEMENT block. Layer management is inferred and the only layer management should be via the MDIO/MDC.
In 50.2, delete the FRAME_LOCK service primitive. This is not provided by clause 49, and is a duplication of the information encoded in LF and RF.
Delete 50.2.3 and its subclauses.
Table 50-1, 50-2 and 50-3, unsupported overhead should be undefined, not forced to a specific value.
Table 50-4, remove all the line error reports.
Delete last paragraph in 50.3.5.
Delete 50.3.5.3 as this is handled by RF/LF and should not be duplicated here.
Delete 50.3.7.1.3 and associated register.
Delete third and last paragraphs in 50.3.7.1.5.
Delete 50.3.7.1.6 and associated register.
Delete 50.3.7.1.7 and associated register.
Delete 50.3.7.1.9 and associated register.
Delete 50.3.7.1.10 and associated register.
Delete 50.3.7.1.11 and associated register.

Proposed Response *Response Status* **C**

REJECT.

The comment and suggested remedy amount to a sweeping change to the WIS clause and the usability of the WAN-PHY that it defines.

The specific functions affected by the suggested remedy are:
1) All LCD-P defect support eliminated
2) Unsupported overhead can have random values rather than customary defaults
3) All Line-BIP, Line-AIS, Line-REI and Line-RDI functionality eliminated
4) Path-AIS defect reporting eliminated
5) Section trace functionality eliminated
6) Path trace functionality eliminated

The WIS clause explicitly, and in great detail, states that there is no intention of facilitating direct connection to standard SONET equipment. As per many previous presentations, an ELTE device must always be used for this purpose. The purpose of providing a minimum subset of management functions in the WIS is to enable management of the link to the ELTE, via the management platforms and practices commonly used in WAN networks. Deletion of the above functions will render this difficult or impossible and is clearly undesirable.

It should be noted, finally, that the functionality described above has been accepted by the task force at large as being part of the minimum set required to meet the objectives of the standard with respect to the WAN-PHY.

Motion to accept the comment and suggested remedy.

Moved: S. Haddock
Seconded: B. Quackenbush
Vote:
Y: 8
N: 49
A: 23

Motion # 5 PMD/PMA Motion

Description: Accept in principle the concept of building in a test generator/checker into clauses 49 & 50.
Motion Type: Technical > 75% required
Moved By: Bill Reysen
Seconded By: Henning Lysdal
Results: All Attendees
Time: 3:56pm 01/12/01

P/F: **Passed by greater than 75 % (2 negatives)**

Discussion: There was a threat to submit a future TR comment if the logic was put into a PMA device. Rich Taborek suggest we use the same method of specifying test patterns as was used in 1 GbE, it was done in an annex.

Motion # 6 PMD/PMA Motion

Description: Move that the P802.3ae Task Force authorize the addition of Annex 48A, Jitter Test Patterns, to D2.1. These patterns are applicable to the 10GBASE-LX4 and possibly XAUI.
Motion Type: Technical > 75% required
Moved By: Rich Taborek
Seconded By: Dave Cunningham
Results: All Attendees by acclimation
Time: 4:15pm 01/12/01

P/F: **Passed**

Discussion: This should not be optional. So this annex will be normative.

Motion # 7 Logic Motion

Description: Move that the IEEE P802.3ae Task Force adopt the serial LAN & WAN Jitter Test Patterns as presented by Bill Reysen earlier in this session and instruct the editors to make the appropriate changes in D2.1.
Motion Type: Technical > 75% required
Moved By: Bill Reysen
Seconded By: Shimon Muller
Results: All Attendees by acclimation
Time: 4:26pm 01/12/01

P/F: **Passed**

Motion # 8 General Motion

Description: Move that the IEEE P802.3ae Task Force affirm the resolution of all comments on IEEE Draft P802.3ae/D2.0 as resolved during the January 2001 interim meeting.
Motion Type: Technical > 75% required
Moved By: Brad Booth
Seconded By: Ben Brown
Results: All Attendees Y – 67 N – 0 A – 0
Time: 4:32pm 01/12/01

P/F: **Passed**

Motion # 9 General Motion

Description: Move that the IEEE P802.3ae Task Force requests that the Editors of P802.3ae create Draft P802.3ae/D2.1 and that draft be distributed for review and comment. Comment handling and resolution will be done on a basis that is similar to that used by the Working Group.

Motion Type: Technical > 75% required
Moved By: Brad Booth
Seconded By: Ben Brown
Results: All Attendees by acclimation
Time: 4:38pm 01/12/01

P/F: **Passed**

General Presentations & Minutes

1. **Opening Business (Jonathan Thatcher)**
   http://grouper.ieee.org/groups/802/3/ae/public/jan01/intro_0900.pdf

Mr. Thatcher presented the typical 10 GbE introductory material, please reference the presentation for details. Jonathan pointed out that there is a comment and presentation that appears to be out of order since new features have been cut off. This deals with the addition of a 10Gbase-LR4 as an alternative to LX4. This would eliminate the need for 8b/10b encoding. This proposal is coming in from Paul Bottorff. The chairman asked the group if there was any confusion that 8b/10b was part of the 'LX4' Port_Type that is contained in the current draft of the IEEE802.3ae standard. In the past the group voted as a committee to forward the standard as is and as the basis for the standard, so this line of thinking is out-of-order. The chair is aware of three patent letters that may impact this 10GbE standard, Agilent, Enterasys, and ETRI filed them. A total of 48 people returned comments on this D2.0 standard. The tracking database will be used to document all clause breakout activities and details. The clause break out modus operandi will be to vote in all technical comments and these decisions will be ratified during the Friday close out meeting session. During the March meeting Jonathan shall request the draft go to working group ballot, to do so this means the draft has no open technical issues. This will be a huge bar to get past in the coming months.

2. **Progress Report on Equalization of Multimode Fibers (Oscar Agazzi)**
   Oscar's presentation was not posted to the 10 GbE web page

Mr. Agazzi presented the procedure, which has been adopted for channel characterization and preliminary measurement results. The setup for measurements was discussed in detail. Two types of lasers, e.g. 850nm VCSELs and 1310nm DFBs were used along with DMD challenged fibers. Results of three test efforts by Finisar, Lucent and Broadcom will be presented during the 01/10/01 evening ad-hoc group meeting from 6pm – 8pm. Oscar reported that so far no showstoppers have been discovered. During this week's PMD meetings four different presentations were given relative to this topic. Recommendations were made on how to enhance measurements and recommendations on analysis of data. The group is on track for a detailed report in March 2001. Jonathan

asked the room if a 2 sec pulse splitting is a conservative power penalty, it is rolled into the spread sheet. 19ps jitter

3. **10GFC Status (Rich Taborek)**
   http://grouper.ieee.org/groups/802/3/ae/public/jan01/taborek_1_0101.pdf

Mr. Taborek gave a very brief 10GFC liaison report presentation. The 10GFC provides signaling and physical layer services that may be utilized by the FC-2 level to transport data at a rate in excess of 10 Gbps between FC ports. Copies of this initial draft standard can be obtained by pointing your web browser to www.t11.org This FC committee has access to our IEEE802.3ae drafts. The 10GFC timeline is trailing our IEEE802.3ae standards effort by just three months.

4. **Report from Serial PMD ad-hoc (Piers Dawe)**
   http://www.ieee802.org/3/ae/public/jan01/dawe_1_0101.pdf

Mr. Dawes reported on a number of serial issues being worked on over the past two months via a series of conference calls. They proposed a 3 dB extinction ratio. A new item came up, called interferometric noise, more detailed engineering work will follow, but at this time he felt this was not a show stopper. PMD – polarization mode dispersion has been added to the link model, need a value of DGDmax. A simple linear formula was added to the link model. Some technical issues raised are near completion and the remaining significant items include jitter test methods and management & control of the sub-layers. The PMA and PDM engineers need help understanding these higher layer management functions. A stronger coordination is required between the PMA/PMD standards writers and the higher layer management standards writers. It is now time to carefully size up the detailed development worked needed to address these PMA/PMD management concerns. That will happen this week.

5. **XAUI Status (Anthony Sanders and Dawson Kesling)**
   Presentation was not posted to the 10 GbE web page

Mr. Sanders reported that the Jitter ad hoc and compliance channel efforts are the biggest efforts underway prior to this meeting. At this meeting the group will devote separate break outs for further resolution. The XAUI Jitter effort underway is to justify the numbers we have in the standard. There is a large participation on this effort and the group dealing with the jitter issues is confident that by March things will be cleared up. Specifically the methodology for measurement, compliance patterns, receive & transmitter tolerances, and additional jitter budget issues. There are a number of on-going simulation efforts attempting to verify the newly proposed jitter numbers and patterns.

6. **MDIO (Ed Turner)**
   http://www.ieee802.org/3/ae/public/jan01/turner_1_0101.pdf

Mr. Turner gave a quick ad-hoc MDIO report. A number of individuals from both the 802.3ae and 802.3af committees worked on the new electrical interface specification and they selected an interface with an expected long life. This interface will be compatible with lower voltage devices that emerge in the future. They recommended the JEDEC standard JESD8-11 interface. www.jedec.org The ad-hoc work is finished, Ed proposed these ad-hoc conclusions be added to the next version of the draft standard.

7. Serial Jitter (Bill Reysen)

Presentation was not posted to the 10 GbE web page

Mr. Reysen warned the group that our jitter issue has the potential to hold up the standard. The vice-chair requested the expectation for this Friday's general session. The group is hoping to deal with PMA & PMD layer changes for the Big Ticket 'Test Pattern' issue. Also a documented plan for the other open Big Ticket technical items, e.g. how to measure jitter is expected by this Friday. Given that there's only two months between now and the Working Group ballot Shimon asked if there is going to be enough time to resolve this complex technical issue surrounding Jitter, the answer was yes there will be enough time. Not sure if this was the politically correct answer or…….. There is by no means a shortage of work to be done in this area, at last glance here are some of the parameters and issues being dealt with at a recent Jitter Ad-Hoc meeting:

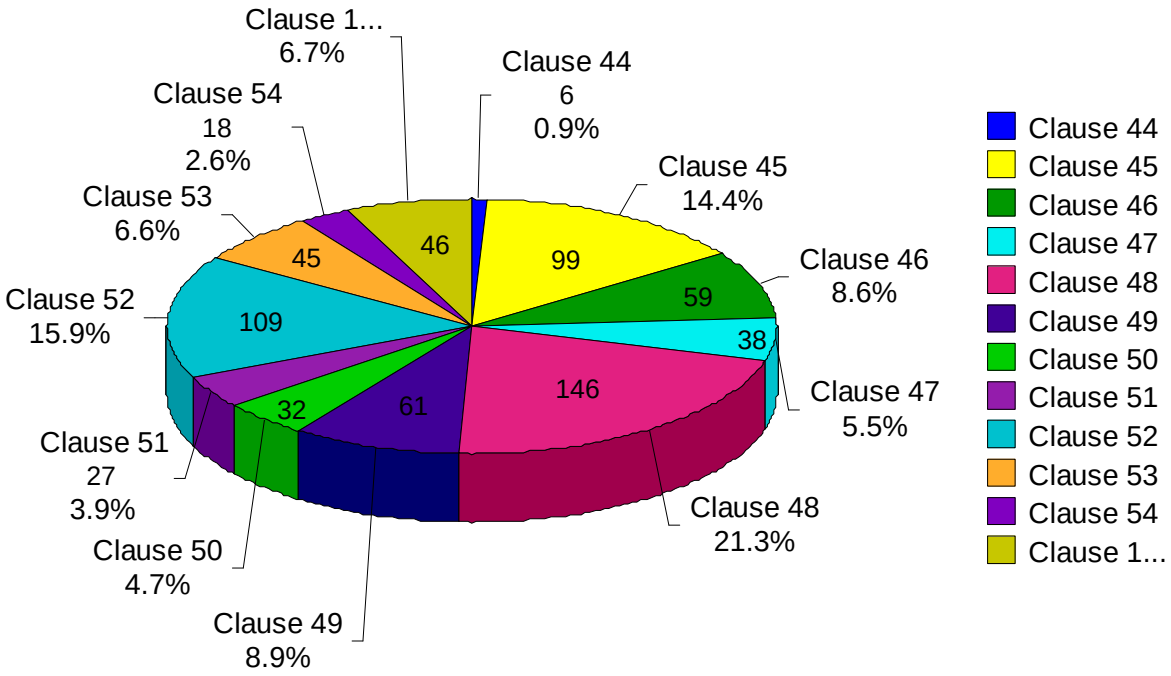
- Break frequencies and amplitudes
- Very low frequency jitter definition frequency and amplitude
- IEEE Sections, Annex´s and References
- DJ from Channel Compliance
- FEXT/NEXT (Cross Talk)
- Return Loss
- Defined patterns
- Compliance Definition
- Test Equipment for Pattern Compliance testing
- Overall Verification of Jitter Budget
- Ongoing simulations

8. Editor's Report (Brad Booth)

Presentation was not posted to the 10 GbE web page

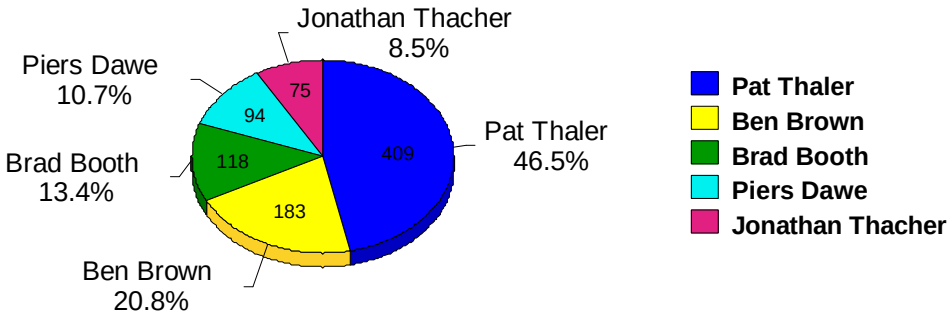
Mr. Booth is our chief editor, he reported today that 48 people submitted comments. There were 694 editorial and 726 technical D2.0 comments.

Technical Comments by Clause #



Technical Required (TR) comments were not used this time around. A TR resolution needs to be signed off. So if you make a TR comment in the future you MUST attend the following meeting where this comment is resolved. Don Alderrou who works for nSerial submitted the first D2.0 comment. The comment process goes like this - Brad receives all comments first, he then imports the comments into the database and distributed them to the individual clause editors. There is a strict comment coding used for the life cycle of a comment, see diagram below. Since we don't have any TR comments this time around all comments will be dealt with. Only two acceptable formats can be used, e.g. CSV and ASCII text, the parser will not accept any other formats**. PLEASE – PLEASE do not use "~" or TABs.** Use 00 for a general comment, meaning applies to the entire document. Do use clause and sub clause numbers also the page and line number is extremely helpful so use them. Don't use one huge comment when the huge comment can be broken down into specific items and dealt with individually. If someone making a comment wants to include a diagram in their comment, send that figure to Brad Booth directly and create these diagrams in Frame Maker if at all possible. Do NOT send comments or diagrams directly to the Clause editors.

Top 5 Commenters



An example comment, i.e. comment number 1064 is shown below. Notice this comment applies to Clause 54 of the standard "WWDM PMD" and more specifically to table 54-6 of that section. The commentor's name and company affiliation are captured in the database. The commentor's suggested remedy was accepted.

1064 *Clause* **54** *Section* **Table 54-6** *Paragraph* *Line* Doug Coleman Corning *Comment Type* **T (technical)** *Comment Status* **A** uW should be converted to dBm. *SuggestedRemedy* This provides continuity between documents and between previous Tables. *Proposed Response* *Response Status* **C** ACCEPT IN PRINCIPLE. Both microwatts and dBm will be used (global search for OMA parameters). Coordinate with clause 52.

9. 10Gbase-LR4 as an Alternative to LX4 (Paul Bottorff)
Presentation was not posted to the 10 GbE web page

Mr. Bottorff says life is difficult for the next three years if 8b/10b silicon is required. The 8b/10b Port_Type is only used by one of eight Port_Types. With a single PCS (i.e. 64b/66b PCS) Paul claims a single new training sequence needs to be added, called LIS. The LAN Interface Sublayer proposal is the insertion of a 16-octet training sequence every 155520 octets. Use 8 A1's followed by 8 A2's. If this proposal is accepted Clause 48 goes away, add LIS to clause 50 and clause 53 would need to be modified to interface to both WIS and PCS and operate with a LAN and WAN PMD. Paul claims that there are no changes to the MAC with this proposal.

10. Clause 52 Status (Dave Kabal)
Presentation was not posted to the 10 GbE web page

Mr. Kabal gave the stats on Clause 52. His sub-group dealt with 161 technical comments and 34 editorial comments. They made a lot of changes to come to terms on the triple tradeoff curves and OMA. The group removed the SC Duplex connector; this will probably come up again at 802.3. They redefined the MDI as the fiber and removed the duplex SC definition from the standard. Jitter continues to be a significant issue, according to Bill Reysen the current jitter content is incorrect and the jitter ad-hoc has a significant amount of work to do to resolve this issue off-line in the jitter ad-hoc meetings between now and March. Technical Feasibility is difficult; the clause 52 committee does not understand how to address it. The previous reference to 40-km link distances was an informative reference; it has changed to a normative reference. The addition of a new link penalty resulting from Interferometric noise (IN) was discussed and an ad-hoc was created to look at the ramifications it may have on the standard, expect more technical comments against D2.1 in this area. A presentation by Clay Hudgins on PMD & MDIO specified new text that was approved, this will impact clasues 45, 52, and 54. The pitch can be found at http://grouper.ieee.org/groups/802/3/ae/public/jan01/hudgins_1_0101.pdf
Reference the URL below for the D2.0 Clause 52 resolution comment database:
http://grouper.ieee.org/groups/802/3/ae/public/adhoc/serial_pmd/documents/D2.0-clause52-comments_resolutions.pdf

The block diagram above came from Clay's pitch, also included in Clay's pitch is detailed text for the D2.1 standard, this text deals with signal definitions and functions, loopback, fault, transmit disable, and signal detect. The proposed text is already in the proper form for inclusion into the standard.

11. Clause 54 Technical Comment 54001 (Dave Cunningham)

Presentation was not posted to the 10 GbE web page

Mr. Cunningham suggested a change in the pass-band specification for each wavelength of the WWDM solution from +/- 5.7nm to +/- 7.0nm. A group of interested people decided to leave the standard as is now, however that this issue needs to be investigated by the March meeting and make any necessary changes then to the standard if changes are warranted. Everyone in the room agreed with this line of thinking. By relaxing this spec to even just 6nm, the VCSEL manufacturing yields can be almost doubled, and therefore almost halve the cost of the devices.

12. Serial PMD Jitter (Bill Reysen)

Presentation was not posted to the 10 GbE web page

Mr. Reysen gave a Jitter update presentation. We're getting very close to the measurement capabilities of test equipment to accurately measure and characterize jitter contributions that are attributed to the various link elements, e.g. fiber, transmitter, receiver. The jitter efforts in the SONET world are not going to be modeled here because SONET compliant devices may not inter-operate. Jitter is very much a statistical thing and there are lots of ways to specify it. One of the issues that was a goal for resolution at this meeting was Test Patterns. Unfortunately due to the time consumed by comment resolution there was not enough time to address Test Patterns. This built in test pattern being put into the equipment is necessary for an automated means of verifying jitter, as opposed to having to measure jitter on a component by component basis. Built in could mean a test pattern generator designed into the ASICs for PMA/PCSs. To date there have been very few technical contributions on this subject. Getting this activity done by March is doubtful. The current alternatives are not too attractive. There is agreement on the test patterns for the WAN PHYs, but not for the LAN PHYs. A software test pattern solution is much better because if we don't get the pattern correct now, putting it in ASIC means we can't change it in the future. Rich Taborek felt that loading an MDIO register(s) with a test pattern of 256 bits is sufficient. Several were quick to say that 256 bits is not enough.