

IEEE P802.3ae – 10 Gigabit Ethernet Minutes
Task Force Plenary Meeting
September 12 - 14, 2000
New Orleans, LA.

Prepared by: Jeff Warren

Administrative

The meeting convened at 8:37am, September 12th, 2000. Jonathan Thatcher, the 10 GE Task Force chairman, opened the meeting with a presentation of the agenda. Jonathan then appointed Jeff Warren as the permanent recording secretary for the P802.3ae Task Force, this was approved by acclamation. The agenda was reviewed. A motion to approve the agenda was made by Steve Haddock and seconded by Bob Grow, this passed by acclamation. Jonathan then reviewed all the administrative items such as reflector and web locations, membership, voting and sign-in rules.

This three day meeting was organized as a joint meeting during the first day and a half then the group split into two parts with 50% of the participants working in the “Logic Track” and 50 % of the participants working in the “PMD Track”.

Some important links:

- ❑ Agenda = <http://grouper.ieee.org/groups/802/3/ae/public/sep00/index.html>
- ❑ E-mail Reflector = http://grouper.ieee.org/groups/802/3/10G_study/email/thrd1.html
- ❑ Reflector Instructions = <http://grouper.ieee.org/groups/802/3/ae/reflector.html>
- ❑ Voting Rules = <http://grouper.ieee.org/groups/802/3/rules/member.html>
- ❑ Patent Policy = <http://grouper.ieee.org/groups/802/3/patent.html>

The next IEEE meeting will be held in Tampa, FL. from November 6th – 10th. Prior to this meeting the 10GEA has offered to host a two-day meeting. Bob Grow, the 10GEA technical leader extended an open invitation to any IEEE member who is actively involved with the drafting and editing of this 1st draft 10 GE standard to participate. This meeting shall be held in Austin, Texas October 24th and 25th, 2000.

Raddisson Hotel

111 Cesar Chavez

Austin TX. 78771

(512) 478-9611

(800) 333-3333 reservations.

Two Day Agenda

10/24 – Jitter Issues

10/25 – Editorial Tasks

The P802.3ae 10 Gigabit Ethernet Task Group meeting was adjourned at 5:05pm on September 14, 2000.

Goals for this Meeting

This meeting was dedicated primarily to closing PMD issues, including MMF objective modifications and reviewing draft 1.0. This marked the beginning of the “***Task Force Draft Review & Editing Phase***”. The on-line comment database was not used during this meeting, it is targeted to go on-line for the next IEEE meeting this coming November. The specific objectives for the week include resolution of the MMF PMDs, identification, solution and/or plan for a solution to key issues with the 1st draft 10 GbE standard. Key issues are defined as issues that impact multiple clauses or will require a significant on going effort to resolve them. Additionally Jonathan wants to organize problem resolution “Swat Teams”, develop a plan for the MDI connector selection, deal with break link, remote fault and OAM&P functions.

Meeting Accomplishments

General Discussion (moderated by Jonathan Thatcher): The distance objectives for multi-mode fiber PMDs was resolved by a vote of 76 to 8 (90 % approval) also two MMF PMDs were adopted by a vote of 71 to 15 (83 % approval). The group felt that these two PMDs provide the best solution for campus and lowest cost long-term tera POP and equipment room interconnects. These PMDs also satisfy the new MMF objectives. There are now four distinct PMDs voted into the standard, they are 1550nm Serial, 1310nm Serial, 1310nm WDM and 850nm Serial. The new MMF objectives now specify “***At least 300 meters over installed MMF***” and “***At least 65 meters over MMF***”. Installed in this case means all MMF specified in the 802.3z standard (62.5 micron 160/500 MHz*km FDDI-grade is the worst case). There was an attempt to add a 5th PMD “850nm CWDM”, this failed to reach the 75% approval required by a vote of 29 to 35 (45 % approval). There are several sub-groups forming to tackle key issues, for example the “Jitter Group”, these new groups will have their own reflectors set up for discussions. The old reflectors, i.e. cabling, copper, PAM, distance and 64/66 reflectors will be shut down to new e-mails, they will go into archive mode. The committee discussed and approved three interim meetings for 2001, please reference the Future meetings schedule below for details. The previously authorized 11/5/00 interim meeting is not necessary. There was an extended discussion of MDI connectors, previously the chairman of P802.3ae and 802.3 recommended the SC Duplex connector shall be used for this particular project. This SC Duplex could be replaced or additional connectors could be added. Some participants felt the connector does not need to be specified for the TP2 patch cord conformance point. Most felt the important point is to specify connector performance, e.g. losses across a connector and connector polarity was a concern.

Logic Track Summary (moderated by Ben Brown): This group completed a review of clauses 1, 2, 3, 4, 6, 22, 30, 31, 35, 46, 47, 48, 49 and 50. Ben suggested smaller more narrowly focused groups will be required in the future, e.g. XGMII sub-group. There is strong support for HSTL2 on the XGMII, however there’s a lot of work to be accomplished in the next few months. The logic group is leaning towards the Shimon/Frazier “Remote Fault and Break Link” proposal as opposed to the LSS proposal. Signal Detect was discussed but more work is required. There will be

references to the T1.416 ANSI standard for the 10 GE WAN PHY. New WAN world issues are emerging that traditional Ethernet did not have to contend with in the past such as testing links prior to data transmission and how to deal with the various bit error counters. A logic track motion which changed the XGMII electrical to HSTL (1.8v) and timing to be source-simultaneous in both TX & RX directions passed by an 802.3 vote of 26 to 1 with 21 individuals abstaining. All attendees voted 60 to 4 with 48 abstaining.

PDM Track Summary (moderated by Walt Thirion): A total of 11 presentations were given during this track, the group reviewed clauses 51, 52 and 54. The group is comfortable with the 1310nm WWDM, 1310nm Serial and 850nm Serial PMDs. However the 1550nm Serial PMD which was previously thought to be solid is now the PMD that needs more work in the area of distances to be supported. The Piers Dawe spreadsheet used for modeling optical links, version 2.3.4 was adopted by a vote of 75 to 1 (99 % approval). This spreadsheet does not cover transmitter chirp very well.

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Future IEEE Meetings

Month	Days	Year	Meeting Type	City	State/Country
November	6 th – 10 th	2000	Plenary	Tampa	Florida
January	16 th – 18 th	2001	Interim	Irvine	California
March	12 th – 16 th	2001	Plenary	Hilton Head	South Carolina
May	21 st – 23 rd	2001	Interim	<i>Open</i>	<i>Open</i>
July	9 th – 13 th	2001	Plenary	Portland	Oregon
September	1 st half	2001	Interim	Copenhagen	Denmark

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

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
- ***** NEW *****

***** MODIFIED OBJECTIVES *****

* 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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Agenda

802.3ae Agenda

Speaker	T Topic	Time Req	Time Allc	Start Time
Tue, 12 Sept 2000				8:30 AM
	Call to Order			
Jonathan Thatcher	Z Opening Business	0:25	0:25	8:30 AM
Chris Diminico	TIA liaison report	0:15	0:15	8:55 AM
Rich Taborek	10G Fibre Channel liaison report	0:15	0:15	9:10 AM
Chris Simoneaux	L XGP Overview and Status Report	0:25	0:25	9:25 AM
Schelto van Doorn	L Multi Source Agreement for 10Gig Transponder	0:10	0:10	9:50 AM
	Break	0:20	0:20	10:00 AM
Jonathan Thatcher	L MMF PMD Objectives -- Are they right?	0:10	0:10	10:20 AM
	Discussion -- Objective Motion?	0:20	0:20	10:30 AM
Tom Palkert	T 4 Fiber Very Short Reach 10GBE		0:10	10:50 AM
Sam Kim	U 4 Channel Very Short Reach 10 GBE Optical XCVR		0:15	11:00 AM
Pat Gilliland	T 10Gb/s Four Fiber Parallel Transmission Solutions	0:25	0:25	11:15 AM
Phil Schofield	T Structured Cabling for Parallel PMDs		0:20	11:40 AM
	Lunch	1:20	1:00	12:00 PM
Ali Ghiasi	T User Perspective on 850 nm Variants	0:20	0:20	1:00 PM
Doug Collins	L Evaluating short wavelength VCSELs	0:20	0:20	1:20 PM
Jared Stack	L Modal beam conditioning for enhanced MMF B/W	0:20	0:20	1:40 PM
Jack Jewell	U 850 nm Serial PMD Specifications	0:10	0:10	2:00 PM
Jack Jewell	?	0:10	0:10	2:10 PM
Paul Bottorff	T Multimode PMD Proposal and Supporting Rationale	0:20	0:20	2:20 PM
Bill Wiedemann	L CWDM 10GBASE-SX Proposal	0:30	0:30	2:40 PM
	Discussion -- PMD Motions?		1:00	3:10 PM
Jim Tavecchi	L Challenges in Designing 10 GB/S Backplanes	0:20	0:20	4:10 PM
	Break	0:20	0:20	4:30 PM
Shimon Muller	L Remote Fault & Break Link Proposal for 10GbE	0:30	0:30	4:50 PM
Kevin Daines	L BL & RF Revisited	0:15	0:15	5:20 PM
Osamu Ishida	T Link Signaling Sublayer (LSS) Proposal	0:20	0:20	5:35 PM
Rich Taborek	T 10GE Proposal: LSS for Remote Fault & Break Link	0:15	0:15	5:55 PM
	Break	0:20	0:30	6:10 PM
Vipul Bhatt	T Equalization - Overview and Potential	0:10	0:10	6:40 PM
Abhijit Phanse	T Fiber Equalization - A Review of Technologies	0:10	0:10	6:50 PM
Henning Buelow	U SiGe IC Solutin for 10G Equalization of PMD	0:20	0:20	7:00 PM
Fow-Sen Choa	T Adaptive Equalization Techniques for MMF Transmissions	0:10	0:10	7:20 PM
Moe Win	T Similarities of PMD and DMD for 10Gbps Equalization	0:20	0:20	7:30 PM
Oscar Agazzi	T Feasibility of DSP-Based Equalization for Optical Channels -	0:20	0:20	7:50 PM
Wed, 13 Sept 2000				8:00 AM
	Call to Order			
Shimon Muller	L Changes to Existing Clauses - Status Update		0:10	8:00 AM
David Law	T Clause 30 update - 10Gb/s MIB		0:10	8:10 AM
Edward Turner	T Clause 33 update - MDIO/MDC management interface	0:10	0:10	8:20 AM
Brad Booth	T Editor and Clause 45 Update		0:15	8:30 AM
Bob Grow	L Clause 46 update		0:05	8:45 AM

Dawson Kesling	T Clause 47 Update - XAUI	0:10	8:50 AM
Rich Taborek	Clause 48 Update -	0:10	9:00 AM
Pat Thaler	L Clause 49 10GBASE-R PCS	0:10	9:10 AM
Tom Alexander	L Clause 50 (WIS) Status	0:15	0:15 9:20 AM
Justin Chang	T Clause 51 Update – Serial PMA	0:10	0:10 9:35 AM
Jonathan Thatcher	L Clause 52 Update – Serial PMD	0:10	9:45 AM
David Cunningham	Clause 54 Update – WDM	0:10	9:55 AM
Break -- Change Room --		0:20	0:30 9:55 AM
PMD/PMA Track			10:25 AM
Peter Ohlen	T Dispersion penalty for single-mode serial PMDs	0:15	10:25 AM
Peter Ohlen	U OMA for single-mode serial PMDs	0:15	10:40 AM
Piers Dawe	L 1310 nm serial eye mask and jitter	0:15	10:55 AM
Piers Dawe	L Recap: Enhanced Link Budget Spreadsheet	0:15	11:10 AM
David Law	Z Tutorial on MIB / MDIO	0:20	11:25 AM
Walt Thirion	Review PMA and PMD Clauses		11:45 AM
LOGIC Track			10:25 AM
David Martin	T WIS Fault Isolation	0:20	10:25 AM
Joel Dedrick	L XGMII Timing	0:20	0:20 10:45 AM
Norival Figueira	T WIS MIB	0:30	0:30 11:05 AM
Ben Brown	Review Logic Clauses		11:35 AM
Wed, 14 July 2000	Recombine Tracks		3:00 PM
	Track Reports	0:30	3:00 PM
	Motion Madness	1:00	3:30 PM
	Closing	0:30	4:30 PM
Adjourn			5:00 PM

Closing Discussions

- David Law reminded the group that if they have presentations on the web that they need to update them if they are out of date.
- The jitter group that is forming as well as others will have a unique reflector set up for discussion. The cabling, copper, PAM, distance and 64/66 reflectors will be shut down to new e-mails, they will go into archive mode.
- May 21, 22, 23 2001 York Meeting. After the meeting David Law determined that this meeting location is not possible due to limited hotel room availability.
- Previous Ottawa minutes have been approved.
- Minutes will come out in two pieces – 1st motions and important notifications then everything else.
- The previously authorized 11/5/00 interim meeting is not necessary.
- Connector Discussion:
 - ❑ The chairman of 802.3ae and 802.3 has recommended the SC Duplex connector shall be used for this particular project.
 - ❑ This SC Duplex could be replaced or additional connectors could be added.
 - ❑ Is the intent to put in a connector and require it be used? We should do something that is conformance testable.
 - ❑ The conformance point is TP2 (a patch cord) there is no reason to specify a particular connector since any connector would work.
 - ❑ We should not specify a connector, the only place where we need a connector specified is at the end of the patch cord, and perhaps this could be an SC, however the MDI does not necessarily need to have connector specified.
 - ❑ It would be a good idea to include connector performance, e.g. losses across a connector.
 - ❑ SC25 suggested that if a standards group did not pick a connector by 2/01 that they would pick it for them.
 - ❑ There is one aspect of the SC Duplex connector that has to be fixed, that being which side is Tx and which side is Rx.
 - ❑ The vast majority of the test equipment in this world does not have SC Duplex; the ST and simplex SC are more popular.
 - ❑ There was a vote for not specifying any connector at all, just worry about getting polarity correct.
 - ❑ At this time the group decided not to make a decision about any connectors and to remove references to the SC connector from the standard.

