IEEE P802.3ae – 10 Gigabit Ethernet Minutes
Task Force Plenary Meeting
July 11 - 12, 2000
La Jolla, CA

Prepared by: Jeff Warren

Administrative:

The meeting convened at 8:30am, July 11, 2000. Jonathan Thatcher, the 10 GE Task Group chairman, opened the meeting with a presentation of the agenda, now available at the IEEE web site http://grouper.ieee.org/groups/802/3/ae/public/july00/index.html

Jonathan then volunteered Jeff Warren to act as recording secretary for the meeting and went on to review the agenda. A motion to approve the agenda was made by Ben Brown, it passed by acclamation. Jonathan then reviewed all the administrative items such as reflector and web locations, membership, voting and sign-in rules.

The next meeting is an interim meeting and will be held in New Orleans, LA. from September 12th – 14th. This is a change in venue that occurred after the close of this July 2000 plenary meeting. This September meeting is dedicated to the preparation of the first draft of the standard. An interim meeting on Sunday 11/5/00 has been authorized. The need for this meeting is contingent upon the progress made during the September interim.

An e-mail reflector has been set up for the IEEE802.3ae 10 Gigabit Ethernet task group, http://grouper.ieee.org/groups/802/3/10G_study/email/thrd1.html To be added to the reflector go to the IEEE P802.3ae 10Gb/s Ethernet Task Force Reflector Information page and follow instructions. http://grouper.ieee.org/groups/802/3/ae/reflector.html The voting rules can be found at http://grouper.ieee.org/groups/802/3/rules/member.html The 802.3 patent policy can be found at http://grouper.ieee.org/groups/802/3/patent.html

The two day meeting was split into two parts with all logic presentations and motions given on the first day and the PDM presentations and motions on the second day.

Logic Discussions (moderated by Ben Brown): Proposals to be included in the 1st draft of the standard based on successful motions include (Open Loop PHY Rate Control, MDC/MDIO Baseline, Management MIB Baseline, XGMII, XAUI/XGXS, WIS, XBI, 64b/66b PCS, SUPI, IPG & Frame Alignment).
PDM Discussions (moderated by Walt Thirion): Proposals to be included in the 1st draft of the standard based on successful motions include (1310 nm Serial PMD and 1550 nm Serial PMD).

This P802.3 10 Gigabit Ethernet meeting closed with reasonable results. Reasonable because there was deadlock on the support for (2 of 5) distance objectives over multi-mode fiber. The P802.3ae 10 Gigabit Ethernet Task Group meeting was adjourned at 7:15pm on July 12th, 2000.

Outline:

Meeting Goals:

This meeting marked the end of the "Selection Phase" which ran from March – July 2000. During May we staged for the July final selection of proposals, identified the final candidates (e.g. coding schemes) and consolidate proposals including identifying clause structure. The goals for this July 2000 are to adopt and refine baseline proposals as well as plan the 1st draft for a September 2000 availability.

Future Meetings:

➢ September 12th – 14th	Interim meeting	New Orleans, LA.
➢ November 6th – 10th	Plenary meeting	Tampa, Florida
➢ January	Interim meeting	TBD

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 100 m over installed MMF ***No Proposal targeted for 1st draft Std.***
  - At least 300 m over MMF ***No Proposal targeted for 1st draft Std.***
  - At least 2 km over SMF
  - At least 10 km over SMF
  - At least 40 km over SMF
- 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).

Agenda:

Speaker	T	Topic	Time Req	Time Allc	Start Time
Tue, 11 July 2000		**Call to Order**			8:30 AM
Jonathan Thatcher	Z	Opening Business	0:45	0:45	8:30 AM
Robert Grow		Presentation of 10GbE Blue Book	0:10	0:10	9:15 AM
Booth, Bradley		Blue Book Structure	0:30	0:20	9:25 AM
Shimon Muller	T	Open Loop PHY Rate Control Mechanism	0:10	0:10	9:45 AM
Shimon Muller	T	Changes to Existing Clauses	0:30	0:20	9:55 AM
David Law	T	10Gb/s Ethernet MDC/MDIO Proposal	0:10	0:10	10:15 AM
David Law	T	10Gb/s Ethernet Management MIB Proposal	0:10	0:10	10:25 AM
		Break	0:20	0:20	10:35 AM
Howard Frazier	T	XGMII Proposal	0:15	0:15	10:55 AM
Stephen Haddock	T	IPG and SOP lane alignment	0:15	0:15	11:10 AM
Rich Taborek		XAUI/XGXS Proposal	0:30	0:20	11:25 AM
Rick Walker		64b/66b PCS	0:20	0:15	11:45 AM
		Lunch	1:20	1:10	12:00 PM
Norival Figueira	T	WAN Interface Sublayer (WIS) Update	0:45	0:30	1:10 PM
Osamu ISHIDA	T	Link Signaling Sublayer (LSS) Proposal	0:25	0:25	1:40 PM
Stuart Robinson	T	XBI - Optional PMA Service Interface for Serial PMD's	0:25	0:20	2:05 PM
Paul Bottorff	T	SUPI	0:30	0:25	2:25 PM
		Break	0:20	0:20	2:50 PM
Tom Palkert	T	SUPI	0:20	0:20	3:10 PM
Jonathan Thatcher	Z	**LOGIC MOTIONS**		2:30	3:30 PM
		Adjourn			6:00 PM

Wed, 12 July 2000		**Call to Order**			8:00 AM
Michael J Hackert		TIA FO-2.2.1 liaison report	0:10	0:10	8:00 AM
Pat Gilliland	T	10GFC Liaison Report: 850nm VSR PMDs	0:15	0:15	8:10 AM
Piers Dawe		Optical Model (Spreadsheet) Update	0:15	0:15	8:25 AM
Edward Chang	T	10 GBASE-SX4 CWDM 850nm with Extended Distance	0:30	0:30	8:40 AM
Bill Wiedemann	T	CWDM 10GBASE-SX Proposal	0:30	0:30	9:10 AM
Pat Gilliland	T	Comprehensive WAN, LAN, and Very Short Reach PMD	0:20	0:20	9:40 AM
		Break	0:20	0:20	10:00 AM
Paul F Kolesar		850 nm Serial Specifications and Criteria	0:35	0:35	10:20 AM
Rob Williamson		A case for 850-nm serial PMD: specs, feasibility	0:20	0:20	10:55 AM
Steven Swanson		First Draft PMD Solution Set	0:15	0:15	11:15 AM
Edward Chang	T	Five PMDs Provide Market Innovation	0:20	0:20	11:30 AM
		Lunch	1:20	1:10	11:50 AM
Krister Fröjdh	T	Choice of Parameters for SM PMDs	0:15	0:15	1:00 PM
David Cunningham		3-PMD proposal	0:25	0:25	1:15 PM
David Cunningham	T	Support for Blue Book and 3PMD Set	0:25	0:25	1:40 PM
Jens Fiedler	T	Cost Comparison of Long Wavelength Solutions	0:15	0:15	2:05 PM
Jonathan Thatcher		Why "That Three PMD Set"	0:20	0:20	2:20 PM
		Break	0:20	0:20	2:40 PM
Jonathan Thatcher	Z	**PMD MOTIONS**		3:00	3:00 PM

Speaker	T	Topic	Time Req	Time Allc	Start Time
		Adjourn			6:00 PM
		If we have time... OR postponed till September			
Jim Tavacoli	T	10G backplane design problems	0:20	0:20	
Elwood Parsons		Implementing 5G in Cu Today / Roadmap to 10Gbps	0:20	0:20	
ChanGoo Lee		A comprehensive grasp on MB810	0:20	0:20	
Takashi Yoshikawa	T	1.3 um VCSEL for SMF 2, 10 km	0:20	0:20	

Presentations:

1. **Presentation of 10GbE Blue Book (Bob Grow)**
   Mr. Grow and a group of interested set of participants contributed to this blue book. The goal is to select a core set of proposals that our editors can work from to create the first draft of the 10 GbE standard. Not all persons that supported this Blue Book fully agree with the content, but in the sprit of moving forward were willing to make compromises. Bob asked the group to consider this set of proposals as our core proposals, the base line for our discussions. The 10 GEA helped considerably to generate this set of proposals. This was the same way that the 1 GbE and Fast Ethernet blue books were created. Howard Frazier stated that this book has no unique status in IEEE802.3ae, it does represent a set of proposals that have been reviewed in the past. The twelve proposals in this Blue Book include:
   - Blue Book Structure (***Booth***)
   - Proposal for an Open Loop PHY Rate Control Mechanism (***Muller***)
   - IEEE P802.3ae 10Gb/s Ethernet MDC/MDIO Baseline Proposal (***Law***)
   - IEEE P802.3ae 10Gb/s Ethernet Management MIB Baseline Proposal (***Law***)
   - XGMII Update (***Frazier***)
   - XAUI/XGXS Proposal (***Taborek***)
   - 64b/66b PCS (***Walker***)
   - WAN Interface Sublayer (WIS) Update (***Figueira***)
   - Link Signaling Sublayer (LSS) Proposal (***Ishida***)
   - XBI – Optional PMA Service Interface for Serial PMD's (***Robinson***)
   - SUPI Update (***Bottorff***)
   - Proposed Set of Three 10 GbE PMD's & Related Specifications (***Cunningham***)

2. **Blue Book Structure (Brad Booth)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/booth_1_0700.pdf
   Mr. Booth started with a review of the four layers (i.e. LAN serial, WAN serial, WAN WDM and LAN WDM) and the XAUI extender used to extend the XGMII interface. Some interfaces are not instantiated in the standard, e.g. PCS to WIS and PMA to PMD. Reference this presentation for a mapping of 10 GbE presentations to the relevant clauses. There were several implementation examples presented, and Brad said they would not be placed in the standard. There was a concern that they

should be placed in the standard to help individuals with interoperable implementations from a jitter budget point of view.

Suffix Decode: **10GBASE-xyz**

Port Type	New Proposal
1300nm LAN Serial	10GBASE-LX
1500nm LAN Serial	10GBASE-EX
1300nm WAN Serial	10GBASE-LW
1500nm WAN Serial	10GBASE-EW
1300nm LAN WWDM	10GBASE-LX4
1300nm WAN WWDM	10GBASE-LW4

Wavelength
- L = Long wavelength (1300nm)
- E = Extra long wavelength (1500nm)

Network environment / PMD Type
- X = LAN (8b/10b WDM; 64b/66b Serial block encoding)
- W = WAN

Number of Wavelengths
- Omitted = one, e.g. serial
- 4 = four, e.g. WDM

3. **Open Loop PHY Rate Control Mechanism (Shimon Muller)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/muller_1_0700.pdf
   Mr. Muller gave a review of his MAC rate control mechanism, reference the May meeting minutes for a summary of this rate adaptation mechanism. The new information includes changes to the MAC Self-Pacing Proposal implementation, for example removing half duplex considerations from the frame transmission pseudo code in section 4.2.8. This method of rate adaptation has an estimated worst case imprecision of 0.05751 %. For every 8,000 bytes transmitted you'll need to transmit an extra IDLE character. This is very similar to the way we deal with clock tolerance differences over the link, i.e. IPG shrinkage.

4. **Changes to Existing Clauses (Shimon Muller)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/muller_2_0700.pdf
   Mr. Muller covered changes to clauses he is the primary editor for. The open loop rate control will hit clauses 1 & 4. The diagrams are getting crowded, the group should update the diagram in clause 1 for 10 GbE, delete diagrams in clauses 2, 4 and 6, lastly change the diagram in clause 35 to limit its scope to GMII. The speed independence should be dealt with this time around, make the MAC speed independent – just changes in a few places. The inconsistency in CRC processing between 802.3 and 802.1 should be addressed, this will imply changes in 13 places. The issue with document structure in clause 22 is that it has a scope much larger than the rest of the clause. Shimon suggests leaving it as is and add new 10 GbE information relevant to PHY Management in a new clause 33. The MAN/WAN friendliness centers around our work in the WAN space, it hasn't been done before so

the group needs to determine how the standard will migrate from a LAN standard to a LAN/WAN standard. This proposal contains a summary of all the changes to existing clauses that have been identified so far. Shimon is seeking timely feedback on the presented issues to generate the first draft. The default will be the editor's recommendations. More details will be presented during the first draft review. Pat Thaler was concerned with the modifications to the Pascal code, Steve Haddock asked Pat to express her specific concerns when they surface in the near future.

5. **10 GbE MDC/MDIO Proposal (David Law)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/law_1_0700.pdf
   Mr. Law's presentation was largely a review of the MDC/MDIO work he had previously presented in May. Please reference the May minutes for those previous details. The UNH-IOL has a feasibility study underway that investigates these new MDC/MDIO techniques. The initial paper published by Alan Ames and Bob Noseworthy from the UNH InterOperability Lab found that after investigating 22 FE and GE PHY's from various vendors that the use of two MII management frames is feasible.

6. **10 GbE Management MIB Proposal (David Law)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/law_2_0700.pdf
   Mr. Law gave the same MIB presentation that he pitched at the MAY meeting. Reference the May meeting minutes for details.

7. **XGMII Proposal (Howard Frazier)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/frazier_1_0700.pdf
   Mr. Frazier's new material on the XGMII includes source & receiver setup times. Howard fully expects these proposed setup values will change. There is a concern with the number of clocks. Howard is not concerned with this due primarily to the short distance of the XGMII, e.g. approximately 3 inches. There was clarification that XGMII is independent of XAUI.

8. **IPG and SOP lane alignment (Stephen Haddock)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/haddock_1_0700.pdf
   Mr. Haddock started with some definitions of IPG, for example the Ethernet MAC specification calls for a 12-byte minimum transmitted IPG and 4-byte minimum received IPG. The new 10GbE lane restriction of all packets starting on lane 0 at the XGMII imposes some new design considerations that the MAC is not aware of and should not be aware of because the MAC should be speed independent. Steve presented three alternatives for achieving start of packet alignment to lane 0. Steve also ruled out 2 of the 3 alternatives, for example no MAC changes. The preferred option was to slide the packet forward or backwards at the reconciliation sub-layer until the next lane 0 alignment comes around within three byte times maximum. This has an effect on the transmitted minimum IPG, now it would range from 9 to 15 bytes but long term would average 12 bytes. There was an unrelated question about where IPG's are adjusted when doing open loop rate control, the answer is in the 64b/66b block. Shimon spoke in favor of this proposal, however he did have a concern with

the compliance and conformance testing of this proposal. The reconciliation sublayer is where this proposal would end up in the standard.

9. **XAUI/XGXS Proposal (Rich Taborek)**
   http://grouper.ieee.org/groups/802/3/ae/public/jul00/taborek_2_0700.pdf
   Mr. Taborek gave the exact same presentation on XAUI as he did in the May 2000 meeting, please reference the May meeting minutes for details. There was a comment on the reference clock, it will not be specified in the standard, it could be derived from the incoming bit stream.

10. **64b/66b PCS (Rick Walker)**
    http://grouper.ieee.org/groups/802/3/ae/public/jul00/walker_1_0700.pdf
    Mr. Walker's presentation is also a repeat of his pitch on 64b/66b that he gave in May, once again please reference the May meeting minutes for details. The code summary chart now includes clarification of the 1st and 2nd RS transfers and a few other modifications, e.g. mapping of Z codes to Line codes. A few minor changes to the state machines were included in this pitch. The 64b/66b code optionally supports the new LSS protocol.

11. **WAN Interface Sublayer (WIS) Update (Norival Figueira)**
    http://grouper.ieee.org/groups/802/3/ae/public/jul00/figueira_1_0700.pdf
    Mr. Figuerira also gave an update to WIS with little to no new content. Norival suggested how to write WIS into the standard, his proposal leverages highly on the ANSI T1.416-1999 specification. This specification can be retrieved by going to URL http://www.atis.org/atis/docstore/index.asp This ANSI document contains definitions and references to other documents providing a complete specification of network and customer installation interfaces compatibility. This also covers SDH support as well. Norival defined each section of this ANSI document that would be relevant to the 10 GbE standard. The defined overhead bytes that are not used by 10 GbE are transmitted as ZEROs and are ignored at the receiver. How to map a 66 bit frame into bytes is missing from this presentation.

12. **Link Signaling Sublayer (LSS) Proposal (Osamu ISHIDA)**
    http://grouper.ieee.org/groups/802/3/ae/public/jul00/ishida_1_0700.pdf
    Mr. Ishida's pitch was also a review of LSS; please reference previous meeting minutes for a detailed summary of this link signaling proposal. LSS is only a reporting mechanism, no negotiations and no acks, no handshake, no synchronization. Two break link and remote fault scenarios were shown. There was concern with the optional OAM&P. From a cable plant management Osamu felt this was a minimum requirement.

13. **XBI Optional PMA Service Interface for Serial PMD's (Stuart Robinson)**
    http://grouper.ieee.org/groups/802/3/ae/public/jul00/robinson_1_0700.pdf
    Mr. Robinson described an optional PMA interface, called XBI which is used to ensure interoperability between the Serial WAN/LAN PCS (CMOS) and SERDES (SiGe, GaAs or Bipolar) chips usually within an optical module. In layer terminology

this interface is between the PCS (64B/66B encoder/decoder) and the PMA (serializer/deserializer). A "gearbox" is used at the 66bit PCS interface to get this interface down to a manageable number of pins, like 16 pins. This interface definition comes from the OIF consortium; the OIF is not a standards body so if this were pulled into IEEE 802.3ae for standardization this IEEE group would take control of this interface definition. Using this OIF work helps the 10 GE committee with time to market because there is a large set of component and system vendors in support of this interface proposal. This covers both the WAN and LAN Phy rates, which leads us to an open item that needs clarification, which is clocking. A 622MHz for the WAN Phy and 645 for the LAN Phy are currently required. The XBI interface would support the 9.95328 Gbaud WAN Phy rate with 622.08 MHz clock and the 10.3125 Gbaud serial LAN Phy rate using a 645 MHz clock. Data is transferred across a sixteen differential pair using LVDS I/O.

14. SUPI (Paul Bottorff)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/bottorff_1_0700.pdf

Mr. Bottorff gave an update to the SUPI interface. There are two interfaces on the table for PMD's, in the case of WWDM WAN transceivers the SUPI (4 x 2.48832 Gbaud) interface is used, other transceivers use a 16-bit parallel OIF interface. SUPI is similar to XAUI in that four serial lanes (16 bit word stripping) are used; however SUPI uses a scrambled code and XAUI uses a block code. A deskew function is included in SUPI.

15. SUPI – A Protocol for a Short Reach WAN PHY Interface (Tom Palkert)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/palkert_1_0700.pdf

Mr. Palkert's presentation just like Paul's above focused on SUPI. Tom points out that this 16-bit interface is specified in an OIF very short reach protocol contribution defined in OIF2000.074. This interface will support both 2.5 and 3.125 Gbps optical components. The pin-out and block diagram of the internals for a proposed OC-192 Quad VSR SerDes was shown. This SUPI protocol can be used on CWDM, WWDM PMD's and also on parallel fiber. The reuse of LAN PHY optical components is also a significant advantage.

16. TIA FO-2.2.1 Liaison Report (Michael J Hackert)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/hackert_1_0700.pdf

Mr. Hackert reported that the TIA FO-2.2.1 62.5 um modal dependencies on bandwidth recommendation is complete and 50 um proposal is drafted. A validation experiment is in progress for 50 um to verify their recommendation will work for the next generation 50 um MMF. Their experimentation and validation will be complete by 10 GbE working group ballot.

17. 10GFC Liaison Report: 850nm VSR PMD's (Pat Gilliland)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/gilliland_2_0700.pdf

Mr. Gilliland reported that two recent 850 (serial & parallel) votes were taken in Fiber Channel, both passed. The parallel PMD option supports both 64b/66b and 8b/10b block-coding schemes. Additionally the parallel PMD supports up to 1km link

distances over the new 50/125 um ribbon fiber. The transmitter, receiver and jitter characteristics were presented. The serial PMD option relies on the TIA FO-2.2 recommendation. The goal is to spec up to 300m over the new MMF, however modeling shows a maximum link length w/c at 260m. Much shorter link lengths are supported over legacy fiber, in the range of 30 – 80 meters. The connectors are focused on the edge of the network applications. The concern is that if we pick this solution up from FC and bring it into IEEE we'll need to make additional modifications. This 10GFC effort may be useful to the IEEE 802.3ae as a reference document when completed.

18. Optical Model (Spreadsheet) Update (Piers Dawe)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/dawe_1_0700.pdf

Mr. Dawe reported on the changes to the spreadsheet. Piers mention that many if not all people that use the spreadsheet have been using the modified version for the past month or so. This is a work in progress, more experimental verification is needed at 1550 nm, plus DCD, MPN, Jitter, multilevel encoding and chirp. New equations for the combined penalty of (BLW RIN MPN) have been developed. A revised ISI formula was presented. Petar suggested the RIN and MPN are related and questioned the method of adding the two together. Piers suggested he and Petar take this subject off-line for discussion. Jonathan questioned if Piers's presentation was for the purposes of driving consensus on the spreadsheet model so it could be voted into the standard. He also asked if the Q/A that occurred after the presentation concluded would prevent this spreadsheet from being adopted. Petar commented that he does not agree with the spreadsheet as presented and that changes need to made soon.

19. 10 GBASE-SX4 CWDM 850nm with Extended Distance (Edward Chang)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/chang_1_0700.pdf

Mr. Chang discussed extending the operating distance of 10 GBASE-SX4 CWDM 850nm by using a Vortex launch; this would extend the 62.5 um installed MMF operating distance to 300 meter. A vortex launch will cause the light to stay away from the center of the core of the fiber. It will spiral like a helix in the core. The alignment is on the order of 5 – 7 microns, which is not the same order of magnitude as single mode tolerances. David Cunningham did not think the Vortex launch should be considered at all by this committee.

20. CWDM 10GBASE-SX Proposal (Bill Wiedemann)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/wiedemann_1_0700.pdf

Mr. Wiedemann is a spokesman for the 850 CWDM camp. This proposal was originally proposed in March 2000. 71 individuals from 36 companies support this effort. The five criteria are met by this proposal. The distance objectives achieved are 100m on installed fiber and 300m on standard 50um fiber, plus the ability to met the schedule. This is the lowest power option, with multi vendor support. Since greater than 50 % of the market can be met by this solution, it should be standardized. If this optimized solution for greater than 50 % of the market is not accepted Bill felt that the acceptance of 10 GbE would be slower than it could be. The transmitter optical module will be available by multiple suppliers. There are no single mode alignment

requirements; this results in lower cost. Higher density applications will be easier to achieve in the future due to the lower power requirements. They estimate around 2 Watts per transceiver. This lower power will result in lower EMI emissions. The MM construction leads to this lower power, the solution does not require temperature control, and is easy to assemble. Performance eye diagrams at 3.125 Gbps were shown at 300 meters. Availability of a complete transceiver is Q4 2000. The PMD selection chart was shown again with a note that 54 % of the target 10 G market is satisfied by the 100 m MMF application. Bill encouraged the group to vote this solution into the PMD set. There are at least 3 suppliers for the lasers on this solution. XAUI re-timers should be available from at least 9 suppliers, 6 TIA suppliers and 9 laser driver suppliers. Parallel optics could be a lower power solution. Bill summarized with "Ethernet has been successful because it has always been the most cost effective solution in the networking market space. This committee must standardize on an optimal solution for the largest market segment".

21. Comprehensive WAN, LAN, and Very Short Reach PMD (Pat Gilliland)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/gilliland_1_0700.pdf

Ten individuals support Mr. Gilliland's presentation. The low cost applications for this VSR PMD option includes rack to rack, central office cross connect, intra rack and equipment room connections under 100 meters in length. This solution will require array connectors for the ribbon fiber. The VSR proposal uses 850nm Serial for lowest cost, 850nm Parallel to leverage existing technology, and addresses the 100m objective over existing MMF. This PMD would heavily leverage the work done in Fiber Channel, Pat suggested that in the future this VSR PMD could be referenced from an Annex of the 10 GbE standard. There was a concern raised about cable management, seems to be OK for very short reach like within a single computer room. Field termination of parallel cables is not possible. The time frame for 10 GbE should be OK given our standards schedule. It is very unlikely that there will be a low cost field termination method available any time soon. Pat said some ribbon fiber manufactures would dispute the previous statement.

22. 850 nm Serial Specifications and Criteria (Paul F Kolesar)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/kolesar_1_0700.pdf

Mr. Kolesar's presentation supports the 5 PMD set including the 3-PMD set proposed by Hanson back on May 2000 with the addition of 850 nm Serial and CWDM. The support for this 5 PMD set has grown a bit more since the May 2000 interim meeting, currently there are 63 supporters. The mode conditioning patch cord is not required. The operating ranges for the 10GBASE-SX solution over MMF and SMF ranges from 2 – 300 meters. The typical clause 38 transmitter, receiver, power budget and jitter tables were presented again. Some updates to the proposal are coming based on the updated Dawe's spreadsheet. Users are willing to pull in new media that provides new application coverage while retaining support for legacy systems. The choice between the 10 Port Types will drop very fast when system integrators ask their customers what they want and need. A MMF projection chart shows the new MMF reaching 50% of legacy MMF sales by year 2004. Other future projects show that 83 % of all 10 GbE ports shall be enterprise backbone links with lengths less than 300

meters, or 6.6M such ports by the year 2005. This is the high volume application that the 850nm camp feels should be addressed with a low cost "SX" type solution. A number of customer testimonials were given that support the usage of new MMF, they are:

Customer Testimonial 1 Kurt Bartelmehs, who is in charge of the network for the University of Texas-Austin

> "We have installed the new multi-mode fiber because it supports legacy and gigabit applications and low-cost 10 Gigabit Ethernet at 850 nm."

Customer Testimonial 2 Markku Niemi, IT Facilities Manager, Nokia

> "At Nokia Saterinportti-premises (Espoo, Finland), we have installed Lucent's new multi-mode fiber to the backbone network for future 10 Gbit needs. Saterinportti-premises is a building consisting of 5 blocks and is designed for up to 2000 people."

Customer Testimonial 3 Mike Bennett, Lawrence Berkley Labs

> "I support at least one low cost LAN PMD solution and if the 850 nm serial PMD turns out to be the one, then I support it. Further, I don't like having to use mode conditioning patch cables. Pulling new fiber intra-building is no problem for us, so I don't perceive this as a forklift upgrade."

Customer Testimonial 4 Dave Hyer, Senior Member Technical Staff, Compaq

> "To prevent the proliferation of customized solutions and the resultant interoperability problems, IEEE 802.3 should standardize on an optimized, high-volume, short-reach PMD for our customer requirements. I believe this solution is best achieved with 850 nm technology and multi-mode fiber. This approach is compatible with legacy applications, while providing reasonable reach and a degree of future proofing when combined with the new high bandwidth multi-mode fiber."

Customer Testimonial 5 Roy Bynum, Network Architect.

> "IEEE 802.3ae needs to standardize a low-cost 850 nm PMD. In data centers, the construction cost for single-mode fiber plant is 4 times the cost of multi-mode. Ribbon interconnects in the data center, such as OIF or Infiniband, are not acceptable due to the inability to field-terminate ribbons. The mode-conditioning patch cords are unacceptable due to high cost and complexity added to the cable plant. I would much rather have IEEE standardize on 850-nm PMDs for 10 gigabit Ethernet than have many proprietary 850 nm PMDs."

Paul presented the distinct identity chart below which shows the technology that are optimized for each 10 GbE application.

Problem	Optimal Solution
Longest Distance (40+ km)	1550 Serial
Medium Reach, Lower Cost, Transponder Compatibility	1310 Serial
Maximum Reuse of Installed MMF	1310 WDM

Lower Cost for Installed MMF	850 WDM
Lowest Cost on MMF	850 Serial

The PAR 100 m objective must have a standards based solution because Ethernet technology enjoys greater than 90 % of the market space so lets standardize on this PMD option as opposed to referencing some other standard's body solution. From a technical feasibility point of view, there are 12 companies that have made numerous presentations on 850 serial and CWDM proposals. The new MMF media is gaining acceptance. The SerDes logic for 850 Serial can/is the same SerDes as used by 1310 nm serial. Paul concluded by mentioned that in March the HSSG approved a motion which specified seven or fewer PMD's. The 5 PMD set is inclusive of the 3 PMD set and it's too soon to discard any of the 5 PMDs.

23. A case for 850-nm Serial PMD: Specs, Feasibility (Rob Williamson)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/williamson_1_0700.pdf

Mr. Williamson presented his companies 850 nm Serial solution. This included an expected evolution for this technology, i.e. the implementation for the next 12 months (CMOS, GaAs, optical assy), moving to an early 2001 implementation (CMOS, SiGe, Optical assy). The VCSEL used is a 10um oxide VCSEL that has high reliability. The RIN measurements are well within specification at –136 dB/Hz up to 85 degrees C. Eye diagrams at 0, 25, 40 and 70 degrees C demonstrate acceptable performance. They do not expect any problems with conformance to the worst case receiver sensitivity of –13dBm. Rob wrapped up by stating the 850 nm Serial PMD are achievable by multiple vendors and will be the lowest cost option for the high volume 300m application space. There were a few comments on how new MMF has very little impact on the total system cost.

24. First Draft PMD Solution Set (Steven Swanson)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/swanson_1_0700.pdf

Mr. Swanson supports the previous 850 nm serial speakers. Steve focused on how we would select these PMDs considering his interest in maximizing optimum solutions for the various application spaces. The 850 nm PMD solutions will be the lowest cost and if they are not supported by the 10 GbE committee they will be deployed any ways as proprietary solutions. A unified low-cost solution will accelerate the market acceptance of 10 GbE. Nine possible PMD sets were highlighted.

PMD Technology	5 PMD set	4 PMD set A	4 PMD set B	4 PMD set C	4 PMD set D	3 PMD set A	3 PMD set B	3 PMD set C	3 PMD set D
850 nm Serial	•	•	•	•					•
850 nm CWDM	•	•	•		•	•	•		
1310 Serial	•	•		•	•	•		•	
1310 WWDM	•		•	•	•		•	•	•
1550 Serial	•	•	•	•	•	•	•	•	•

There is only one set that does not include the 850 nm technology and that happens to be the same one that is in the Blue Book. The 5 PMD list represents significant progress in the down selection process, remember there were approximately 20 PMD proposals on the table less than a year ago. There are four "3 PMD Sets", three of these will require the elimination of one long wavelength option. There are four "4 PMD Sets", all four include 850 nm technology. There is only one "5 PMD Set" it is an inclusive set that meets all 802.3ae objectives. This 5 PMD set has very significant support and will not delay the standard. Steve summarized by saying please support the 5 PMD set, the bulk of the work is behind us. There was a comment that since Ethernet is moving outside of its normal application space, i.e. LAN space moving into MAN/WAN space it is not surprising that there are more PDM options surfacing.

25. Five PMD's Provide Market Innovation (Edward Chang)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/chang_2_0700.pdf

Mr. Chang gave a brief three chart presentation that supports the 5 PMD thrust.

26. Choice of Parameters for SM PMD's (Krister Fröjdh)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/frojdh_1_0700.pdf

Mr. Frojdh described a different way to specify link budgets and transmitter power for 10GbE single-mode PMD parameters than are currently specified by ITU. The goal is to lower transmitter cost due to higher yield, support longer distances, use direct modulated lasers where possible and to simplify drive electronics. Krister stated this new method of specification would not disadvantage any pre-existing devices that conform to ITU specs.

27. Support for Blue Book and 3 PMD Set (David Cunningham)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/cunningham_0700.pdf

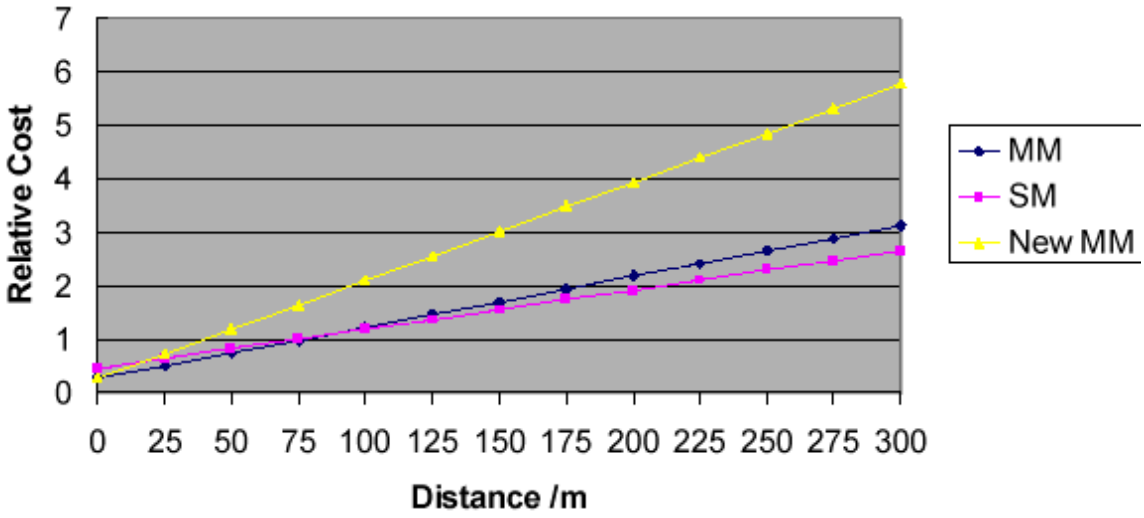
Mr. Cunningham's presentation on the web changed slightly and will be updated. David stated that all five criteria are supported by his 3 PMD set proposal and it's time to move forward at this meeting to gain some momentum on the 10 GbE standard. The 1550 nm for LR > 40 km SMF MAN/LAN, 1310 nm for IR 10 km SMF (LAN/MAN/WAN) and WWDM 1310 nm for SR 300 m MMF and IR 10 km

SMF LAN/MAN. Agilent supports the development of 850 nm MMF based PMD's. David felt that other standards bodies are capable of standardizing on this 850 nm technology, like ITU, OIF, FC and IB. The 850 nm technology could be viewed as interconnect technology, not LAN/MAN/WAN. The LAN variation of 1310 nm WWDM has been extensively tested in the past, e.g. TIA TG 2.2. Both the MMF and SMF eye diagram results show the eye is open wide enough to work well at 10 GbE. Modal noise is not a concern. With regards to 850nm a comment was made that 802.3z took the time and trouble to specify 1000BaseCX but it is not heavily used in the industry and the 1550 nm technology is used a lot but is not specified. The slide that talks about 10GbE relinquishing the 850 nm solutions to other standards bodies did not go over very well at all. There are a lot of people willing to do the work here in 802.3ae to complete the 850-nm standardization. David clarified that the 3 PMD set satisfies the objectives, lets get it into the standard and separate out the 850 nm technology decision to the committee as a separate effort. OIF and IB are not standardization's bodies. Has anyone other than Agilent been involved with the development of long wavelength WDM for 10GbE? David believes that there are other companies working on long wavelength WDM but choose not to bring that work here. David was asked if the committee includes 850 nm in the standard would it slow down the standards development, David was not sure if it would or not. Are the modal numbers based on 62.5 um fiber with offset launch cord as launch condition? Is there any consideration for removing the off-set launch cord? No.

28. Cost Comparison of Long Wavelength Solutions (Jens Fiedler)

http://grouper.ieee.org/groups/802/3/ae/public/jul00/fiedler_1_0700.pdf

Mr. Fiedler's pitch is a pro-3PMD solution that stresses the future proof benefits of single-mode fiber; this is inclusive of a potential next step for Ethernet applications running at 40Gbps. The relative cost effectiveness applies to both long and short distances. Jens also spoken in favor of 850nm solutions for very short reach distances, however he felt these should be defined by other committees such as FC, OIF and IB. A series of cable cost comparisons as a function of cable types, numbers of connectors and distances were shown, for example:



This chart shows a relative current cost comparison (estimate) of cable types with six connectors. The legacy MMF costs = 1.3x SMF costs, the new MMF costs = 2.5x SMF costs and the SMF connector costs = 1.7x MMF connector costs. Comment from the floor that SMF was less than 10 % of the installed based and there are no significant amounts of SMF in buildings.

29. Why "That Three PMD Set" (Jonathan Thatcher)
http://grouper.ieee.org/groups/802/3/ae/public/jul00/thatcher_1_0700.pdf

Mr. Thatcher gave a somewhat controversial pitch in support of the three PMD set. The current 1310 nm Serial technology is forward thinking, not just for 10 GbE but also for the next step. It sets the stage for a four channel (10G each channel) or 40G Ethernet solution based on single-mode fiber. From a cost point of view SMF can be amortized over multiple generations of communications technology. Given the BW of SMF is relatively unlimited, Jonathan's point is that SMF should be the basis for this standard's media so that future revs of Ethernet will not require media upgrades each time Ethernet speeds are increased. Jonathan claimed he has been getting calls from confused fiber installers and contractors about new installations because someone is telling them that the IEEE 802.3ae standard REQUIRES new MMF. Long wave VCSELs are around the corner. Jonathan mentioned some risk factors for 850nm and new MMF - said high speed 850 nm VCSELs are not in production and not qualified yet, dependent on timely completion of 2.2.1, CDRH for laser safety, TIA is not bound by the 5 criteria, new MMF availability and fragmenting the market. Jonathan then referenced a number of IEEE802.3ae testimonials that support fewer PMD's and ended the talk with this line:

5 is Jive
3 sets us FREE

Why when in the GE market place SW has 85 % of the market hasn't LW taken over?

It is difficult to say SMF is one size that fits all cases, new MMF is a good choice for green field installations. There are relatively new VSR options being worked in other areas and we are very focused on other application spaces like WAN, we should be careful to not forget our roots, it is LAN not WAN. Lucent spoke in favor of the high BW fiber availability

Motions:

Logic Based Motions:

- **Motion # 1**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposals, as presented, as the basis for draft D1.0 :
    - muller_1_0700 "Open Loop PHY Rate Control"
    - law_1_0700 "MDC/MDIO Baseline Proposal"
    - law_2_0700 "Management MIB Baseline Proposal"
    - frazier_1_0700 "XGMII Update"
    - taborek_2_0500 "XAUI/XGXS" as modified with /Random[A,K]/R/ proposal (taborek_1_0700)
    - walker_1_0700 "64b/66b PCS"
    - figueira_1_0700 "WIS Update"
    - ishida_1_0700 "LSS Proposal"
    - robinson_1_0700 "XBI - Optional Serial PMA Service Interface"
    - bottorff_1_0700 "SUPI Update"
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: N: A:
    Attendees Y: N: A:
    Time:
    P/F:
  - **Discussion:** The intent is that these individual proposals are the same proposals that are in the Blue Book and will all ultimately be on the web. A few of these proposals had some minor changes but they are all going to be updated on the web. Brad Booth has all the changes. Howard and Shimon spoke against the

complete set of proposals, specifically Howard had objections to two of these proposals.

- **Motion # 1.a**
  - **Description:** Move to divide motion #1 above.
  - Motion Type: Procedural 50% required
  - Moved By: Howard Frazier
  - Seconded By: Tom Dineen
  - Results: 802.3 Voters Y: 45 N: 58 A: 17
    Time: 3:40pm July 11, 2000
    P/F: Fails (back to motion #1)
  - Results: 802.3 Voters Y: 86 N: 12 A: 21
    Time: 4:00pm July 11, 2000
    P/F: **Passed** (move to motion # 2 now)

  - **Discussion:** The group was split on this decision to divide the motion. Some felt that it would be better to find a larger bucket of proposals to vote on as a whole, then deal with the proposals that a few had difficulty with. The complete list is a complete representation of what is required to establish the base line draft standard (less PMD's). There was a request to call the question, no objection.

- **Motion # 1.b**
  - **Description:** Move to reconsider the motion to divide.
  - Motion Type: Procedural 50% required
  - Moved By: Bill Weidaman
  - Seconded By: Jay Hoge
  - Results: 802.3 Voters Y: 95 N: 10 A: 11
    Time: 3:55pm July 11, 2000
    P/F: **Passed** (back to motion #1a)

  - **Discussion:** A large number of individuals spoke in favor of this motion prior to the actual vote. Call the question, no objections. Since this passed we were back to motion 1.a on the motion to divide.

- **Motion # 2 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal as the basis for draft D1.0 :
    - muller_1_0700 "Open Loop PHY Rate Control"
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 113 N: 0 A: 7

    Time: 4:03pm July 11, 2000
    P/F: **Passed**

- **Discussion:** Call the question, no objections.

- **Motion # 3 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - law_1_0700 "MDC/MDIO Baseline Proposal"
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 106 N: 0 A: 10
    Time: 4:07pm July 11, 2000
    P/F: **Passed**

  - **Discussion:** There was some minor concern with the op codes. The author spoke in favor of moving forward with this as a base line recognizing that there is more work to come in the future revisions of the standard drafts.

- **Motion # 4 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - law_2_0700 "Management MIB Baseline Proposal"
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 105 N: 0 A: 9
    Time: 4:10pm July 11, 2000
    P/F: **Passed**

- **Motion # 5 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - frazier_1_0700 "XGMII Update"
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 110 N: 0 A: 4
    Time: 4:15pm July 11, 2000
    P/F: **Passed**

  - **Discussion:** There was a request to do more work on the timing of the XGMII. The author of the proposal said he accepts the fact that the XGMII timing needs more work.

- **Motion # 6 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :

- taborek_2_0500 “XAUI/XGXS” as modified with /Random[A,K]/R/ proposal (taborek_1_0700)
- Motion Type: Technical > 75% required
- Moved By: Ben Brown
- Seconded By: Brad Booth
- Results: 802.3 Voters Y: 113 N: 0 A: 7
  Time: 4:20pm July 11, 2000
  P/F: **Passed**

- **Motion # 7 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - walker_1_0700 “64b/66b PCS”
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 104 N: 4 A: 9
    Time: 4:25pm July 11, 2000
    P/F: **Passed**

  - **Discussion:** Roy felt the timing alignment between the MAC and the WIS needs additional work. Since there is a way to identify the type of PHY that sits below the MAC this should not be a problem. These comments are more appropriate for the WIS discussion, not this motion.

- **Motion # 8 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - figueira_1_0700 “WIS Update”
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 104 N: 4 A: 9
    Time: 4:27pm July 11, 2000
    P/F: **Passed**

- **Motion # 9 (This will not be in the BOM, and there is no plan to bring a motion to 802.3 on this)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - ishida_1_0700 “LSS Proposal”
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 55 N: 32 A: 43
    Time: 4:50pm July 11, 2000

P/F: **Failed**

- Results: All Voters Y: 76 N: 49 A: 83
  Time: 4:50pm July 11, 2000
  P/F: **Failed**

- **Discussion:** Howard and Shimon spoke against this proposal because it does not address any objectives and it is too complex. We don't need to decide on this proposal at this time, it needs more analysis. The group has not heard any other ways to accomplish this functionality, is not ready for prime time, and so lets postpone it to a later point in time. The chair, Jonathan took exception with the comment that this is complex and felt that we need a common OAM&P method to manage links end-to-end. There was an objection because OAM&P is optional and has not been around within committee long enough to study and understand it. There was a comment that the IPG is a field we should not modify at this time. Rich Taborek strongly supported this proposal, stated it is extremely simply and is the only mechanism to convey break link. If we don't do this there will be proprietary methods showing up in the industry to transmit break link and remote fault, this is a bad thing for the industry. There was an argument that auto negotiation started out as a very simple three state process, and turned out to be a complex useless function. Paul spoke in favor of the motion because Ethernet is moving into the WAN environment and is the only mechanism for LAN PHY to be used in long distance links over DWDM technology, this proposal supports that thrust.

- **Motion # 10 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - robinson_1_0700 "XBI - Optional Serial PMA Service Interface"
  - Motion Type: Technical > 75% required
  - Moved By: Ben Brown
  - Seconded By: Brad Booth
  - Results: 802.3 Voters Y: 85 N: 11 A: 22
    Time: 5:00pm July 11, 2000
    P/F: **Passed**

  - **Discussion:** Howard did not understand why this XBI was necessary. The SEDES and PCS needs this interface because they are made of dissimilar technology, so having a well defined interface (especially one that is so widely supported in the industry) is strongly suggested. Many more people spoke in favor on this motion than against it, in fact only Howard spoke against it.

- **Motion # 11 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - bottorff_1_0700 "SUPI Update"
  - Motion Type: Technical > 75% required

- Moved By: Ben Brown
- Seconded By: Brad Booth
- Results: 802.3 Voters Y: 83 N: 9 A: 25
  Time: 5:03pm July 11, 2000
  P/F: **Passed**

- **Motion # 12**
  - **Description:** Move that we modify the objective HSSG Objective "proposed standard P802.3ad (Link….." to "standard IEEE Std 802.3ad-2000 (Link …" :
    - bottorff_1_0700 "SUPI Update"
  - Motion Type: Technical > 75% required
  - Moved By: Howard Frazier
  - Seconded By: Steve Haddock
  - Results: 802.3 Voters Y: 117 N: 0 A: 0
    Time: 5:15pm July 11, 2000
    P/F: **Passed**

- **Motion # 13 (No 802.3 voters wished to challenge this going into the BOM)**
  - **Description:** Move that the P802.3ae Task Force adopt the following proposal, as presented, as the basis for draft D1.0 :
    - Haddock_1_0700 "IPG & Frame Alignment"
  - Motion Type: Technical > 75% required
  - Moved By: Bob Grow
  - Seconded By: Tom Dineen
  - Results: 802.3 Voters Y: 92 N: 1 A: 6
    Time: 5:25pm July 11, 2000
    P/F: **Passed**

- **Discussion:** All discussion was in favor with this motion.

PMD Based Motions:

Discussion prior to the PMD motions:

- The 100 meter over installed MMF was questioned. At this point we can't change them we could only vote to make a modification and pass that modification on to 802.3 for consideration.
- The PMD sub group chair Walt developed a series of motions after talking with a lot of interested parties. We will consider each PMD alternative as an individual motion.
- The chair asked for individuals that have an interest in making motions to identify them now so they can be scheduled. This does not preclude people from making any kind of a motion whenever they want to.
- There was a concern that after the first five individual motions we may not end up with a set of PMD's that satisfy all five distance objectives.
- Another person spoke against individual votes because an individual PMD's value depends on which set it belongs to.

- Stephen Haddock took over chairmanship of the 802.3ae group during this PMD voting phase.

- Pre **Motion # 14**
  - **Description:** To make all PMD votes only on PMD sets that meet all distance objectives.
    - Motion Type: Procedural 50 % required
    - Moved By: John George
    - Seconded By: Chris Diminico
    - Results: Y: 31 N: 78 A:
      Time 4:00pm July 12, 2000
      P/F: **Failed**

  - **Discussion:** Against – voting for sets will put us in a situation where we must vote no on a set when we object to one of the options in a set. Against – we need to understand where we all stand on the merits of each PMD option. Against – if this were to pass we will then need to spend a LONG time developing a set of SETs that meet this motion. Against – We really need a sense on what will and will not pass.

  - Pat CALLED THE QUESTION.
    - There was objection to calling the question, and that was over ruled by vote. So we went back to pre Motion # 14

Straw poles prior to motions:
Those in favor of the 3 PMD set = 75
Those in favor of the 5 PMD set = 112

- **Motion # 14**
  - **Description:** Move that the P802.3ae Task Force adopt the 850nm serial PMD as presented in kolesar_1_0700 as the basis for one of the PMDs in draft D1.0.
    - Motion Type: Technical > 75% required
    - Moved By: Walt Thirion
    - Seconded By: Jonathan Greenlaw
    - Results: 802.3 Voters Y: 59(57%) N: 45 A: 13
      Time: 4:45pm July 12, 2000
      P/F: **Failed**
    - Results: All Voters Y: 120(64%) N: 68 A: 27
      Time: 4:50pm July 12, 2000
      P/F: **Failed**

    - **Discussion:** Support – This is a PMD within the 5 PMD set. Support – We need the right feature set for all the relevant application spaces and I support this in favor of the 5 PMD set. Support – I support this because it is a low cost solution that addresses an application space. Against – Does not address any useful application space for my customers. Against – We need solutions that

run over existing MMF (FDDI vintage) up to 300 meters. Also it will confuse my customers.

- **CALL THE QUESTION** (Dineen) Y: 36 N: 66 **Failed**
- Against – If next generation fiber and other PMD options succeed based on other standards efforts then they will find themselves into the Ethernet standard. Support – I want low cost solutions. Also we heard some strong customer testimonials. Support – Lowest cost again for new installations and equipment rooms. Against – 85 % of the coupled light needs to be coupled into the fiber, this is an OPEN issue. Jim Tatum: speak in favor; mistake to have work go forward in another committee. In favor; lowest cost solution in market; inexpensive way to put in dark fiber for new infrastructure.
- Swanson—**Friendly amendment** to add 1310 serial and 1550 serial to motion. **Unaccepted.**
- Steve Swanson—**motion to amend**, Len Young – second
  - Y: 28 N: 66 A: 17 **Failed**
  - **"**Move that the P802.3ae Task Force adopt the 850nm serial PMD as presented in Kolesar_1_0700, the 1310nm serial PMD as presented in hanson_1_0500 and the 1550nm serial PMD as presented in hanson_1_0500 as the basis for three of the PMDs in draft D1.0.

- **CALL THE QUESTION** (**PASSED**) Back to Motion # 14.

- **Motion # 15**
  - **Description:** Move that the P802.3ae Task Force adopt the 850nm CWDM PMD as presented in wiedemann_1_0700 as the basis for one of the PMDs in draft D1.0
    - Motion Type: Technical > 75% required
    - Moved By: Walt Thirion
    - Seconded By: Brad Booth
    - Results: 802.3 Voters Y: 67 (64 %) N: 38 A: 20
      Time: 5:15pm July 12, 2000
      P/F: **Failed**
    - Results: All Voters Y: 126 (73 %) N: 46 A: 38
      Time: 5:19pm July 12, 2000
      P/F: **Failed**

    - **Discussion:** 11 in support, 4 against. **Support** – this is an important member of the 5 PMD set, low cost, as a customer I want a short wave solution, we should not be a SMF only group, keep complexity in the silicon, don't let multiple proprietary solutions surface out there, this PMD is not being developed in the FC group the previous one was (850 nm Serial), roadmaps need multiple solutions, I'm a system vendor supporting this because we need a short haul solution. **Against** – it is not clear what is the right short wave solution yet before we adopt any of these. In the past a very successful formula has been to let other standards committees write these PMD specs. These other standards are intensely interested in standardizing this short wave technology.

- CALL THE QUESTION, **no objection.**

- **Motion # 16**
  - **Description:** Move that the P802.3ae Task Force adopt the 1310nm serial PMD as presented in hanson_1_0500 as the basis for one of the PMDs in draft D1.0.
    - Motion Type: Technical > 75% required
    - Moved By: Walt Thirion
    - Seconded By: Tom Dineen
    - Results: 802.3 Voters Y: 102 (87 %) N: 14 A: 4
      Time: 5:23pm July 12, 2000
      P/F: **Passed**
    - Results: All Voters Y: 171 (98 %) N: 3 A: 24
      Time: 5:25pm July 12, 2000
      P/F: **Passed**

    - **Discussion:** Support 4, Against 0. Support – This is for WAN usage typically 10 km links. Addresses the attachment of the LAN Phy to the WAN and backbone in the campus. Is mature lets support it.

- **Motion # 17**
  - **Description:** Move that the P802.3ae Task Force adopt the 1310nm WWDM PMD as presented in hanson_1_0500 as the basis for one of the PMDs in draft D1.0.
    - Motion Type: Technical > 75% required
    - Moved By: Walt Thirion
    - Seconded By: Thomas Deneen
    - Results: 802.3 Voters Y: 61 (57 %) N: 45 A: 21
      Time: 5:44pm July 12, 2000
      P/F: **Fails**
    - Results: All Voters Y: 94 (58 %) N: 69 A: 44
      Time: 5:45 pm July 12, 2000
      P/F: **Fails**

    - **Discussion:** Support = 7, Against = 8 **Support** - Supported for installed MMF set. There's a lot of FDDI grade MMF in back bones. For it because we get a broad set of reach options. It is based on well known technology so it is not risky. Time to market advantage. **Against** - bad substitute for a low cost MMF family. Most risky of all PMD's mentioned. Is not going to be accepted by the LAN market place due to off set launch patch cord requirement. Is being done in FC so we don't need to do it here. Technology is good for extending installed MMF but bad for SMF. The patch cords are not well accepted comment was made many times.
    - CALL THE QUESTION (**passed)**

- **Motion # 18**

- **Description:** Move that the P802.3ae Task Force adopt the 1550nm serial PMD as presented in hanson_1_0500 as the basis for one of the PMDs in draft D1.0.
  - Motion Type: Technical > 75% required
  - Moved By: Walt Thirion
  - Seconded By: Tom Dineen
  - Results: 802.3 Voters Y: 102 (100 %) N: 0 A: 23
    Time: 5:48pm July 12, 2000
    P/F: **Passed**

- **Motion # 19**
  - **Description:** Move that the P802.3ae Task Force adopt the 4 fiber VSR as presented in palkert_1_0500 and the 10GFC proposal as presented in gilliland_1_0700 as the basis for one of the PMDs in draft D1.0
  - Motion Type: Technical > 75% required
  - Moved By: Walt Thirion
  - Seconded By: Tom Plackart
  - Results: 802.3 Voters Y: 28 N: 45 A: 33
    Time: 5:59pm July 12, 2000
    P/F: **Fails**
  - Results: All Voters Y: 43 N: 81 A: 59
    Time: 6:00pm July 12, 2000
    P/F: **Fails**
  - **Discussion:** Support = 5, Against = 3

- **Motion # 20**
  - **Description:** Move that the P802.3as Task Force request to 802.3 WG to appoint Rich Taborek as the 10 GFC liaison to coordinate 850 nm PMD standards activities.
  - Motion Type: Procedural 50% required
  - Moved By: Tom Palkert
  - Seconded By: Slelto van Doorn
  - Results: 802.3 Voters Y: 78 N: 4 A: 13
    Time: 6:14pm July 12, 2000
    P/F: **Passed**

- ***Motion 21** Approval of minutes Y = 71 N 0 A 19 **Passes***

- **Motion # 22**
  - **Description:** Move that the P802.3ae Task Force adopt the 850 nm serial PMD as presented in kolesar_1_0700, the 850 nm CWDM PMD as presented in wiedemann_1_0700 and the 1310 nm WWDM PMD as presented in hanson_1_0500 as the basis for three of the PMDs in draft D1.0
  - Motion Type: Technical > 75% required
  - Moved By: Walt Thirion
  - Seconded By: Steve Swanson
  - Results: 802.3 Voters Y: 58 (55 %) N: 47 A: 19

Time: 6:47pm July 12, 2000
P/F: **Failed**

- Results: All Voters Y: 108 (59 %) N: 76 A: 19
  Time: 6:50pm July 12, 2000
  P/F: **Failed**
- **Discussion**: Support = 5, Against = 7. Support – Individually they all had about 60 % support, we need a MMF solution. This motion includes a low cost solution. Lets let the market place regulate the solution space. Against – seems that since all three were voted down, why vote on them again? As a systems vendor all three of these overlap. We need to find one solution not three for this space. Five PMDs equates to ten Port_Types, way too many for systems vendors, would require a GBIC that is very expensive. Would add three port types that did not previously reach consensus. Again we vote on all these already.
- CALL THE QUESTION (**passed)**
- Howard Frazier requested a roll call vote on this motion, the results of this roll call vote are attached below.

A	**Agazzi**	**Oscar**	Broadcom Corporation
Y	**Alderrou**	**Don**	NSerial Corporation
Y	**Alexander**	**Thomas**	PMC-Sierra
	Amer	**Khaled**	AmerNet
	Anderson	**Arlan J.**	Nortel Networks
	Andersson	**Ralph**	TDK Semiconductor Corp
	Arai	**Ken-ichi**	NTT Information Sharing Platform Lab
	Azadet	**Kameran**	Lucent Technologies
N	**Babanezhad**	**Joseph N**	Plato Labs, Inc
	Badoni	**Vipul D.**	LSI Logic Corporation
	Balmer	**Keith**	Texas Instruments Ltd.
	Beaudoin	**Denis**	Texas Instruments
Y	**Bennett**	**Mike**	Lawrence Berkeley Lab
A	**Berglund**	**Sidney**	3M
	Bestel	**John L.**	Lucent Technologies
	Bohbot	**Michel**	NORDX/CDT
N	**Booth**	**Brad**	Intel Corp.
N	**Bottorff**	**Paul**	Nortel Networks
	Bourque	**Gary**	PMC-Sierra, Inc.
N	**Brown**	**Benjamin**	Nortel Networks
	Brown	**Dave**	MOSAID Technologies Incorp.
	Buck	**Steve F.**	TDK
Y	**Buckman**	**Lisa**	Agilent Technologies
	Burton	**Scott**	MITEL Corporation
	Busse	**Robert**	Transition Networks
Y	**Bynum**	**Roy**	MCI Worldcom
Y	**Cam**	**Richard**	PMC-Sierra, Inc.
	Campbell	**Bob**	Lucent Technologies
	Carlson	**Steve**	ESTA
N	**Chang**	**Edward G.**	Hewlett-Packard Company
Y	**Chang**	**Edward S.**	Unisys Corporation
N	**Chen**	**Zinan**	Nortel Networks
A	**Chin**	**Hon Wah**	Optical Networks Inc
Y	**Claseman**	**George**	Kendin Communications, Inc

Y	**Cobb**	**Terry**	Lucent Technologies
Y	**Colla**	**Régis**	Alcatel
N	**Cornejo**	**Edward**	Lucent Technologies
Y	**Cunningham**	**David**	Agilent Technologies Bristol
	Dahlgren	**Robert**	Silicon Valley Photonics
N	**Daines**	**Kevin**	World Wide Packets
Y	**Dallesasse**	**John**	Molex Fiber Optics, Inc
N	**Dartnell**	**Peter**	Nortel Networks
Y	**Dawe**	**Piers**	Agilent Technologies
N	**de la Garrigue**	**Michael**	Alcatel
Y	**Debiec**	**Tom**	Berk-Tek
Y	**Di Minico**	**Chris**	CDT Corporation
	Dickens	**Erik**	Texas Instruments
N	**Dineen**	**Thomas**	Dineen Consulting
	Dixon	**Allen**	Siecor Corporation
Y	**Dolfi**	**David W.**	Agilent Technologies, Inc
	Donhowe	**Mark**	W. L. Gore and Associates
	Dove	**Dan**	Hewlett-Packard Company
Y	**Dreyer**	**Steve**	SEEQ Technology Corp.
Y	**Dugan**	**Richard**	Agilent Technologies
	Dupuis	**Marc R**	Madison Cable Corporation
Y	**Eisler**	**George**	Brooktree Division
A	**Ewen**	**John F.**	IBM Microelectronics
	Feuerstraeter	**Mark**	Level One Communications, Inc.
N	**Fiedler**	**Jens**	Infineon Technologies AG
N	**Figueira**	**Norival**	Nortel Networks
Y	**Flatman**	**Alan**	LAN Technologies
N	**Frazier**	**Howard**	Cisco Systems
A	**Freitag**	**Ladd**	IBM
	Fritz	**Scott**	TDK Semiconductor Corp.
N	**Frojdh**	**Krister**	OptoTronic AB
	Furlong	**Darrell**	Lancast
	Ganley	**Tim**	Lucent Technologies
	Giaretta	**Giorgio**	Lucent Technology
N	**Goergen**	**Joel**	Force 10 Networks
	Goldis	**Moty**	Lucent Technologies
	Graham	**Rich**	Cabletron Systems
Y	**Grann**	**Eric B.**	Blaze Network Products
A	**Gray**	**C. Thomas**	Cadence Design Systems, Inc
N	**Greenlaw**	**Jonathan E.**	Hewlett-Packard
N	**Grow**	**Robert M.**	Intel
Y	**Hackert**	**Michael**	Corning Incorporated
A	**Haddock**	**Stephen**	Extreme Networks
	Haile-Mariam	**Atikem**	Intel Ventures
N	**Hansen**	**Johannes**	Intel Denmark ApS
	Hanson	**Del**	Agilent Technologies
	Harshbarger	**Doug**	Corning Incorporated
	Hasley	**Lloyd**	Cicada Semiconductor Inc
	Hassoun	**Marwan**	RocketChips, Inc.
	Hawkins	**John F**	Nortel Networks
A	**Healey**	**Adam**	University of New Hampshire IOL
	Hecht	**Gaby**	Gadzoox Networks
Y	**Herrity**	**Ken**	Blaze Networks Products
	Hinrichs	**Henry**	Pulse Engineering, Inc.

N	**Hoge**	**Jay**	JDS Uniphase
Y	**Hyer**	**David W.**	Compaq
N	**Ichino**	**Haruhiko**	Nippon Telegraph & Telephone Corp.
N	**Ishida**	**Osamu**	Nippon Telegraph & Telephone Corp.
	Jensen	**Ernie**	Magnetic Concepts & Design
	Joh	**Clarence**	Lucent Technologies
N	**Jørgensen**	**Thomas K.**	Intel Denmark A/S
	Jover	**Juan**	Level One Communications, Inc.
N	**Kabal**	**David**	Nortel Networks
	Kaku	**Shinkyo**	Allied Telesyn International
	Kalkunte	**Mohan**	Broadcom Corporation
	Kalla	**Amrit**	Phillips Semiconductors
	Kaplan	**Hadriel**	Nortel Networks
	Karam	**Roger**	Cisco Systems, Inc
Y	**Kardontchik**	**Jaime**	Microlinear
	Karst	**Dennis L.**	IBM Microelectronics
N	**Kato**	**Toyoyuki**	Anritsu Engineering
	Kayser	**Kevin**	ON Semiconductor
	Kim	**Dae Young**	Chungnam National University
	King	**Neal**	Infineon Technologies
Y	**Kolesar**	**Paul**	Lucent Technologies
N	**Kumar**	**Pankaj**	Level One Communications, Inc
Y	**Lackner**	**Hans**	QoSCom
Y	**Langston**	**Daun**	Sigmatel
N	**Law**	**David**	3Com Corporation
N	**Lee**	**Changoo**	Elect. & Telecomm. Research Inst.
N	**Lee**	**Hyeong Ho**	ETRI
Y	**Lemoff**	**Brian E.**	Agilent Technologies
	Leonowich	**Robert H.**	Lucent Technologies
N	**Lerer**	**Michael**	Avici Systems, Inc.
Y	**Lewing**	**Van**	Quantum Effect Devices
	Lin	**George**	3Com Corporation
	Lowrey	**Scott**	Network Elements Inc.
	Lucas	**Fred A.**	3Com Corporation
	Luu	**Philip K**	STMicroelectronics, Inc
	Lynch	**Jeffrey**	IBM
A	**Lysdal**	**Henning**	Giga
	MacLeod	**Brian**	Project 101, Inc.
	Marsland	**Robert A.**	Focused Research
N	**Martin**	**David W.**	Nortel Networks
A	**Mathey**	**Thomas**	Northern Data Systems
	McCarron	**Philip L**	Cabletron Systems
	McCormack	**Michael S**	3Com Corporation
	Miao	**Tremont**	Analog Devices Inc.
Y	**Micallef**	**Joseph N**	Agilent Technologies, Inc
	Mick	**Colin**	Mick Group
N	**Milbury**	**Martin R**	Cabletron Systems Inc
	Miller	**Larry D.**	Nortel Networks, Inc.
	Mohl	**Dirk S.**	Hirschmann GmbH & Co.
Y	**Montstream**	**Cindy**	Ortronics
	Muir	**Robert**	Level One Communications , Inc
N	**Muller**	**Shimon**	Sun Microsystems Inc.
N	**Musk**	**Robert**	Hewlett-Packard Limited
	Nachman	**Yaron**	Lucent Technologies

	Nadeau	**Gerard**	UNH IOL
	Naganuma	**Ken**	Toko America, Inc
Y	**Naidu**	**Hari**	Fujikura Technology America
	Nakamura	**Karl**	Cisco Systems, Inc.
	Nelson	**Kristian**	Packet Engines, Inc.
A	**Nikolich**	**Paul**	Broadband Access Systems
	Nootbaar	**Michael**	TDK Semiconductor Corp
A	**Noseworthy**	**Bob**	Univ of New Hampshire
	Nowell	**Mark**	Cisco Systems
	O'Toole	**Michael**	AMP Incorporated
N	**Obara**	**Satoshi**	Fujitsu Limited
	Ooka	**Toshio**	Sumitomo Electric USA Inc.
	Pace	**Robert R.**	Texas Instruments
Y	**Palkert**	**Tom**	Applied Micro Circuits Corp.
	Pannell	**Don**	Marvell
	Parhi	**Keshab K.**	Broadcom
	Parsons	**Elwood T**	AMP Incorporated
Y	**Paslaski**	**Joel**	Ortel Corporation
	Patel	**Bhavesh**	Extreme Networks
N	**Pavlovsky**	**Alex**	Lucent Technologies
	Payne	**John**	JLP Associates
A	**Pepeljugoski**	**Petar**	IBM Research
	Plunkett	**Timothy R.**	NSWCDD
Y	**Pondillo**	**Peter**	Corning Inc.
N	**Prediger**	**Bernd**	Infineon Technologies AG
	Quackenbush	**William**	Cisco Systems
Y	**Ramelson**	**Brian**	Lucent Technologies
	Rasimas	**Jennifer G.**	Nortel Networks
Y	**Rausch**	**Dan**	Agilent Technologies
	Rautenberg	**Peter**	Alcatel Cabling Systems
	Richkas	**Dave**	Pulse
	Robinson	**Gary**	EMC Corporation
Y	**Robinson**	**Stuart**	PMC-Sierra, Inc
	Rogers	**Shawn**	Texas Instruments Incorporated
	Ross	**Floyd**	Fujitsu Nexion, Inc.
N	**Rubin**	**Larry**	INH Semiconductor Corp.
	Sabato	**Simon**	Level One Communications
	Salzman	**Michael M.**	Lucent Technologies
	Sarles	**Bill**	FWS Engineering
	Schroeder	**Ted**	Alteon Networks
	Seifert	**Rich**	Networks and Communications
A	**Sendelbach**	**Lee**	IBM
N	**Seto**	**Koichiro**	Hitachi Cable America, Inc
	Shain	**Vadim**	NEC Electronics
	Shastry	**Nanjunda**	3Com Corporation
	Sikdar	**Som**	Force10 Networks
Y	**Simmons**	**Tim**	Hewlett-Packard Ltd
A	**Sorensen**	**David**	Broadcom Corporation
	Sørensen	**Michel**	Intel Denmark ApS
	Stapleton	**Nick**	3Com Europe Ltd
N	**Stetter**	**Claus**	Allayer Communications
	Steudler	**Ronald**	Lucent Technologies
N	**Suzaki**	**Tetsuyuki**	NEC Corporation
Y	**Swanson**	**Steve**	Corning Incorporated

A	**Szostak**	**Tad**	3M
Y	**Taborek**	**Rich**	nSerial Corporation
Y	**Tailor**	**Bharat**	Gennum
	Tavacoli	**James M.**	Accelerant Networks
Y	**Thaler**	**Pat**	Agilent Technologies
A	**Thatcher**	**R. Jonathan**	World Wide Packets
A	**Thirion**	**Walter**	
	Thompson	**Geoffrey**	Nortel Networks, Inc.
	Thomson	**Douglas**	Entridia
	Tolley	**Bruce**	Cisco Systems
Y	**Torres**	**Luis**	Methode Electronics, Inc.
	Truman	**Thomas E**	Bell Laboratories
N	**Turner**	**Edward**	3Com Europe Ltd
N	**van Doorn**	**Schelto**	Infineon
	Van Gilder	**John**	Silicon Dynamics
	Van-Mierop	**Dono**	IBM Research Laboratory in Haifa
	Verigin	**Iain**	PMC-Sierra, Inc
A	**Vijeh**	**Nader**	Lantern Communications
	Villamor	**Bill**	National Semiconductor Corp.
	Vilozny	**Ron**	3Com Israel
Y	**Walker**	**Rick**	Agilent Technologies
N	**Wang**	**Peter**	3Com Corporation
N	**Warren**	**Jeff**	Extreme Networks
	Washburn	**Ted**	Methode Electronics Inc
Y	**Weniger**	**Fred**	Vitesse Semiconductor
N	**Wery**	**Willem**	Intel Corporation
Y	**Wiedemann**	**Bill**	Blaze Network Products
Y	**Williamson**	**Robert S**	Focused Research
Y	**Witkowski**	**Mike**	Compaq Computer Corporation
Y	**Won**	**Jonghwa**	Samsung Electronics Co ltd
	Won	**King**	Network Associates
Y	**Wong**	**David**	Allayer Technologies Corp.
N	**Wong**	**Ed**	Cabletron Systems Inc
Y	**Wong**	**Leo**	BitBltz Communications, Inc
Y	**Wurster**	**Stefan M.**	Microlinear Corp.
Y	**Yorks**	**Jason**	Cielo Communications Inc.
Y	**Young**	**Leonard**	Corning Incorporated
Y	**Yousefi**	**Nariman**	Broadcom, Inc.
	Yu	**Ben**	3 Com Corporation
	Yu	**Mark (Meng-Lin)**	Lucent Technologies
Y	**Zannini**	**Hank**	Avici Systems, Inc.

- **Motion # 23**
  - **Description:** Move that the P802.3ae Task Force adopt the 850 nm CWDM PMD as presented in wiedemann_1_0700 and the 1310 nm WWDM PMD as presented in hanson_1_0500 as the basis for two of the PMDs in draft D1.0
  - Motion Type: Technical > 75% required
  - Moved By: Walt Thirion
  - Seconded By: David Cunningham
  - Results: 802.3 Voters Y: 59 N: 41 A: 14
    Time: 6:59pm July 12, 2000
    P/F: **Failed**

- Results: All Voters Y: 95 N: 61 A: 13
  Time: 7:01pm July 12, 2000
  P/F: **Failed**

- **Discussion**: Support = 2
- CALL THE QUESTION (**passed**)

- **Motion # 24**
  - **Description:** Move that the P802.3ae Task Force adopt the 850 nm Serial PMD as presented in kolesar_1_0700 and the 1310 nm WWDM PMD as presented in hanson_1_0500 as the basis for two of the PMDs in draft D1.0
  - Motion Type: Technical > 75% required
  - Moved By: Walt Thirion
  - Seconded By: Ed Cornejo
  - Results: 802.3 Voters Y: 48 N: 49 A: 7
    Time: 7:06 pm July 12, 2000
    P/F: **Fails**
  - Results: All Voters Y: 81 N: 66 A: 15
    Time: 7:08pm July 12, 2000
    P/F: **Fails**
  - CALL THE QUESTION (**passes**)

---------- **END OF P802.3ae MEETING** ----------

- **802.3 CSMA/CD WG Meeting Motion on 10 Gigabit Ethernet TF**
  - **Description:** 802.3 affirms the following list of motions passed during this weeks 802.3ae meetings:
    - Logic Track #'s: 2, 3, 4, 5, 6, 7, 8, 10, 11, 12
  - Motion Type: Technical > 75% required
  - Moved By: Jonathan Thatcher
  - Seconded By: Stephen Haddock
  - Results: 802.3 Voters Y: 136 N: 0 A: 6
    Time: 11:25am July 13, 2000
    P/F: **Passes**

- **802.3 CSMA/CD WG Meeting Motion # 2 on 10 Gigabit Ethernet TF**
  - **Description:** 802.3 affirms the following list of motions passed during this weeks 802.3ae meetings:
    - PMD Track #'s: 16, 18
  - Motion Type: Technical > 75% required
  - Moved By: Jonathan Thatcher
  - Seconded By: Stephen Haddock
  - Results: 802.3 Voters Y: 104 N: 4 A: 34
    Time: 11:47am July 13, 2000
    P/F: **Passes**

Major Options on Decision Tree

- Recommend 802.3ae membership continue to work to resolve outstanding objective requirements
- Attempt to resolve these at this 802.3 WG meeting
- Modify the objectives
- Split the PAR (**highly discouraged**)
- Some combination of the above

There was an attempt to **change two distance objectives**:

- **From:**
  At least 100 m over installed MMF
  At least 300 m over MMF
- **To:**
  Support installed (legacy) 50 and 62.5 micron MMF to 300 meters
  Support a short wavelength PMD over new high bandwidth MMF to 300 meters for new installs and interconnects

STRAW POLE:	802.3 Voters	Y: 29	N: 57
	All Voters	Y: 46	N: 70