IEEE 802.3 Study Group
10Gb/s PHY for EPON

Closing Report to
IEEE 802.3 WG

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Some Historical Data

CFI Straw Polls:

163 Number of people in the room

58 Individuals would attend and contribute to the 10 Gbps PHY for EPON Study Group

31 Companies Support the Formation of the 10 Gbps PHY for EPON Study Group

802.3 WG vote to form the Study Group:

Y:51 N:2 A:9

SG Meeting Report

1. 10Gb/s PHY for EPON Study Group met on Tuesday and Wednesday

2. We had high attendance – 90 people signed the attendance list
   (224 are on the reflector as of today)

3. We reviewed presentations, made motions, “crispified” our objectives a bit, and had all kinds of fun.

Reviewed Many Presentations

- **Backward Compatibility/Co-existence with 1G EPON**
  1. Ryan Hirth/Teknovus – 1 Gbps to 10 Gbps Migration
  2. Toshiaki Mukojima/Oki - Backward Compatibility and Co-Existence
  3. Roger Merel/Luxtera - Backward Compatibility
  4. Keiji Tanaka/KDDI R&D - System Configuration
  5. Akihiro Otaka/NTT - Motion and Discussions, Voting
- **Technical Feasibility of 29 dB Power Budget**
  1. Frank Chang/Vitesse - 10G EPON Optical Budget Considerations
  2. Frank Effenberger/Huawei - 10Gb/s PMD Considerations
  3. Roger Merel/Luxtera - PMD Proposal Considerations
  4. Akihiro Otaka/NTT - Background of the 29dB Requirement
  5. Motoyuki Takizawa/Fujitsu - Optical Budget for 10G-EPON
  6. Akira Takahashi/Mitsubishi - Experimental Consideration on EPON Transmission
  7. Mitsunobu Kimura/Hitachi - Feasibility at 29dB Loss Budget
  8. Hiroshi Murata/Sumitomo - A PMD Class Supporting 29 dB Link Budget
  9. Hirotaka Wada/NEC - 29dB Budget Technical Feasibility for "10Gb/s EPON"
  10. Haim Ben-Amram/PMC Sierra - Serial 10G Downstream using FEC
  11. Dong-Soo Lee/ETRI - Technical Feasibility of 10Gb/s EPON
  12. Toshiaki Mukojima/Oki - Considerations for 10Gb/s EPON PHY
- **Other Topics**
  1. Bin Yeong Yoon/ETRI - Advent of 10G Asymmetric EPON
  2. Jeff Mandin/PMC Sierra - FEC Framing
  3. Pat Thaler/Broadcom - 64B/66B Encoding

Objectives (before)

- **Support subscriber access networks using point to multipoint topologies on optical fiber**
  (SG vote - Passed by voice vote without opposition)

- **PHY(s) to have a BER better than or equal to 10^{-12} at the PHY service interface**
  (SG vote - Passed by voice vote without opposition)

- **Provide physical layer specifications:**
  - **PHY for PON, 10 Gbps downstream / 1 Gbps upstream, single SM fiber**
  - **PHY for PON, 10 Gbps downstream / 10 Gbps upstream, single SM fiber**
    (SG vote - Y:34, N:0, A:2)

- **Define up to 3 classes of PMD. Define PMD(s) to operate with split ratios of 16 and 32, and with distances of 10 or 20 km. Investigate split ratios of 64 and 128.**
  (SG vote - Y:39, N:0, A:1)

Objectives (after)

- **Support subscriber access networks using point to multipoint topologies on optical fiber**
  (SG vote - Passed by voice vote without opposition)

- **PHY(s) to have a BER better than or equal to 10^{-12} at the PHY service interface**
  (SG vote - Passed by voice vote without opposition)

- **Provide physical layer specifications:**
  - **PHY for PON, 10 Gbps downstream / 1 Gbps upstream, single SM fiber**
  - **PHY for PON, 10 Gbps downstream / 10 Gbps upstream, single SM fiber**
    (SG vote - Y:34, N:0, A:2)

- **Define up to 3 optical power budgets that support split ratios of 1:16 and 1:32, and distances of at least 10 and at least 20 km.**
  (SG vote - Y:51, N:0, A:10)

SG Motion #1

- Following PAR approval, 802.3av Task Force should investigate the development of physical layer specification(s) which accommodate the simultaneous operation of existing 1G-EPON and/or a 1550-1560nm video overlay, with 10G-EPON.

  Moved: Akihiro Otaka
  Seconded: Toshiaki Mukojima

  Required 75%

  Y: 45 N:4 A:12
  Motion passed

SG Motion #2

(1) Delete the following text from Objectives:

"Investigate split ratios of 64 and 128."

(2) Following PAR approval, the 802.3av Task Force should form an ad hoc group to investigate the development of physical layer specification(s) which accommodate split ratios of 64 and 128.

M: Lowell Lamb
S: Roger Merel

Required 75%
Y:39 N:0 A:11

Motion passed

SG Motion #3

- On behalf of 10 Gb/s PHY for EPON Study Group, the SG chair shall request IEEE 802.3 WG to approve PAR, 5 Criteria, and Objectives during IEEE 802.3 WG closing plenary session on Thursday, July 20th, 2006.

M: Howard Frazier

S: Frank Chang

Required > 75%

Y: 66 N:0 A:3

Motion passed

PAR

Five Criteria

PAR and 5 Criteria Status

- In May we passed the following motion:

  Request that the working group chair forward the draft PAR and 5 criteria to the 802 EC for consideration at the July 2006 Plenary session.

- Correspondingly, PAR and 5 criteria were submitted to LMSC EC on June 13th for consideration at its meeting on July 21th.

Locations of Study Group Documents

PAR (printout from new online PAR submission form):

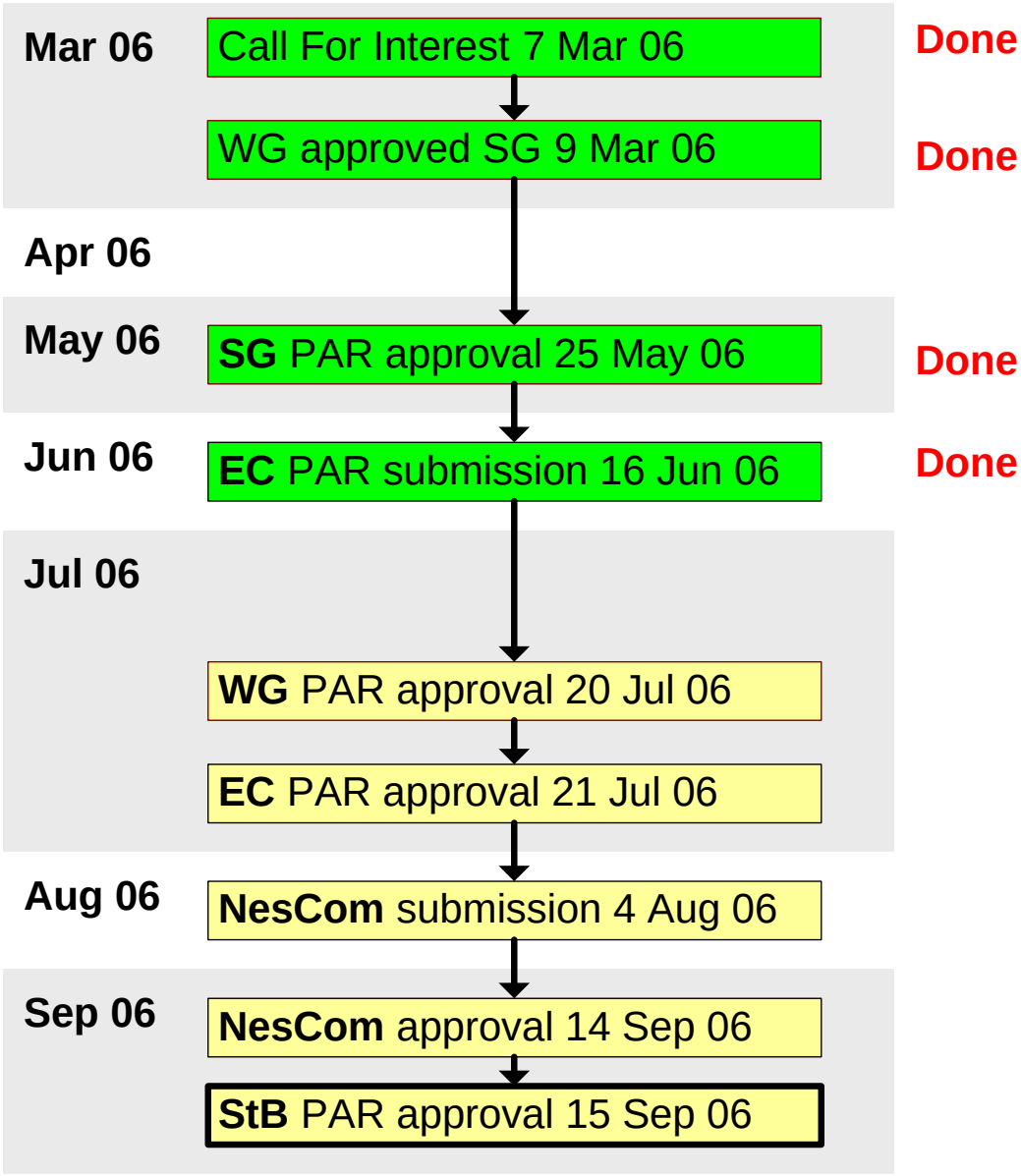
- **http://www.ieee802.org/3/10GEPON_study/public/may06/10gepon_PAR_0506.pdf**

- PAR (with SG voting results)
  - **http://www.ieee802.org/3/10GEPON_study/public/may06/10gepon_PAR_vote_0506.pdf**

- 5 Criteria (with SG voting results)
  - **http://www.ieee802.org/3/10GEPON_study/public/may06/10gepon_5criteria_0506.pdf**

- Objectives (with SG voting results)
  - **http://www.ieee802.org/3/10GEPON_study/public/july06/10gepon_objectives_0706.pdf**

Proposed Study Group Timeline



WG Motion #1: Objectives

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group Objectives, as shown in 10gepon_objectives_0706.pdf.

M: Glen Kramer

S: Howard Frazier

Technical (>75%)

802.3 Voters: Y:46 N:0 A:7

PASSES

WG Motion #2: Broad Market Potential

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group Broad Market Potential criterion, as shown in 10gepon_5criteria_0506.pdf.

M: Glen Kramer

S: Thomas Mathey

Technical (>75%)

802.3 Voters: Y:45 N:1 A:9

PASSES

WG Motion #3: Compatibility

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group Compatibility criterion, as shown in 10gepon_5criteria_0506.pdf.

M: Glen Kramer

S: Wael Diab

Technical (>75%)

802.3 Voters: Y:47 N:0 A:4

PASSES

WG Motion #4: Distinct Identity

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group Distinct Identity criterion, as shown in 10gepon_5criteria_0506.pdf.

M: Glen Kramer

S: Thomas Dineen

Technical (>75%)

802.3 Voters: Y:49 N:1 A:5

PASSES

WG Motion #5: Technical Feasibility

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group Technical Feasibility criterion, as shown in 10gepon_5criteria_0506.pdf.

M: Glen Kramer

S: Howard Frazier

Technical (>75%)

802.3 Voters: Y:52 N:1 A:6

PASSES

WG Motion #6: Economic Feasibility

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group Economic Feasibility criterion, as shown in 10gepon_5criteria_0506.pdf.

M: Glen Kramer

S: Duane Remein

Technical (>75%)

802.3 Voters: Y:42 N:4 A:11

PASSES

WG Motion #7: PAR

- Move that 802.3 WG approve the 10 Gb/s PHY for EPON Study Group PAR, as shown in 10gepon_PAR_0506.pdf, with appropriate modifications to indicate the then current revision of 802.3, and forward the PAR to the 802 SEC and NesCom for approval.

M: Glen Kramer

S: Howard Frazier

Technical (>75%)

802.3 Voters: Y:45 N:1 A:9

PASSES