IEEE 802.3
Higher Speed Study Group
Closing Plenary Report

Orlando, FL
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IEEE 802.3 HSSG Organization

- **Study Group Chair:**
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- **"Reach" Ad Hoc Chair**
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- **"Fiber Optic" Ad Hoc Chair**
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Reflector and Web

- To subscribe to the HSSG reflector, send an email to:
  ListServ@ieee.org

  with the following in the body of the message (do not include "<>"):
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- HSSG web page URL:
  http://www.ieee802.org/3/hssg/

Goals for this Meeting

- Hear 30 presentations related to objectives and 5 Criteria

- Finalize HSSG Objectives

- Finalize number of recommended PAR

- Start developing consensus on:
    - Project Authorization Request (PAR)s
    - 5 Criteria Responses

- Refinement of PAR A

- Tutorial Preparations

Accomplishments

- Heard 1 Ad Hoc Report

- 33 Presentations
  - 40G MAC Rate
  - Cu PMD
  - Single PCS

- Study of PAR A (as currently defined) near completion
  - Objectives Consensus Building
    - Broad market Potential
    - Economic Feasibility 100m MMF Fiber
    - Economic Feasibility 10km SM Fiber
  - Review of PAR A Critter Responses
    - Text Edit- Broad Market Potential (See Motion #3)
    - Text Edit- Economic Feasibility (See Motion #2)

- No new objectives added at this time

- Defined action plan

Presentations (1 of 2)

Chris Cole	Technical & Economic Feasibility of 10km SMF 100GE Transceivers
Chris Cole	Broad Market Potential of 100GE Transceivers
Steve Trowbridge	Mapping of 100 Gbit/s Ethernet into OTN and the need for a Lane Independent PCS
Pete Anslow	Single Mode Fibre Loss Loss Information Spreadsheet
Mike Bennett	The Nneed for a low-cost 100GbE inter-rack copper interconnect
Mark Nowell	The Ethernet EcoSystem - Broad Market Potential for 100 Gb Ethernet
John Jaeger	HSSG Presentation Mapping to 5 Criteria Responses HSSG Presentation Mapping to 5 Criteria Responses - Spreadsheet
Carl Booth	24 AWG twinaxial cable structure for 25Gb applications
John Abbott	Relative cost of 100GbE point-to-point links
Andy Bach	Financial Industry Projected Bandwidth Growth
Arlon Martin	100GbE, 10x10 Alternative
Jim McGrath	100G Copper Proposal: Technical Feasibility
Schelto Vandoorn	Higher Speed Ethernet and Server Requirements
Ted Woodward	To Infinity and Beyond!": Why 40km+ Links Matter and What HSSG Might Do About It.

Presentations (2 of 2)

Bill Trubey	Future Market Potential for 100G Ethernet, An MSO Perspective by Time Warner Cable
Paul Kolesar	Updated cost analysis of MMF variants
Charlie Zhong	25 Gbps SerDes
Donn Lee	Saturating 100G and 1T Pipes
Herb Van Deusen	High Speed Copper Cabling for HSSG
Chris Diminco	High Speed Study Group objectives and five criteria
Ted Seely	Carrier Hurdles To Meeting 10GE Demand
Chris DiMinico	Twinaxial cable assembly transmission characteristics
Matt Traverso	Approach for 40km PMD
Matt Traverso	Optical Specifications for 10km Link
Howard Frazier	40 Gb/s Ethernet 5 Criteria Responses
Adam Bechtel	A Web Company's View on Ethernet
Joel Goergen	Understanding a 40km Reach Objective
Will Miller	Discussion of an existing test adapter for next generation 100G Ethernet cable/wire/receptacle, and device testing.
Frank Chang	Bandwidth Drivers in Broadband Access - A BMP case study from EPON perspective
Jack Jewell	10x10G VCSEL Array Feasibility Issues
Ted Seely (on behalf of Troy Sprenger)	100G Ethernet - Tomorrow Is Too Late
Ralf-Peter Braun	100GE - 10 / 40km Economic Feasibility
John Jaeger	5 Criteria Responses

HSSG Objectives

- Support full-duplex operation only (approved 11/16/06: All 73/0/4)

- Preserve the 802.3 / Ethernet frame format at the MAC Client service interface (approved 11/16/06: All 76/0/4)

- Preserve minimum and maximum FrameSize of current 802.3 Std (approved 11/16/06: All 74/0/4)

- Support a speed of 100 Gb/s at the MAC/PLS interface (approved 11/16/06: All 67/9/14, 802.3 26/4/11)

- Support at least 10km on SMF. (approved 11/16/06: All 86/0/4, 802.3 40/0/4)

- Support at least 100 meters on OM3 MMF. (approved 11/16/06, All 61/3/27, 802.3 33/2/13)

- Support a BER better than or equal to 10^{-12} at the MAC /PLS service interface. (approved 1/19/07, All 68/0/4).

- Support at least 40-km on SMF. (approved 1/19/07, All 38/10/32, 802.3 12/6/16).

Updated Jan 19, 2007

HSSG PAR A

- **Objectives**
  - Support full-duplex operation only.
  - Preserve the 802.3/Ethernet frame format at the MAC Client service interface.
  - Preserve minimum and maximum FrameSize of current 802.3 Std.
  - Support a speed of 100 Gb/s at the MAC/PLS service interface.
  - Support at least 10km on SMF.
  - Support at least 100 meters on OM3 MMF.
  - Support a BER better than or equal to 10-12 at the MAC/PLS service interface.
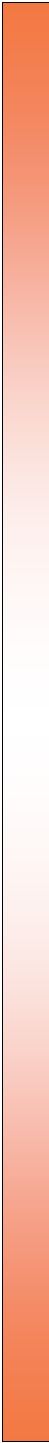
- **PAR – Working Draft**
  - http://grouper.ieee.org/groups/802/3/hssg/HSSG_PARA_PAR_WD_0107.pdf

- **Critters – Working Draft**
  - http://grouper.ieee.org/groups/802/3/hssg/HSSG_PARA_5C_WD_0107.pdf

Straw Polls- Current Objectives

- Straw Poll #1 - Based on adopted objectives for PAR A, does the HSSG believe that there is broad market potential for 100 GbE? (All: 71/2/10)

- Straw Poll #6 - The HSSG has demonstrated economic feasibility for a 10km single-mode PMD at 100 Gb/s. (All: 59/0/16)

- Straw Poll #7 - The HSSG has demonstrated economic feasibility for a 100m multi-mode PMD at 100 Gb/s.(All: 47/0/25)

- Straw Poll #8 - The HSSG has demonstrated technical feasibility for a 40 km SMF PMD at 100 Gb/s. (All: 30/6/40)

- Straw Poll #9 - The HSSG has demonstrated economic feasibility for a 40 km SMF PMD at 100 Gb/s. (All: 12/15/50)

- Straw Poll #10 - Does the HSSG believe that the 40km reach objective should be added to HSSG PAR A? (All: 14/26/43)

Consensus Building – PAR A Objectives

- Motion #6: The HSSG has demonstrated broad market potential for 100 GbE based on adopted objectives for PAR A. (All: 59/5/12)

- Motion #7: The HSSG has demonstrated economic feasibility for a 10Km SMF 100 Gb/s PMD. (All: 52/1/11)

- Motion #8: The HSSG has demonstrated economic feasibility for a 100m multi-mode 100 Gb/s PMD. (All: 54/0/10)

Straw Polls – Other Areas

- Straw Poll #2 - Should the HSSG continue to study 40Gb/s operation? (All: 35/33/20)

- Straw Poll #3 - Does the HSSG believe that there is broad market potential for 40 GbE (in addition to 100GbE)? (All: 23/32/36)

- Straw Poll #11 - The HSSG should adopt a copper objective (All: 34/15/36)

Straw Poll - How to Proceed (1/2)

- Straw Poll #5

  If 40G were adopted as an objective, the HSSG feels it should be addressed by:

  a. HSSG PAR A

  b. a new PAR

- Results

  Option A - 18

  Option B - 32

  Abstain - 33

Straw Poll – How to Proceed (2/2)

- ## Straw Poll #12

  Does the HSSG feel that the chair should request to present "PAR A" to the IEEE 802.3WG at the July Plenary?

- ## Results

  Yes – 48

  No - 3

  Abstain - 28

PAR A Refinement - Motion #2

Motion:

Modify the 2nd Economic Feasibility response to change 'rival technologies' to 'alternate approaches or technologies' in HSSG_PARA_5C_WD_0107:

New response would be:

"Representations from component and equipment suppliers and their customers indicate that Ethernet at 100 Gb/s will offer better value and lower cost than alternate approaches or technologies."

Moved by John Jaeger

Second by: Mark Nowell

Technical (>75%)

All   Yes: 59   No: 1   Abstain: 4

Motion Passes

PAR A Refinement - Motion #3

Motion:

Modify the 1st Broad Market Potential response to change 'market requirements' to 'market need' in HSSG_PARA_5C_WD_0107:

New response would be:

*Rapid growth of network and internet traffic has placed high demand on the existing infrastructure motivating the development of higher performance links. Quantitative presentations have been made to the IEEE 802.3 HSSG indicating significant **market need** for 100 Gb/s Ethernet across a wide range of applications*

Moved by John Jaeger

Second by: Mark Nowell

Technical (>75%)

All   Yes: 62   No: 0   Abstain: 8

Motion Passes

Motion #4

Motion: The HSSG should adopt an objective to specify a single PCS to be used for all PMDs

Moved by Steve Trowbridge

Second by: Ted Woodward

Technical ($\geq$75%)

All   Yes: 13   No: 43   Abstain: 15

Motion Fails

Action Plan

- Tutorial Preparation
- At least 40 km SMF PMD Objective
  - Technical feasibility
  - Economic feasibility
- 40G MAC Rate
  - Add as an objective?
  - Economic feasibility
  - Broad market potential
  - What PMDs?
- Cu PMD
  - Add as an objective?
- # of PAR?
  - Complete Project Documents

Future Meetings

- **April 2007 HSSG Interim Session**
  - April 17 - 19
  - Hosted by Nortel
  - Crowne Plaza Hotel
  - Ottawa, ON, Canada

- **May 2007 Interim**
  - May 28 – 31
  - ITU
  - Geneva, Switzerland
  - For information, see http://www.ieee802.org/1/files/public/docs2006/meetings-may07-interim+workshop-1106.pdf

- **July 2007 IEEE 802 Plenary**
  - July 16 – 19
  - Hyatt Regency
  - San Francisco, CA, USA

Future Meetings – Straw Poll

- Straw Poll #15 - I intend to attend the April interim meeting in Ottawa. (40)

- Straw Poll #16 - I intend to attend the May Interim meeting in Geneva. (45)

Straw Polls – September Interim

- Straw Poll #13 - I would be interested in attending an HSSG Interim meeting in September in Korea per the offer to host by Samsung Electronics, ETRI, and TTA. (All (y/n): 27/29)

- Straw Poll #14 - I would be interested in attending an HSSG Interim meeting in September in Korea per the offer to host by Samsung Electronics, ETRI, and TTA, but can not because of date of event. (All (y/n/a): 10/12/17)

Motion (SG Motion)

- Move that:
  - The HSSG requests that IEEE 802.3 extend the Higher Speed Study Group.

- Moved by – Schelto Vandoorn
- Second by – Mark Nowell

- Procedural (>50%)

- All Yes - 58   No – 0   Abstain - 0
- Motion Passes

Motion

- Move that the HSSG requests that IEEE 802.3 extend the Higher Speed Study Group.

- (>50%)
- Moved by John D'Ambrosia on behalf of the Study Group
- Seconded by : N / A

- 802.3 Voters (Y/N/A):
- Motion 63/0/6

Thank You!