




# IEEE 802.3 Higher Speed Study Group

Discussion for January HSSG Interim

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# Possible Study Group Schedule

- January, 2007 Interim Meeting
  - Draft Objectives
- March, 2007 Plenary Meeting
  - Complete Objectives (if not complete from Jan)
  - Draft PAR & 5 Criteria
  - Prepare for Tutorial in July
- April, 2007 Interim Meeting?
  - Complete PAR & 5 Criteria?
- May, 2007 Interim Meeting
  - Complete PAR & 5 Criteria
  - Submit draft to 802 SEC
- July, 2007 Plenary Meeting
  - Execute PAR approval process
  - 802.3 Approve PAR for forwarding to 802 SEC
  - 802 SEC approve and forward to NesCom
- August, 2007
  - Submit PAR to NesCom
- September, 2007
  - September Interim Meeting
  - NesCom: Approve PAR
  - IEEE-SA Standards Board Approve PAR
- November 2007 Plenary Meeting
  - First official Task Force Meeting

# Goals for this Meeting

- Hear 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



# Adopted 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 service 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)



# Questions for Discussion -

- New Objectives?
- Number of PAR?
- Does the SG think that a single PAR could be generated from the current adopted objectives (adopted in November 2006)?
- If the SG thinks “yes” to above, are any other objectives needed?
  - BER?

# Straw Poll #1

- The HSSG should adopt as a BER objective
  - a) Support BER of  $10^{-12}$
  - b) Support BER of  $10^{-13}$
  - c) Support BER of  $10^{-15}$
  - d) Support BER of  $10^{-12}$  or better
  - e) Other
  - f) No BER objective
  - g) abstain

## Results

- a) 42
- b) 0
- c) 0
- d) 20
- e) 0
- f) 1
- g) 12

Headcount: 85

## Straw Poll #2

- Does the HSSG feel that the current adopted objectives (November 2006) should be addressed by a single PAR?

### Results

- Yes - 63
- No - 3
- Abstain - 18



# PAR (Example)

- Title
  - What are we calling this
- Scope
  - The Focus – Higher Speed Ethernet
- Purpose
  - Why do we want to do this

# of PAR not decided

No strawman or draft created yet





# Critters

- # of PAR not decided yet
- Law\_01\_0107 provides strawman based on currently adopted objectives (adopted at November plenary)
- Presentations this meeting discussing
  - Broad Market Potential
  - Technical Feasibility
  - Economic Feasibility

# Critters – Broad Market Potential (BMP)

- 802 Broad Market Potential
  - Broad sets of applications
  - Multiple vendors and numerous users
  - Balanced cost (LAN versus attached stations)
- BMP is challenging
- Following slides provides historical summary of input from individuals in the end user community
  - Needs to be evaluated against adopted objectives
- Answers 2 of the 3 questions.
- Historical perspective – IMHO more input from end-users than previous projects

# BMP – HSSG Historical Perspective

## “Nuggets” from End User Community

- CFI Supporters – individuals from AMS-IX, Google, Internet Multifeed Co., Japan Internet Exchange Co. Ltd., LBNL, Level3, NTT America, T-Systems, Yahoo
- End User Input
  - bennett\_01\_0906 – Mike Bennett, LBNL
  - bennet\_02\_0906 – Mike Bennett, LBNL
    - Title – “Surveying the Industry For a Higher Speed Ethernet”
    - Includes individuals from: Yahoo, Comcast, Cox, Cisco (IT), AMS-IX, Equinix, LINX, IX in Japan, Level 3, ESnet, Brookhaven National Lab, Fermi National Lab, Lawrence Berkeley Lab, Lawrence Livermore Lab, NERSC
    - Note – companies already doing LAG of 4 to 8 10G Links
      - Level 3 – 8 x10 GbE, IX up to 8 for IX noted, Yahoo – 4 x10GbE, LLNL 4x10
  - schoenmaker\_01\_0906 (Peter Schoenmaker, NTT)
    - “100 Gb/s should be minimum target speed”
    - 2km meets most of their distance needs
  - steenman\_01\_0906 (Henk Steenman, AMS-IX)
    - “at least 100 Gb/s”
    - “Fiber length between 10 and 40 km on Single Mode fiber”

# BMP – HSSG Historical Perspective

## “Nuggets” from End User Community (Continued)

- ❑ young\_01\_1106.pdf (George Young, ATT)
  - Title – “Objectives for Service Provider Shared Transport of 802.3 Higher Speed Ethernet”
- ❑ bennett\_01\_1106.pdf (Mike Bennett, LBNL)
  - Survey – individuals from AMS-IX, Cox Communication, Equinix, Google, Level3, NTT, Softbank BB, Sprint, Yahoo
  - Supporters – Individuals from Esnet, Frankfurt IX, Japan, IX, LBNL,NERSC, London IX, NetNod, Open Peering, Tele2, TrueServer
  - “It appears we are at or near consensus in the following areas:
    - ❑ An objective to support One MAC Data Rate >10Gbps
    - ❑ An objective to support 100 Gb/s as the MAC Data Rate
    - ❑ An objective to support at least100 Gb/s as the MAC Data Rate
      - One of us expressed interest in a 40 Gb/s MAC data rate”
- ❑ diminico\_01\_0107.pdf
  - Copper cable assembly proposal for 100 Gb/s
  - Supported by Mike Bennett, LBNL
  - Currently not an adopted objective

## BMP – HSSG Historical Perspective

### “Nuggets” from End User Community (Continued)

- ❑ lee\_01\_0107.pdf (Louis Lee, Equinix)
  - 100 Gbps or greater
  - 0 - 2 /10 km SMF
- ❑ saxena\_01\_0107.pdf (Vic Saxena, Comcast)
  - “There is a market need for 100GE”
  - “Must standardize 100GE, pre-standard implementations are less accepted in the market”
  - “Non-standard 40/80GE solutions will only slow 100GE development and adoption”
  - “Providing a standard, cost effective solution is the best way to make 100GE successful”
- ❑ braun\_01\_0107.pdf
  - “What is necessary from the service / network provider view?”
    - ❑ Support of 100GE in MAN and WAN networks
  - Supporters – Individuals from Deutsche Telekom T-Com, Deutsche Telekom T-Systems, and Verizon

# Straw Poll #3

- Based on adopted objectives (from November Plenary), does the HSSG believe that there is broad market potential for 100 GbE?

## Results

- Yes - 52
- No – 17
- Abstain - 16

# Technical Feasibility

- Work of FO Ad Hoc to date
- 18 Presentations at the Jan 07 Interim discussing possible FO solutions
- Multiple approaches have been explored

## Straw Poll #4

- The HSSG has demonstrated technical feasibility for a 10km single-mode PMD

### Results

- Yes - 66
  - No – 0
  - Abstain – 12
- 
- Requested by Dan Dove, FO Ad Hoc Chair



# Straw Poll #5

- The HSSG has demonstrated economic feasibility for a 10km single-mode PMD.

## Results

- Yes - 37
  - No – 3
  - Abstain – 38
- 
- Requested by Dan Dove, FO Ad Hoc Chair

## Straw Poll #6

- The HSSG has demonstrated technical feasibility for a 100m multi-mode PMD.

### Results

- Yes - 60
  - No – 1
  - Abstain – 17
- 
- Requested by Dan Dove, FO Ad Hoc Chair

# Straw Poll #7

- The HSSG has demonstrated economic feasibility for a 100m multi-mode PMD.

## Results

- Yes - 34
  - No – 6
  - Abstain – 39
- 
- Requested by Dan Dove, FO Ad Hoc Chair

# Straw Poll #8

- Based on adopted objectives (from November Plenary), does the HSSG believe that there is broad or sturdy niche market potential for 100 GbE?

## Results

- Yes - 32
  - No – 5
  - Abstain - 35
- 
- Requested by Brian Holden

## Straw Poll #9

- Should the HSSG continue to study 40Gb/s operation?

### Results

- Yes - 22
  - No – 33
  - Abstain – 21
- 
- Requested by Shimon Muller



**THANK YOU!!!**