Higher Speed Ethernet Update

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Peering BOF XIV
At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position, explanation, or interpretation of the IEEE.
Higher Speed Ethernet - Technology Pull, Not Push

- End users from many different markets are asking for 100 GbE today
  - IXs
  - ISPs
  - Content
  - R&E and HPCC

- Already getting media attention and mention by C-level execs

- Participation in the HSSG by end users has never been this high
  - Thanks for your support...
Higher Speeds Drive Density (or, Why Should I Care?)

- 100 GbE will benefit everyone
  - Even if you don’t need it
  - Requires a fundamental advance in technology

- Drives 10 GbE port density up and cost down

- Possible line-rate combinations
  - 1 x 100 GbE port
  - 10 x 10 GbE ports
  - 100 x 1 GbE ports
  - And even more oversubscribed port density…

- Your bandwidth requirements and port densities are growing, not shrinking
Birth of an IEEE Standard: It Takes About 5 Years

1. Ideas From Industry
2. Feasibility and Research
3. Call for Interest
4. Study Group
5. Task Force
6. Working Group Ballot
7. Sponsor Ballot
8. Standards Board Approval
9. Publication

Industry Pioneering 1 Year

Ad Hoc Efforts
CFI July 18, 2006
HSSG is Here
Q4 2007

IEEE ~4 Years

2009 - 2010
MAC data rate objective and architectural issues

- Types
- Reaches

MDI - Medium Dependant Interface
PCS - Physical Coding Sublayer
PHY - Physical Layer Device
PMA - Physical Medium Attachment
PMD - Physical Medium Dependent
WIS - WAN Interface Sublayer
XGMII - 10 Gigabit Media Independent Interface

IEEE Std 802.3-2005
## Summary of Adopted Objectives (Requires 75% Approval)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 16, 2006 Interim</td>
<td></td>
</tr>
<tr>
<td>Support full-duplex operation only</td>
<td>All 73 / 0 / 4</td>
</tr>
<tr>
<td>Preserve the 802.3 / Ethernet frame format at the MAC Client service interface</td>
<td>All 76 / 0 / 6</td>
</tr>
<tr>
<td>Preserve minimum and maximum FrameSize of current 802.3 Std</td>
<td>All 74 / 0 / 4</td>
</tr>
<tr>
<td>Support a speed of 100 Gb/s at the MAC/PLS interface</td>
<td>All 67 / 9 / 14 802.3 26 / 6 / 11</td>
</tr>
<tr>
<td>Support at least 10km on SMF</td>
<td>All 86 / 0 / 4 802.3 40 / 0 / 4</td>
</tr>
<tr>
<td>Support at least 100 meters on OM3 MMF</td>
<td>All 61 / 3 / 27 802.3 33 / 2 / 13</td>
</tr>
<tr>
<td>Jan 19, 2007 Interim</td>
<td></td>
</tr>
<tr>
<td>Support a BER better than or equal to $10^{-12}$ at the MAC/PLS service interface</td>
<td>All 68 / 0 / 4</td>
</tr>
<tr>
<td>Support at least 40km on SMF</td>
<td>All 38 / 10 / 32 802.3 12 / 6 / 16</td>
</tr>
</tbody>
</table>

All: All people in the room, 802.3: Registered 802.3 voters
Next Step: Becoming a Task Force

- The HSSG must answer the 5 Criteria
  - Broad Market Potential
  - Compatibility
  - Distinct Identity
  - Technical Feasibility
  - Economic Feasibility

- The tough one – “Broad Market Potential”
  - Questions per IEEE 802
    - Broad sets of applications
    - Multiple vendors and numerous users
    - Balanced cost (LAN versus attached stations)
  - Issues
    - Desktop success (volumes much less than GbE)
    - 10 GbE volumes haven’t met projections
  - Your input is needed here…!
To subscribe to the HSSG reflector, send mail to: ListServ@ieee.org

with the following in the body of the message:

subscribe stds-802-3-hssg <your first name> <your last name>

end

HSSG web page URL:

http://grouper.ieee.org/groups/802/3/hssg/index.html
Future HSSG Meetings

- **IEEE 802 Plenary**
  
  [http://www.ieee802.org/meeting/future_meetings.html](http://www.ieee802.org/meeting/future_meetings.html)
  
  - March 11 – 16, 2007
    Orlando, FL, USA

- **IEEE 802.3 Interims**
  
  
  - April 17 – 19 or April 24 - 26, 2007
    Ottawa, Canada
  
  - May 28 – 31, 2007
    Geneva, Switzerland
Thank You
IEEE Standards Process (2/4)

- Task Force Meetings
  - Approved PAR
  - Objectives
  - Proposals Selected
    - Yes
    - No

- Task Force Review
  - D1.0
  - D1.(n+1)
  - TF Review Done
    - Yes
    - No

- To 802.3 WG Ballot
  - No
  - Yes

- D2.0
  - A
IEEE Standards Process (3/4)

802.3 WG Ballot

> 75 %

- Yes
  - Comments
    - No
      - RIP
    - Yes
      - D2.(n+1)

- No
  - D3.0
    - 802.3 Forward to LMSC
      - No
        - A
      - Yes
        - EC Forward to LMSC
          - No
            - A
          - Yes
            - B
IEEE Standards Process (4/4)

1. **LMSC Sponsor Ballot**
   - LMSC Sponsor Ballot
   - If > 75%: Yes
   - If < 75%: RIP
   - Comments: No
   - If Comments: No
     - D3.(n+1)
   - If Comments: Yes
     - D3.n

2. **D3.n**
   - If 802.3 Forward to RevCom: Yes
     - EC Forward to RevCom: Yes
     - RevCom Review Approval: Yes
     - IEEE-SA SB Approval: Yes
     - Std
     - No
   - Forward to RevCom: No
     - B
     - RevCom Approval: No
     - RIP
     - B

3. **RevCom Review**
   - If No: B
   - If Yes: B

This diagram outlines the steps involved in the IEEE Standards Process, including the decision points and outcomes for each stage.