

**Meeting Notes – Sept 23, 2012**  
**IEEE 802.3 Industry Connections**  
**HSE Consensus Ad Hoc**

Prepared by: Steve Trowbridge (Alcatel-Lucent)

Ad Hoc Meeting started at approximately 10:30am.

Agenda & General Information

By - John D'Ambrosia (Dell)

See - agenda\_hse\_01a\_0912.pdf

- Welcome and Introductions. Everyone introduced themselves and stated their affiliation.
- The chairman asked if there were any members of the press in the room. No one responded.
- The chairman expressed his belief that the efforts of this ad hoc would result in a higher-speed Ethernet Call for Interest. From slide 10, a CFI request would be needed by October 8 for the November 2012 plenary, February 11 for the March 2013 plenary, or June 10 for the July 2013 plenary.

Presentation #1

Title – *Starting Out - Market & Applications*

By – John D'Ambrosia (Dell)

See – dambrosia\_hse\_01\_0912.pdf

Presentation #2

Title – *Thoughts on the practicality of Terabit Ethernet*

By – Kai Cui (Huawei)

See – cui\_hse\_01a\_0912.pdf

Presentation #3

Title – *100G Link Infrastructure Requirements to Support Future 400G PMDs*

By – Jeff Maki (Juniper)

See – maki\_hse\_01a\_0912.pdf.

Discussion – It was thought this was comparable to some of what happened in early adopter 40G.

Carrier applications were mentioned– tradeoff between traditionally favored duplex cabling and cost of early adopter deployments. From discussion, developing a slide that illustrated technology checklist to itemize other work in the industry. Subsequent discussion indicated that duplex cabling might be supported by creating some type of external cassette with an optical mux/demux and develop variants of CFP4 with four wavelength groups. An old slide from 2007 HSSG by Drew Perkins was recalled that illustrated technology choices based on number of fibers, wavelengths per fiber, bits per symbol, etc. John D'Ambrosia will work with Andy Moorwood (Infinera) to create introductory slides that illustrates various solutions. Discussion on OTN support objective. The main motivation in 802.3ba had been for 40GbE to be compatible with 40G transport which already had been deployed. For 100G, 400G and

beyond, we don't have the same problem as the transport containers are being defined in parallel. But we do have the carrier applications of 400GE into 400G transport as part of the market. Also have the issue that we share technology, e.g., use the same modules for Ethernet and client OTN interfaces. It was suggested that Jeff Maki work on a slide illustrating parallel SMF, while Chris Cole / Andy Moorwood work on slide illustrating multi-lambda approach.

#### Presentation #4

Title – *Server Bandwidth Implications for the Next Higher Speed of Ethernet*

By – Dave Chalupsky (Intel)

See – chalupsky\_hse\_01\_0912.pdf

Discussion – 100G server ports are not a factor until near the end of this decade, however the uplink needs to be higher to make 100G server ports a reasonable utilization choice.

#### Presentation #5

Title – *Feasibility of a 400GbE PCS*

By – Mark Gustlin (Xilinx)

See – gustlin\_hse\_01\_0912.pdf

Discussion – It was indicated that the issue of 16 vs 80 lanes depends on whether you would ever do 10x40G and not so much whether you would do quad 100G and 400G in the same device. PCS complexity could be an illustration of practicality of Terabit – this could be one thing that looks daunting and drives us to 400G rather than Terabit. Some liked the idea of FEC from the start. Discussion about optical connectors. How tied is FEC to 25G lanes? Would it be the same answer at 50G? (It could have a different starting point, e.g., 8 PCSs if 50G signaling.) Discussion regarding different PMDs.

#### Presentation #6

Title – *400Gb/s Ethernet CFI Proposal*

By – Dave Ofelt (Juniper)

See – cole\_hse\_01a\_0912.pdf

Discussion – Discussion about “possible follow-on CFIs at a CFI”. Lots of discussion regarding technology roadmap for 400G and beyond Terabit. It was suggested that this could be leveraged as a slide for the “Why now?” portion of the presentation. It was suggested ending on the BWA curve to be clear there is more to come later.

Straw Poll #1: I support the following data rate as the basis for near term CFI:

1. 400 Gb/s
2. 1 Tb/s
3. 400 Gb/s and 1 Tb/s
4. Rate TBD in SG
5. No CFI

Results

1. 61
2. 0
3. 0
4. 1
5. 0

Straw Poll #2: I support doing a 400GbE Call-For Interest in:

1. November 2012
2. March 2013
3. July 2013
4. Later than July 2013
5. Undecided

Results

1. 1
2. 39
3. 21
4. 0
5. 1

Discussion – Some support November since we have such good consensus, and concerned about OFC/NFOEC overlap. Others supported March – November would be rushed, and as Mark Gustlin's contribution shows, nobody has to wait to start work because the CFI hasn't happened yet. Others indicated that it would be good to do a CFI in March and make a decision to communicate the IEEE direction prior to next year's SG15 plenary in July. Resource issues (P802.3bj and P802.3bm projects) were discussed. Others expressed opinion that November is unrealistic, and this is a self-selected group and there is more work to do to make sure we have sufficient consensus throughout 802.3. It was felt that this was important for companies to allocate resources.

Straw Poll #3: I would attend the March 2013 plenary to support a 400GbE CFI

Yes	34
Probably Yes	6
Probably No	10
No	4

John D'Ambrosia provided historical perspective that the initial plan for the 2006 CFI had been to do it in March, 2006, but it had slipped to July 2006. Based on the Straw Poll, it is his intent to submit a request for a 400GbE CFI for March 2013. Progress of the group will impact whether there is any slip.

Presentation #7

Title – proposed informal communication via email to ietf new-work reflector indicating the BWA ad hoc results and notification of the HSE IC activity

By – Pat Thaler (Broadcom)

See – thaler\_hse\_01\_0912.pdf

Discussion – Some indicated some familiarity with the use of this email reflector, not just for communication with IETF, but as a shared reflector used for indicating the start of new work among a collection of related standards bodies. It was inquired whether it was a normal practice to put initiation of new work in general (e.g., new PARs) on this reflector. Presenter indicated that this was under discussion. Chair asked if there were any objections to his sending the email as an informal communication. No objections were indicated.

Chair summarized meeting action items:

- John will work with some individuals on the broad market potential part of the presentation.
- Chris Cole (Finisar), Mark Gustlin (Xilinx), David Ofelt (Juniper), Jeff Maki (Juniper) will continue work on technical feasibility.
- Andy Moorwood (Infinera) and John D'Ambrosia will work on "why now".

Individuals wishing to participate in the development of these slides should contact respective individuals.

Chair indicated that he would hold a call prior to the Nov plenary for the group to discuss the new slides. Meeting at November Plenary would be to review the first assembled full deck.

Meeting ended at approximately 3:45pm.

Attendees – HSE Consensus Meeting, 9/23/12

Abbas	Ghani	Ericsson, UK
Anslow	Pete	Ciena
Auleshi	Peerduz	Molex
Baldwin	Thananya	Ixia
Balemorthy	Kasyapa	OFS
Barnett	Barry	IBM
Barrass	Hugh	Cisco
Bennett	Mike	LBNL
Braun	Ralf-Peter	Deutsche Telekom, T-Systems
Brown	Matt	AMCC
Bugg	Mark	Molex
Carlson	Steve	HSD
Carroll	Martin	Verizon
Chalupsky	David	Intel
Cideciyan	Roy	IBM
Cole	Chris	Finisar
Cui	Kai	Huawei
D'Ambrosia	John	Dell
Dove	Dan	Applied Micro
Dudek	Mike	JDSU
Farhoodfor	Arosh	Cortina Systems
Ghiasi	Ali	Broadcom
Gustlin	Mark	Cisco
Hajduczenia	Marek	ZTE
Hammond	Bernie	TE Connectivity
Healey	Adam	LSI
Hidaka	Yasuo	Fujitsu Laboratories of America
Hoshida	Takeshi	Fujitsu
Huang	Xi	Huawei
Huff	Lisa	Discerning Analytics
Isono	Hideki	Fujitsu Optical Components
Kawamoto	Takashi	Hitachi
Kuist	Bengt	Ericsson
Lackner	Haus	QoSCom
Lamb	Lowell	Broadcom
Law	David	3Com
Li	Mike	Altera
Lusted	Kent	Intel
Maki	Jeffery	Juniper Networks
Marris	Arthur	Cadence

Masuda	Takeo	OITDA
McDonough	John	NEC America
Moorwood	Andy	Infinera Corp
Nakamoto	Ed	Spirent Communications
Nicholl	Gary	Cisco
Nikolich	Paul	802 Chair
Palkert	Tom	Xilinx, Molex
Patel	Pravin	IBM
Pepper	Gerald	Ixia
Powell	Bill	Alcatel-Lucent
Rabinovich	Rick	Alcatel-Lucent
Sela	Oren	Mellanox
Shanbhag	Megha	TE Connectivity
Shoichiro	Oda	Fujitsu
Sommers	Scott	Molex
Spurrouhawk	Bryan	Leviton
Stassar	Peter	Huawei
Sugawa	Jun	Hitachi
Takohata	Kiyoto	NTT
Toyoda	Hidehiro	Hitachi
Tracy	Nathan	TE Connectivity
Trowbridge	Steve	Alcatel-Lucent
Vaden	Sterling	SMP
Vareljian	Albert	Independent
Xu	Tu	Huawei
Zhao	Wenyu	Catr China