Minutes of SAS PHY Working Group teleconference – Aug 3, 2006 T10/06-364r0

Attendance:

Mr. Paul von Stamwitz	AMCC
Ms. Monica Li	Finisar
Mr. Barry Olawsky	Hewlett Packard Co.
Mr. Dan Colegrove	Hitachi Global Storage Tech.
Dr. Mark Seidel	Intel Corp.
Mr. Schelto van Doorn	Intel Corp
Mr. Harvey Newman	Infineon Technology
Mr. Praveen Viraraghavan	LSI Logic Corp
Mr. Brian Day	LSI Logic Corp.
Mr. Michael Jenkins	LSI Logic Corp.
Mr. Paul Wassenberg	Marvell Semiconductor, Inc
Mr. David Geddes	Marvell Semiconductor, Inc.
Mr. Galen Fromm	Molex Inc.
Mr. Hock Seow	NEC Electronics America, Inc
Mr. Amr Wassal	PMC-Sierra
Mr. Yuriy Greshishchev	PMC-Sierra
Mr. Robert Watson	PMC-Sierra
Mr. Alvin Cox	Seagate Technology
Ms. Judy Westby	Seagate Technology
Mr. Benoit Mercier	STMicroelectonics
Mr. Stephen Finch	STMicroelectronics
Mr. Massimo Pozzoni	STMicroelectronics
Mr. Doug Loree	Toshiba
Mr. Adrian Robinson	Vitesse Semiconductor
Mr. Kevin Witt	Vitesse Semiconductor

25 in attendance

Agenda:

1. Speed negotiation sequence: Long burst versus COMWAKE.

SAS-2 SNW-3 Definition (06-355) [Wassal & Watson]
http://www.t10.org/ftp/t10/document.06/06-355r1.pdf

SAS-2 Start-up training sequence [Newman]
http://www.t10.org/ftp/t10/document.05/05-397r6.pdf

Long burst versus COMWAKE for communication. COMWAKE may have an advantage over the long burst method with the existing RCDT leaving only 100us for the data window. COMWAKE is currently not a sequence required to be detected by a SAS disk drive, so either way of sending the data will require something added.

Is there a problem with crosstalk being detected as a valid OOB sequence on neighbors? SATA in slumber may be at an effective high impedance. SAS drives already send OOB at SAS levels. Port multiplier/selector concern since they use COMWAKE, but may not be an issue.

Is detecting COMRESET during the information transfer an issue? Some comments that this is not an issue because of the requirement to detect COMRESET at any time.

What about the timing uncertainty of COMWAKE?

Timing of COMWAKE has been analyzed by Steve Finch:

A Look At COMWAKE For Use In SNW3 [Finch]
http://www.t10.org/ftp/t10/document.06/06-365r0.pdf

This proposal claims there is no timing issue when RCDT precedes the first COMWAKE.

On the 8/10 we need to determine which method we will use (COMWAKE or long burst) so that the speed negotiation sequence proposals can be completed. Be prepared to vote on this.

A vote on this topic on the 8/3 call ended in a tie: 3/3/6 (COMWAKE/Long Burst/Abstain).

2. Review information transferred proposal by Rob.

SAS-2 SNW-3 bit definitions
http://www.t10.org/ftp/t10/document.06/06-363r0.pdf

- Comments determined that the "Current SSC" bit is useless.
- Missing "G1 supported" bit.
- Degraded bit was discussed. It needs to be there so that it can be communicated to a higher level when the PHY does auto-negotiation and to identify a hot-plug situation.
- Question of whether CRC is needed. What is the criterion for justification? Use a simple parity bit instead? What if CRC fails?
- Where does the note a in the table apply?
- What does RESERVED mean? Transmit a zero and ignore if a one was sent?
- Maybe use bits 4-7 as an indication of SAS level supported?
- No Channel class (loss) included – Initiator-type would only have knowledge; End device could use. Should this be included at this time?
- Additional suggestions?

3. Final speed negotiation window details. (Carried over for future discussion)

Seed value?
A concern was raised that using the scrambler in the training sequence may involve the link layer. Seagate suggests that the 0 seed not be required with every window. Intel also expressed support.

Start of window:
Since the last interval in the configuration window is idle, the training data may start at the beginning of the final speed negotiation window, but shall start by the end of a defined RCDT (not necessarily the same length of time as the previous RCDT's). Input is needed on how long this RCDT should be.

Completion of window:
How is the final speed negotiation window completed? Should there be ALIGN0/ALIGN1 after TRAINdone is exchanged to verify dword sync?
Need to verify the impact to state machines to determine if the ALIGN exchange is needed.
Failure of G4 window next steps.

Next conference call Aug 10, 2006

Agenda:

- COMWAKE versus long burst decision
- Data transferred during SNW3
- SNW4

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Webex information:
https://seagate.webex.com/seagate
Topic: SAS-2 PHY WG
Date: Thursday, Aug 10, 2006
Time: 10:00 am, Central Daylight Time (GMT -05:00, Chicago)
Meeting number: 826 515 680
Meeting password: 6gbpsSAS