

Accredited Standards Committee*

InterNational Committee for Information Technology Standards (INCITS)

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Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- November 6, 2006
Las Vegas, NV

Agenda

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Results of Meeting

1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, November 6, 2006. He thanked Dan Colegrove of Hitachi Global Storage Technology for hosting the meeting. As usual, the people present introduced themselves.

2. Approval of Agenda

The draft agenda was approved with the following additions and changes:

- 7.1 Expander Resets During Code Download [Penokie]

No additions and changes were made during the course of the meeting.

3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for T10 membership. Working group meetings are open to any person or organization directly and materially affected by T10's scope of work. The following people attended the meeting:

Name	S	Organization
Mr. Chris Fore	P	Adaptec, Inc.
Mr. Paul von Stamwitz	P	AMCC
Mr. Steve Robalino	A	Dallas Semiconductor
Mr. Gregory Tabor	V	Dallas Semiconductor
Mr. Mike Yeager	V	Dallas Semiconductor
Mr. Kevin Marks	P	Dell, Inc.
Mr. Mickey Felton	A#	EMC Corp.
Mr. William Martin	P	Emulex
Mr. Robert H. Nixon	A	Emulex
Mr. Ramez Rizk	V	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
Mr. David Freeman	V	Finisar
Mr. Geoffrey Hibbert	V	Finisar
Ms. Kiranmai Vedanabhatla	V	Finisar Corporation
Mr. Rob Elliott	P	Hewlett Packard Co.
Mr. Steven Fairchild	V	Hewlett Packard Co.
Mr. Dan Colegrove	P	Hitachi Global Storage Tech.
Mr. George O. Penokie	P	IBM Corp.
Mrs. Vicky Duerk	V	Intel
Mr. Martin Massucci	V	Intel
Dr. Mark Seidel	A	Intel Corp.
Mr. Pak Seto	V	Intel Corp.
Mr. Joel Silverman	AV	Kawasaki Microelectronics Am
Mr. Dennis Moore	P	KnowledgeTek, Inc.
Mr. David Uddenberg	V	LSI Logic
Mr. Graeme Weston-Lewis	AV	LSI Logic
Mr. Praveen Viraraghavan	V	LSI Logic Corp
Mr. Brad Besmer	V	LSI Logic Corp.
Mr. Brian Day	V	LSI Logic Corp.
Mr. John Lohmeyer	P	LSI Logic Corp.
Ms. Rachelle Trent	V	PMC-Sierra
Mr. Michael Rogers	AV	Samsung
Mr. Gerald Houlder	P	Seagate Technology
Mr. Stephen Finch	P	STMicroelectronics, Inc.
Mr. Doug Loree	V	Toshiba
Mr. Jim Scott	P	Vitesse Semiconductor
Mr. Luben Tuikov	V	Vitesse Semiconductor
Mr. Mark Evans	A	Western Digital
Mr. Jeff Williams	P	Xiotech Corp.
Mr. Bob Hansen	V	Xyratex

40 People Present

Status Key: P - Principal
 A,A# - Alternate
 AV - Advisory Member
 L - Liaison
 V - Visitor

4. Miscellaneous topics

No miscellaneous topics were presented to the group.

5. General Protocol topics

5.1 SAS-2: Store-and-Forward Expander Devices (06-386 and 06-422) [Sheffield]

At the direction of George Penokie, discussion of this topic was deferred to the next meeting.

5.2 SAS-2 Multiplexing (05-381) [Elliott]

Rob Elliott led a review of the latest revision of the proposal to add Multiplexing and 6 Gbs support to SAS-2 (06-381r6). The group requested a few minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 05-381r7 (r6 as modified) be recommended for inclusion in SAS-2. Dan Colegrove seconded the motion. The motion passed 12:0:7.

5.3 SAS-2 Response to abandon-class OPEN_REJECT (06-322) [Elliott]

Rob Elliott presented a proposal to define how STP initiators, targets, and expanders handle receipt of abandon class primitives (06-322r2). Strong objections were raised about how the proposal pushed connection rate knowledge into the SSP link layer and the group put significant effort into correcting the proposal. Rob noted that the new SSP link layer requirement already appears in SAS-2 as an STP link layer requirement.

After several minutes of efforts failed to fully address the issues, Rob agreed to discuss the proposal offline with the people raising issues and revise it for consideration at the next meeting.

5.4 SAS-2 Change to phy reset sequence 10ms rule (06-471) [Day]

Brian Day presented a proposal to limit the requirement that 10ms elapse between phy resets to hot-plug events (06-471r0). The group raised concerns about how the text as written could result in devices being bombarded with phy resets.

Brian received advice regarding several ways to address the confusion and he agreed to prepare a new revision of the proposal for consideration during the next meeting.

5.5 SAS-2: Transport-layer handling of extraneous retransmit DATA frames (06-371) [Sheffield]

Vicky Duerk asked that discussion of this topic be deferred to the next meeting.

5.6 SAS-2: Initiator handling of retransmit read DATA frames (06-467) [Sheffield]

Vicky Duerk presented a proposal to clarify initiator handling of retransmitted read DATA frames when the original frames were received without errors (06-467r0). George Penokie pointed out redundant text in the proposal and the group discussed how to change or remove it. Vicky agreed to prepare a new revision of the proposal for consideration at the next meeting.

5.7 SAS-2: SAM-4: Miscellaneous State Machine Fixes (06-451) [Penokie]

George Penokie presented a proposal to correct wording problems in several SAS-2 state machine definitions (06-451r2). The group requested numerous changes and George agreed to prepare a new revision for consideration at the next meeting.

5.8 SAS-2: Transport layer read data flowchart (06-470) [Penokie]

George Penokie presented a flow chart for target read behavior (06-470r1). He noted that the flow chart was not intended for inclusion in SAS-x. The group raised several concerns with the functional changes which were proposed based on the flow chart. George agreed to prepare a new revision for consideration at the next meeting.

5.9 SAS-2: Transport layer initiator read data flowchart (06-489) [Penokie]

George Penokie presented a flow chart for initiator read data behavior (06-489r0). He noted that the flow chart was not intended for inclusion in SAS-x. The purpose of the flow chart was to guide the group in reviewing the SAS-2 requirements on initiator read data behavior in the presence of retries.

Based on an analysis made possible by the flow chart, two minor wording clarifications were noted on the last page of the proposal. The group agreed that the changes were editorial and Rob agreed to incorporate the changes in the next SAS-2 revision.

The group agreed that this topic should be removed from future agendas.

6. Zoning/Expander topics

6.1 SAS-2 Support multiple STP affiliations (06-188) [Elliott]

Last time, the SAS Protocol WG recommended 188r1 as revised for inclusion in SAS-2 by a vote of 4:2:14 (minutes in 04-416). T10 did not approve it in a vote of 4:8:25:9=46 (minutes in 06-417).

Rob Elliott reported that he had revised the proposal to address the major concerns raised at the September T10 Plenary (06-188r2). No arguments were raised with respect to the revisions Rob described, which included changing a note normative text and updating the text to clarify what devices might be expected to do.

Concerns were raised about the newly defined Clear STP I_T Nexus Loss function. Was the function useful for SATA devices on which Link Reset is the only available translation for the function?

As part of attempting to resolve such questions, problems were identified in the context information stored for each affiliation. Rob stated that the discussion had provided him with lots to think about. He promised a revised version of the proposal for consideration at the next meeting.

6.2 SAS-2 OPEN_REJECT_RETRY during self-configuration changes (06-466) [Elliott]

Rob Elliott presented a proposal to have Expanders that are in the process of self configuring send a reject that can be retried instead of a reject that cannot be retried (06-466r0). The group requested several changes and Rob agreed to prepare a new revision for consideration at the next meeting.

6.3 SAS-2 Broadcast after count update (06-459) [Tuikov]

Luben Tuikov presented a proposal clarify the temporal relationship between Broadcast Change and the count of changes (06-459r0). The proposed changes bothered several people in the group. The group proposed several different ways to respond to the issue raised by the proposal and Luben agreed to prepare a new revision for consideration at the next meeting.

6.4 SAS-2 Broadcast (Zone Activate) only by ZONED BROADCAST (06-474) [Elliott]

Rob Elliott presented a proposal to return the Broadcast (Zone Activate) primitive to Broadcast (Reserved 3) (06-474r0). The group requested minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 06-474r1 (r0 as modified) be recommended for inclusion in SAS-2. Jim Scott seconded the motion. The motion passed 12:0:3.

6.5 SAS-2 Changes to NEGOTIATED PHYSICAL LINK RATE (06-478) [Day]

Brian Day requested advice on coordinating link rate discovery and spin-up hold. The group recommended transitioning to the Reset In Progress state.

Based on the input from the group, Brian agreed to revise 06-478 for consideration at the next meeting.

6.6 SAS-2 REPORT EXPANDER ROUTE TABLE descriptor layout change (06-473) [Elliott]

Rob Elliott presented a proposal to change the order of fields in the Report Expander Route Table descriptor (06-473r0). Rob Elliott moved that 06-473r0 be recommended for inclusion in SAS-2. Kevin Marks seconded the motion. In the absence of any objections, the motion passed unanimously.

6.7 SAS-2 DISCOVER response Attached Device Name for SATA (06-476) [Elliott]

Rob Elliott presented a proposal to improve the ability to identify SATA devices (06-476r0). Concerns were raised about how to distinguish between the worldwide unique values and the potentially non-unique values produced by the hashing option. Rob also sought advice on how to collect the primary data from the ATA device and the group recommended a register read/write method.

Rob agreed to prepare a new revision for consideration at the next meeting.

6.8 SAS-2 ALIGN insertion rate during STP connections (06-275) [Elliott]

Rob Elliott asked that discussion of this topic be deferred to the next meeting.

6.9 SAS-2 Enable and disable zoning by management identifier key (06-373) [Elliott]

Rob Elliott asked that discussion of this topic be deferred to the next meeting.

7. New Business

7.1 Expander Resets During Code Download [Penokie]

George Penokie described how devices disappear for an extended period of time when microcode is downloaded to an Expander. The primary issue George needed addressed was provision for some kind of notification from an Expander to initiators that the Expander is going to go offline for a long time interval. The group offered several implementation ideas for the notification and George noted them for inclusion in a proposal future proposal.

8. Review of Recommendations

The following documents were recommended for consideration by the Plenary:

For inclusion in SAS-2:

05-381r7 (Multiplexing) [Elliott]

06-473r0 (REPORT EXPANDER ROUTE TABLE descriptor layout change) [Elliott]

06-474r1 (Broadcast (Zone Activate) only by ZONED BROADCAST) [Elliott]

9. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

Monday, January 15, 2007 commencing at 9:00 a.m. in Lake Mary, FL at the Orlando Marriott Lake Mary Hotel (1-407-380-7724) hosted by Symantec.

Teleconference calls will be announced on the T10 reflector as needed.

10. Adjournment

The meeting was adjourned at 7:55 p.m. on Monday November 6, 2006.