

Accredited Standards Committee*

InterNational Committee for Information Technology Standards (INCITS)

Doc. No.: T10/06-316r0

Date: July 11, 2006

Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- July 10, 2006
Colorado Springs, CO

Agenda

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3. Attendance and Membership
4. Miscellaneous topics
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5. General Protocol topics
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 - 5.2 SAS-2 Wide SSP target port simultaneous connection rules (05-322) [Elliott]
 - 5.3 SAS-2 Support multiple STP affiliations (06-188) [Elliott]
 - 5.4 SAS-2 Multiplexing (05-381) [Elliott]
 - 5.5 SAS-2: Bus Inactivity Timeout Timer Is Broken (06-273) [Finch]
 - 5.6 SAS-2: Clarifications of the SCSI power conditions in SAS (06-299) [Owens and Marks]
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 - 5.8 SAS-2 STP response to abandon-class OPEN_REJECT (06-322) [Elliott]
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12. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, July 10, 2006. He thanked LSI Logic Corp. for hosting the meeting. As usual, the people present introduced themselves.

2. Approval of Agenda

The draft agenda was approved with no changes.

The following additions and changes were made during the course of the meeting:

5.9 SAS-2: PL_PM3 fixes (06-332) [Penokie]

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. James A. Lott, Jr.	P	Dallas Semiconductor
Mr. Kevin Marks	P	Dell, Inc.
Mr. Robert H. Nixon	P	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
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. Pak Seto	V	Intel Corp.
Mr. Robert Sheffield	P	Intel Corp.
Mr. Dennis Moore	P	KnowledgeTek, Inc.
Mr. Keith Maloney	V	LSI Logic
Mr. David Uddenberg	V	LSI Logic
Mr. Praveen Viraraghavan	V	LSI Logic Corp
Mr. Jeffrey J. Gauvin	V	LSI Logic Corp.
Mr. Tim Hogle	V	LSI Logic Corp.
Mr. John Lohmeyer	P	LSI Logic Corp.
Mr. Avraham Shimor	P	M-Systems
Mr. David Geddes	P	Marvell Semiconductor, Inc.
Mr. Mark Overby	P	Nvidia Corp.
Mr. Tim Symons	P	PMC-Sierra
Mr. Michael O'Donnell	V	San Juan Technologies, Inc.
Mr. Gerald Houlder	P	Seagate Technology
Mr. William Martin	P	Sierra Logic, Inc.
Mr. Stephen Finch	AV	STMicroelectronics
Mr. Vit Novak	P	Sun Microsystems, Inc.
Mr. Tom Skaar	V	Vitesse
Mrs. Zenta Darnell	V	Vitesse Semiconductor
Mr. Ryan Goss	V	Vitesse Semiconductor
Mr. Jim Scott	AV	Vitesse Semiconductor
Mr. Gregory Tabor	P	Vitesse Semiconductor
Mr. Curtis Stevens	P	Western Digital
Mr. Jeff Williams	P	Xiotech Corp.

35 People Present

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

4. Miscellaneous topics

4.1 Report about T11.5 SM-HBA draft standard [Krithivas/Nixon]

Bob Sheffield asked that this topic be removed from the agenda.

5. General Protocol topics

5.1 SAS-2 protocol for changing driver amplitude (03-285) [Evans]

In the absence of Mark Evans this topic was removed from future agendas.

5.2 SAS-2 Wide SSP target port simultaneous connection rules (05-322) [Elliott]

Rob Elliott presented a proposal to add recommendations regarding target usage of simultaneous connections on wide links (05-322r4). Rob Elliott moved that 05-322r4 be recommended for inclusion in SAS-2. Mark Overby seconded the motion. The motion passed 15:0:5.

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

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

5.4 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 (05-381r3). Among several other changes, the group requested that the MUX (LOGICAL LINK 0 ALTERNATE) and MUX (LOGICAL LINK 1 ALTERNATE) primitives be removed from the proposal.

Rob agreed to prepare a new revision of the proposal for consideration at the next meeting, including the changes discussed by the group and adding a description of the state machine changes needed to support multiplexing.

5.5 SAS-2: Bus Inactivity Timeout Timer Is Broken (06-273) [Finch]

Steve Finch presented a discussion of an error in the SAS-2 state machines (06-273r0). The group requested substantial changes in the proposal (some of which had been discussed privately prior to the meeting) and Steve agreed to prepare a new revision.

Steve Finch moved that 06-273r1 (r0 as modified) be recommended for inclusion in SAS-2. Curtis Stevens seconded the motion. The motion passed 18:0:1.

5.6 SAS-2: Clarifications of the SCSI power conditions in SAS (06-299) [Owens and Marks]

Kevin Marks presented a proposal to define consistent behaviors for SCSI power conditions in SAS (06-299r0). The proposal included requirements that devices wait for very long times for specified events to occur and these waits raised concerns in the group.

The group requested that the proposal be reworded to follow the example found in the FORMAT UNIT command and Kevin agreed to prepare a new revision of the proposal for consideration at the next meeting.

5.7 SAS-2: Multiple Broadcasts on Reset (06-302) [Penokie]

George Penokie presented a proposal intended to eliminate drives apparently disappearing on RAID controller back ends (06-302r0). The group did not like using a Function Response code value to report the new initializing status condition described in the proposal and George agreed to prepare a new revision of the proposal that uses the Negotiated Physical Link Rate field. Several other changes were proposed for the next revision and George noted them.

Later in the meeting, George presented the draft r1 text and minor modifications were agreed upon.

George Penokie moved that 06-302r1 (r0 as revised) be recommended for inclusion in SAS-2. Bob Sheffield seconded the motion. The motion passed 11:0:6.

5.8 SAS-2 STP 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 (06-322r0). The group raised concerns regarding the object nomenclature in the proposal and Rob agreed to modify the proposal for consideration at the next meeting.

5.9 SAS-2: PL_PM3 fixes (06-332) [Penokie]

George Penokie presented a proposal to correct the transfer of messages in several SAS state machines (06-332r0). George Penokie moved that 06-332r0 be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. The motion passed 10:0:8.

6. Self-configuring expander devices

6.1 SAS-2 Self-configuring expander status (06-187) [Elliott]

Rob Elliott presented a proposal to define an SMP function to return self-configuring status information from expanders (06-187r1). The group identified problems with the recursive definition of the Self-Configuring Levels Completed field definition and Rob agreed to revise the proposal to add an easier to read table. Other areas were identified where the proposed requirements were confusing and Rob agreed to revise the proposal further.

Rob Elliott moved that 06-187r2 (r1 as modified) be recommended for inclusion in SAS-2. Zenta Darnell seconded the motion. The motion passed 11:0:5.

6.2 SAS-2 Expander Configuration Supervisor and SMP CHANGE Request (06-029) [Weber and Johnson]

Ralph Weber asked that this topic be removed from future agendas.

7. Zoning/expander topology topics

7.1 SAS-2 Allow table-to-table expander attachment (06-189) [Elliott]

Rob Elliott presented a proposal to allow table routed expander ports to be connected to other table routed expander ports (06-189r2). The highly restricted support for SAS-1.1 externally configured expanders was questioned and several present called for enhancing the HBA expander configuration algorithm to fully update SAS-1.1 expanders. Such changes were postponed to a TBD future proposal.

Minor changes were requested and Rob agreed to prepare a new revision.

Rob Elliott moved that 06-189r3 (r2 as revised) be recommended for inclusion in SAS-2. Tim Symons seconded the motion. The motion passed 10:0:8.

7.2 SAS-2: Reporting ZONE PARTICIPATING CAPABLE in the IDENTIFY address frame (06-210) [Marks]

Kevin Marks presented a proposal to define a process for switching a phy from non-participating to participating in a zoned service delivery subsystem (06-210r4). Kevin Marks moved that 06-210r4 be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of objections, the motion passed unanimously.

7.3 SAS-2 Allow more than one ZPSDS in a SAS domain (06-279) [Elliott]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

7.4 SAS-2 Enable and disable zoning (06-281) [Elliott]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

7.5 SAS-2 Zone Management Models (06-285) [Symons]

Tim Symons asked that this topic be removed from future agendas.

8. SMP function topics**8.1 SAS-2 SMP Function Result Priority (06-304) [Darnell]**

Zenta Darnell presented a proposal to prioritize the Function Result values returned (06-304r1). Concerns were raised about over specifying behaviors that could better be handled as vendor product requirements. After a lengthy discussion, such concerns were dismissed.

The group requested that the 'should' introducing the prioritized lists be changed to a 'shall' and that a note following the table be changed to normative text.

Zenta Darnell moved that 06-304r2 (r1 as revised) be recommended for inclusion in SAS-2. Bill Martin seconded the motion. In the absence of any objections, the motion passed unanimously.

8.2 SAS-2 SMP CONFIGURE PHY ZONE function (06-201) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.3 SAS-2 SMP REPORT ZONE PERMISSION function (06-203) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.4 SAS-2 SMP CONFIGURE ZONE PERMISSION function (06-202) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.5 SAS-2 Expander Route Table (CONFIGURE ADDRESS RESOLVE) (06-214) [Johnson]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.6 SAS-2 Zone management lock (06-286) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.7 SAS-2 SMP Activate Zone Locked Update (06-288) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.8 SAS-2 SMP Zone Lock Release (06-289) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

8.9 How to send SMP over SSP? (06-313) [Weber]

Ralph Weber presented four options for mapping SMP requests and responses to SCSI commands (06-313r0). He sought inputs, especially from expander vendors, to guide selection among the choices. The majority of the expander vendors present wanted to consider the issues based on the pros and cons presented to the group before responding and Ralph agreed to collect their inputs during a future telephone conference call.

8.10 SAS-2 SMP Zone Lock Timer (06-326) [Symons]

Due to the late hour, discussion of this topic was deferred to the Thursday afternoon meeting.

9. New Business

No new business was brought before the group.

10. Review of Recommendations

The following document was recommended for inclusion in SAS-2 during this meeting:

For inclusion in SAS-2:

- 06-197r3 (Add expander change count to all SMP functions) [Elliott]
- 06-208r2 (Restrict access to SMP write functions) [Elliott]
- 06-213r2 (REPORT GENERAL additions for zoning and self configuration) [Johnson]
- 06-037r7 (SMP Lists (DISCOVER LIST)) [Johnson]
- 06-078r3 (Expander Routing Table (REPORT EXPANDER ROUTE TABLE)) [Johnson]
- 05-322r4 (Wide SSP target port simultaneous connection rules) [Elliott]
- 06-273r1 (Bus Inactivity Timeout Timer Is Broken) [Finch]
- 06-187r2 (Self-configuring expander status) [Elliott]
- 06-302r1 (Multiple Broadcasts on Reset) [Penokie]
- 06-189r3 (Allow table-to-table expander attachment) [Elliott]
- 06-332r0 (PL_PM3 fixes) [Penokie]
- 06-304r2 (SMP Function Result Priority) [Darnell]
- 06-210r4 (Reporting ZONE PARTICIPATING CAPABLE in the IDENTIFY address frame) [Marks]

11. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

Tuesday, September 12, 2006 commencing at 9:00 a.m. in Nashua, NH at the Crowne Plaza hotel (1-603-886-1200 Reservations: www.crowneplazanashua.com Group Code: HCM) hosted by Hitachi Cable Manchester.

Teleconference calls for SAS-2 Zoning will be held weekly and announced on the T10 reflector. Other teleconference calls will be announced on the T10 reflector as needed.

12. Adjournment

The meeting was adjourned at 7:05 p.m. on Monday July 10, 2006.