

Accredited Standards Committee*

InterNational Committee for Information Technology Standards (INCITS)

Doc. No.: T10/07-114r0

Date: March 13, 2007

Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- March 12, 2007
Memphis, TN

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Miscellaneous topics
5. General Protocol topics
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 - 5.2 SAS-2 SPC-4 Enabling and disabling Transport Layer Retries (07-027) [Martin and Elliott]
 - 5.3 SAS-2 Update SATA references to Serial ATA 2.6 (07-059) [Elliott]
 - 5.4 SAM-4 SAS-2 FCP-4 QUERY TASK SET task management function (07-066) [Elliott]
 - 5.5 SAM-4 SAS-2 FCP-4 QUERY UNIT ATTENTION task management function (07-067) [Elliott]
 - 5.6 SAS-2 Fix target device name PIV bit (07-082) [Elliott]
 - 5.7 SAS-2 Change mode page subpage names (07-085) [Elliott]
 - 5.8 SAS-2:UML changes for logical phys (07-094) [Penokie]
 - 5.9 SAS-2 Transport level read fixes (07-108) [Penokie]
 - 5.10 SAS-2 Redundant primitive sequence error handling (07-089) [Elliott]
 - 5.11 SAS-2 Remove Messages Between State Machines annex (07-124) [Elliott]
6. Zoning topics
 - 6.1 SAS-2 Address resolved zoning (07-028) [Symons]
 - 6.2 More Zone Groups (07-017) [Johnson]
 - 6.3 SAS-2 Zone manager key (06-373) [Elliott]
7. Non-zoning Expander topics
 - 7.1 SAS-2 Broadcast after count update (06-459) [Tuikov]
 - 7.2 SAS-2 Changes to NEGOTIATED PHYSICAL LINK RATE (06-478) [Day]
 - 7.3 SAS-2 DISCOVER response Attached Device Name for SATA (06-476) [Elliott]
 - 7.4 SAS-2 Self-Configuration Status Updates (07-039) [Hartshorn, Johnson]
 - 7.5 SAS-2: Expander Notification of Temporary Shutdown (07-008) [Penokie]
 - 7.6 SAS-2: REPORT BROADCAST function (07-075) [Penokie]
 - 7.7 SAS-2 Add ATTACHED REASON field (07-084) [Elliott]
 - 7.8 SAS2 - Add IDENTIFY Reason code to DISCOVER and DISCOVER LIST (07-121) [Johnson]
 - 7.9 SAS-2 SES-2 Enclosure Connector Information (07-087) [Besmer]
8. Physical WG overlap topics
 - 8.1 SAS-2 SMP function support for SNW-3 phy capabilities (07-091) [Elliott]
 - 8.2 SAS-2 Far-end loopback phy test functions (07-119) [Elliott]
9. New Business

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- 10. Review of Recommendations
- 11. Meeting Schedule
- 12. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, March 12, 2007. He thanked Chris Lyon of the SCSI Trade Association 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:

- 5.9 SAS-2 Transport level read fixes (07-108) [Penokie]
- 5.10 SAS-2 Redundant primitive sequence error handling (07-089) [Elliott]

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

- 5.11 SAS-2 Remove Messages Between State Machines annex (07-124) [Elliott]

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:

SAS Protocol Working Group Attendance Report - March 2007

Name	S	Organization
Mr. Chris Fore	P	Adaptec, Inc.
Mr. Gregory Tabor	P	Dallas Semiconductor
Mr. Kevin Marks	P	Dell, Inc.
Mr. Mickey Felton	A#	EMC Corp.
Mr. William Martin	P	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
Mr. David Freeman	V	Finisar
Mr. Mike Fitzpatrick	P	Fujitsu
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.
Mr. Pak Seto	V	Intel Corp.
Mr. Robert Sheffield	P	Intel Corp.
Mr. Brad Besmer	V	LSI Logic Corp.
Mr. Brian Day	V	LSI Logic Corp.
Mr. Tyson Hartshorn	V	LSI Logic Corp.
Mr. Steve Johnson	V	LSI Logic Corp.
Mr. John Lohmeyer	P	LSI Logic Corp.
Mr. Steven Schauer	V	LSI Logic Corp.

Mr. David Geddes	P	Marvell Semiconductor, Inc.
Mr. Tim Symons	P	PMC-Sierra
Mr. Michael Rogers	A	Samsung
Mr. Gerald Houlder	P	Seagate Technology
Mr. Stephen Finch	P	STMicroelectronics, Inc.
Mrs. Zenta Darnell	V	Vitesse Semiconductor
Mr. Phillip Roberts	V	Vitesse Semiconductor
Mr. Jim Scott	P	Vitesse Semiconductor
Mr. Mark Evans	A	Western Digital

29 People Present

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

4. Miscellaneous topics

No miscellaneous topics were presented to the group.

5. General Protocol topics

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

Bob Sheffield presented a proposal to broaden the initiator handling of retransmitted read DATA frames when the original frames were received without errors in ways that allow the originally received data to be used (06-467r2). The group requested that the proposal be reduced to a single sentence that stated the allowed behavior in general terms (with other changes to state machines, etc. to be included in future proposals). Bob agreed to prepare a new revision of the proposal.

Bob Sheffield moved that 06-467r3 (r2 as revised) be recommended for inclusion in SAS-2. Bill Martin seconded the motion. The motion passed 7:0:8.

5.2 SAS-2 SPC-4 Enabling and disabling Transport Layer Retries (07-027) [Martin and Elliott]

Rob Elliott presented a proposal to control transport layer retries using bits in the Command frame (07-027r1). The group requested several changes including the addition of a VPD page indicating support for the new feature, and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-027r2 (r1 as revised) be recommended for inclusion in SAS-2 and SPC-4. Bill Martin seconded the motion. In the absence of any objections, the motion passed unanimously.

5.3 SAS-2 Update SATA references to Serial ATA 2.6 (07-059) [Elliott]

Rob Elliott presented a proposal to update the SAS-2 references to the currently applicable SATA-IO documents (07-059r0). The group noted that one section of text proposed for insertion was not highlighted in blue and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-059r1 (r0 as revised) be recommended for inclusion in SAS-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

5.4 SAM-4 SAS-2 FCP-4 QUERY TASK SET task management function (07-066) [Elliott]

Due to the late hour, Rob Elliott asked that discussion of this topic be deferred to the next meeting.

5.5 SAM-4 SAS-2 FCP-4 QUERY UNIT ATTENTION task management function (07-067) [Elliott]

Due to the late hour, Rob Elliott asked that discussion of this topic be deferred to the next meeting.

5.6 SAS-2 Fix target device name PIV bit (07-082) [Elliott]

Rob Elliott presented a proposal to update the Device Identification VPD page definitions in SAS-2 (07-082r0). The group requested minor editorial changes (e.g., changing a 6 to a 0) and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-082r1 (r0 as revised) be recommended for inclusion in SAS-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

5.7 SAS-2 Change mode page subpage names (07-085) [Elliott]

Rob Elliott presented a proposal to update the SAS-2 nomenclature for mode and log subpages to match the usage in SPC-4 (07-085r0).

Rob Elliott moved that 07-085r0 be recommended for inclusion in SAS-2. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

5.8 SAS-2:UML changes for logical phys (07-094) [Penokie]

Due to the late hour, George Penokie asked that discussion of this topic be deferred to the next meeting.

5.9 SAS-2 Transport level read fixes (07-108) [Penokie]

George Penokie presented a proposal to correct errors discovered during the incorporation of 06-470r5 (07-108r0). Concerns were raised about how the proposed text changes related to the Data-In Buffer and Data-Out Buffer definitions in SAM-4. Wording changes were agreed upon to properly relate the SAS-2 wording to the SAM-4 wording. George agreed to prepare a new revision of the proposal.

George Penokie moved that 07-108r1 (r0 as revised) be recommended for inclusion in SAS-2. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

5.10 SAS-2 Redundant primitive sequence error handling (07-089) [Elliott]

Due to the late hour, Rob Elliott asked that discussion of this topic be deferred to the next meeting.

5.11 SAS-2 Remove Messages Between State Machines annex (07-124) [Elliott]

Due to the late hour, Rob Elliott asked that discussion of this topic be deferred to the next meeting.

6. Zoning topics**6.1 SAS-2 Address resolved zoning (07-028) [Symons]**

Tim Symons presented a proposal to remove Address Resolved Zoning from SAS-2 (07-028r0). Concerns were raised about wording that described phys outside the ZPSDS and Tim agreed to prepare a new revision.

Tim Symons moved that 07-028r1 (r0 as revised) be recommended for incorporation in SAS-2. Bob Sheffield seconded the motion. The motion passed 9:1:7.

6.2 More Zone Groups (07-017) [Johnson]

Steve Johnson presented a proposal to increase the number of zone groups to 255 (07-017r1). The group requested several changes including a better discussion of how to mixed 128–255 Zone Group configurations are handled. Steve agreed to prepare a new revision.

Steve Johnson moved that 07-017r2 (r1 as revised) be recommended for incorporation in SAS-2. Kevin Marks seconded the motion. The motion passed 6:1:9.

6.3 SAS-2 Zone manager key (06-373) [Elliott]

Due to the late hour, Rob Elliott agreed to defer discussion of this topic to the next meeting.

7. Non-zoning Expander topics

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

In the absence of Luben Tuikov, discussion of this topic was deferred to the next meeting.

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

Brian Day presented a proposal to update the state machines to add details of reporting physical link rate status (06-478r1). He noted that the proposal has been updated to reflect January agreements in the SAS Phy working group.

Brian included notes on several areas needing decision. The group requested changes to address these notes and a few other issues. Brian agreed to prepare a new revision.

Brian Day moved that 06-478r2 (r1 as revised) be recommended for incorporation in SAS-2. Rob Elliott seconded the motion. The motion passed 5:0:11.

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

Due to the late hour, Rob Elliott agreed to defer discussion of this topic to the next meeting.

7.4 SAS-2 Self-Configuration Status Updates (07-039) [Hartshorn, Johnson]

Tyson Hartshorn presented a proposal to support more than 256 descriptors in the Report Self-Configuration Status function and to provide indicators in Report General and Discover List functions to determine if new events have been added (07-039r0).

The proposed fields were moved for compatibility with other approved proposals and several other changes were requested. Tyson agreed to prepare a new revision for consideration at the next meeting.

7.5 SAS-2: Expander Notification of Temporary Shutdown (07-008) [Penokie]

George Penokie presented a proposal to use Broadcast (Expander) primitives to make the SAS domain aware that an expander is downloading microcode and expects to become inaccessible when the microcode is activated (07-008r7). The group requested numerous changes including splitting one Report General field into two fields (initial and current values). George agreed to prepare a new revision.

George Penokie moved that 07-008r8 (r7 as revised) be recommended for inclusion in SAS-2 and SPC-4. Bob Sheffield seconded the motion. The motion passed 3:1:8.

7.6 SAS-2: REPORT BROADCAST function (07-075) [Penokie]

Due to the late hour, George Penokie agreed to defer discussion of this topic to the next meeting.

7.7 SAS-2 Add ATTACHED REASON field (07-084) [Elliott]

Rob Elliott presented a proposal to add Attached Reason fields to the Discover List function descriptors and to a pair of mode pages (07-084r0). The group requested several minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-084r1 (r0 as revised) be recommended for inclusion in SAS-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

7.8 SAS2 - Add IDENTIFY Reason code to DISCOVER and DISCOVER LIST (07-121) [Johnson]

Steve Johnson presented a proposal to add a Reason field to the Discover and Discover List functions (07-121r0). The group requested that some of the proposed fields be moved for compatibility with other uses of the functions. Adding an equivalent field to the SAS Phy mode and log descriptors was also requested. Steve agreed to prepare a new revision of the proposal.

Steve Johnson moved that 07-121r1 (r0 as revised) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of any objections, the motion passed unanimously.

7.9 SAS-2 SES-2 Enclosure Connector Information (07-087) [Besmer]

Brad Besmer presented a proposal to report expander information for expander devices that do not power up correctly (07-087r0). The group requested several changes and Brad agreed to prepare a new revision of the proposal.

Brad Besmer moved that 07-087r1 (r0 as revised) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. The motion passed 2:1:12.

8. Physical WG overlap topics

8.1 SAS-2 SMP function support for SNW-3 phy capabilities (07-091) [Elliott]

Due to the late hour, Rob Elliott agreed to defer discussion of this topic to the next meeting.

8.2 SAS-2 Far-end loopback phy test functions (07-119) [Elliott]

Due to the late hour, Rob Elliott agreed to defer discussion of this topic to the next meeting.

9. New Business

No new business was brought before the group.

10. Review of Recommendations

The following documents were recommended for consideration by the Plenary:

For inclusion in SAS-2:

07-028r1 (Address resolved zoning) [Symons]

07-017r2 (More Zone Groups) [Johnson]

06-467r3 (Initiator handling of retransmit read DATA frames) [Sheffield]

07-059r1 (Update SATA references to Serial ATA 2.6) [Elliott]

06-478r2 (Changes to NEGOTIATED PHYSICAL LINK RATE) [Day]
07-082r1 (Fix target device name PIV bit) [Elliott]
07-085r0 (Change mode page subpage names) [Elliott]
07-108r1 (Transport level read fixes) [Penokie]
07-084r1 (ATTACHED REASON field) [Elliott]
07-121r1 (Add IDENTIFY Reason code to DISCOVER and DISCOVER LIST) [Johnson]

For inclusion in SAS-2 and SPC-4:

07-027r2 (Enabling and disabling Transport Layer Retries) [Martin and Elliott]
07-008r8 (SAS-2: Expander Notification of Temporary Shutdown) [Penokie]

For inclusion in SAS-2 and SES-2:

07-087r1 (Enclosure Connector Information) [Besmer]

11. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

Wednesday–Thursday, April 18–19, 2007 commencing at 1:30 p.m. in Houston, TX hosted by Hewlett-Packard and Amphenol at a TBD location.

Monday, May 7, 2007 commencing at 9:00 a.m. in Bellevue, WA at the Hyatt Regency Hotel (425-462-1234) hosted by Microsoft Corp.

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

12. Adjournment

The meeting was adjourned at 7:35 p.m. on Monday March 12, 2007.