

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 5, 2007
Las Vegas, NV

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Miscellaneous topics
5. General Protocol topics
 - 5.1 SAS-2 Redundant primitive sequence error handling (07-089) [Elliott]
 - 5.2 SAS-2 Transmit IDENTIFY three times (07-090) [Elliott]
 - 5.3 SAS-2: Limiting SAS Target response to OPEN_REJECT (RETRY) (07-391) [Penokie]
 - 5.4 SAS-2: Remove AWT reset on receipt of OPEN_REJECT (RETRY) (07-392) [Penokie]
 - 5.5 SAS-2 Add SMP Report General Version Information (07-403) [Besmer]
 - 5.6 SAS-2: Indeterminate response length to a SMP REPORT GENERAL function (07-397) [Penokie]
 - 5.7 SAS-2: Initiator Side Transport layer write flowcharts (07-424) [Penokie]
6. Zoning topics
 - 6.1 SAS-2 PHY CHANGE COUNT increment due to zoning changes (07-482) [Besmer]
7. Non-zoning Expander topics
 - 7.1 SAS-2 Broadcast after count update (06-459) [Tuikov]
 - 7.2 SAS-2 Changes to Report Phy Broadcast Counts logging and retrieval method (07-103) [Hartshorn]
8. Physical WG overlap topics
 - 8.1 SAS-2 Far-end retimed loopback phy test function (07-119) [Elliott]
 - 8.2 SAS-2 Phy test pattern transmitter controls (07-479) [Elliott]
 - 8.3 SAS-2 More phy test patterns - TRAIN, TRAIN_DONE, and idle dwords (07-480) [Elliott]
9. New Business
 - 9.1 SAS-next considerations
10. Review of Recommendations
11. Meeting Schedule
12. Adjournment

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Results of Meeting

1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, November 5, 2007. 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 no additions and changes.

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

9.1 SAS-next considerations

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. Paul von Stamwitz	P	AMCC
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	P	Finisar Corp.
Mr. Mike Fitzpatrick	P	Fujitsu
Mr. Rob Elliott	P	Hewlett Packard Co.
Mr. Steven Fairchild	V	Hewlett Packard Co.
Mr. Jeff Wolford	V	Hewlett Packard Co.
Mr. Dan Colegrove	P	Hitachi Global Storage Tech.
Mr. George O. Penokie	A	IBM Corp.
Mr. Pak Seto	V	Intel Corp.
Mr. Joel Silverman	P	Kawasaki Microelectronics Am
Mr. Dennis Moore	P	KnowledgeTek, Inc.
Mr. Brad Besmer	V	LSI Corp.
Mr. Brian Day	V	LSI Corp.
Mr. Tyson Hartshorn	V	LSI Corp.
Mr. Steve Johnson	V	LSI Corp.
Mr. John Lohmeyer	P	LSI Corp.
Mr. Charlie Curtin	V	Maxim
Mr. Gregory Tabor	P	Maxim Integrated Products
Mr. Tim Symons	P	PMC-Sierra
Mr. Michael Rogers	A	Samsung
Mr. Martin Czekalski	V	Seagate Technology
Mr. Gerald Houlder	P	Seagate Technology
Mr. Mark Evans	P	Western Digital
Mr. Duncan Penman	V	Western Digital

28 People Present

Status Key: P - Principal
 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 Redundant primitive sequence error handling (07-089) [Elliott]**

Rob Elliott ask that discussion of a proposal to correct the number of error cases for which the recipient's Redundant Primitive detection rules are unclear, especially in light of the 6 Gbs usage of Decision Feedback Equalization (07-089r1), be deferred to the next meeting.

5.2 SAS-2 Transmit IDENTIFY three times (07-090) [Elliott]

Rob Elliott presented a proposal to require sending IDENTIFY frames three times (07-090r3). Rob Elliott moved that 07-090r3 be recommended for inclusion in SAS-2. Bill Martin seconded the motion. The motion passed 10:0:3.

5.3 SAS-2: Limiting SAS Target response to OPEN_REJECT (RETRY) (07-391) [Penokie]

George Penokie presented a proposal to add the OPEN_REJECT (RETRY) time limit field to the Shared Port Control mode page in SAS-2 (07-391r1). The group asked that the field be moved to the Port-Specific Port Control mode page, and several wording consistency problems were highlighted. The group asked that the units of measure be reduced from 100 μ s to 10 μ s and George accepted this advice. Numerous corrections were made in the proposed changes in the State Machine.

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

5.4 SAS-2: Remove AWT reset on receipt of OPEN_REJECT (RETRY) (07-392) [Penokie]

George Penokie presented a proposal to change the effects on AWT of OPEN_REJECT (07-392r1). The group asked that the proposed new mode page bit be moved to the Port-Specific Port Control mode page. The group asked that the proposal define SMP controls for the function. Numerous other corrections also were requested. George agreed to prepare a new revision.

George Penokie moved that 07-392r2 (r1 as revised) be recommended for inclusion in SAS-2. Mark Evans seconded the motion. In the absence of objections, the motion passed unanimously.

5.5 SAS-2 Add SMP Report General Version Information (07-403) [Besmer]

Brad Besmer presented a proposal to add a version field to the SMP Report General function (07-403r0). The proposal generated the customary debate over the usefulness of version fields. Progress was made when Brad agreed that his goal was to determine the appropriate Discovery Protocol to be used. This allowed the group to focus on defining a coded value that indicates which Discovery Protocol is recommended for use by initiators.

Brad Besmer moved that 07-403r0 be recommended for inclusion in SAS-2. The motion failed for lack of second. Brad agreed to prepare a new revision of the proposal for consideration at the next meeting.

5.6 SAS-2: Indeterminate response length to a SMP REPORT GENERAL function (07-397) [Penokie]

George Penokie presented a proposal to clearly differentiate SAS-2 REPORT GENERAL requests from their SAS-1.1 equivalents (07-397r1). The group strongly recommended defining an allocation length in the common SMP function header, and provided numerous suggestions about the details of how this should be specified, particularly with respect to backwards compatibility with SAS-1.1 targets that do not honor the allocation length.

George agreed to prepare a new revision.

5.7 SAS-2: Initiator Side Transport layer write flowcharts (07-424) [Penokie]

George Penokie presented a proposal to update the Initiator State Machine write definitions to accommodate transport layer retries (07-424r0). The group requested a few minor changes and George agreed to prepare a new revision.

George Penokie move that 07-424r1 (r0 as revised) be recommended for inclusion in SAS-2. Mark Evans seconded the motion. In the absence of objections, the motion passed unanimously.

6. Zoning topics

6.1 SAS-2 PHY CHANGE COUNT increment due to zoning changes (07-482) [Besmer]

Brad Besmer presented a proposal to require any zoning change to cause the Phy Change Count to be incremented (07-482r0). Rob Elliott suggested equivalent changes that could be made in another section. Brad was concerned that the alternative section covered poorly related events with respect to zoning changes.

The group asked that the change be reformatted into an unordered list, and that other changes be made to better match the proposal to existing SAS-2 text. Brad agreed to prepare a new revision.

Brad Besmer moved that 07-482r1 (r0 as revised) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of objections, the motion passed unanimously.

7. Non-zoning Expander topics

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

In the absence of Luben Tuikov, the group discussed whether or not to continue this topic on the agenda. Bill Martin moved that this topic be removed from future agendas. Brian Day seconded the motion. The motion passed 9:1:3.

7.2 SAS-2 Changes to Report Phy Broadcast Counts logging and retrieval method (07-103) [Hartshorn]

Tyson Hartshorn presented a proposal to merge the REPORT PHY BROADCAST COUNTS features into the REPORT BROADCAST SMP function (07-103r2). The group noted that the proposal's use of byte 2 was invalid. Tyson agreed to move the proposed field after the SMP function header and to grow the request size accordingly. A new broadcast reason code was defined to handle forwarded broadcasts.

Tyson Hartshorn moved that 07-103r3 (r2 as revised) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of objections, the motion passed unanimously.

8. Physical WG overlap topics

8.1 SAS-2 Far-end retimed loopback phy test function (07-119) [Elliott]

Rob Elliott presented a proposal to define a far-end loopback testing mechanism for SAS (07-119r4). The group asked that transmission of Idle dwords be added as part of the test initiation sequence.

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

8.2 SAS-2 Phy test pattern transmitter controls (07-479) [Elliott]

Rob Elliott presented a proposal to add more transmitter setting controls to the Phy test pattern setup (07-479r0). The group raised concerns about clearly distinguishing between functions supported in test mode and normally supported functions. Minor editorial changes were also requested.

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

8.3 SAS-2 More phy test patterns - TRAIN, TRAIN_DONE, and idle dwords (07-480) [Elliott]

Rob Elliott presented a proposal to define new test patterns (07-480r0). Rob Elliott moved that 07-480r0 be recommended for inclusion SAS-2. Gerry Houlder seconded the motion. In the absence of objections, the motion passed unanimously.

9. New Business

9.1 SAS-next considerations

The group briefly discussed how to develop the SAS-x standards after SAS-2. Several options for splitting Phy and Protocol layers into separate documents were discussed. Splitting SMP was discussed and changing the protocol to a SCSI-command-based construct was offered as an alternative. No conclusions were reached.

10. Review of Recommendations

The following documents were recommended for consideration by the Plenary:

For inclusion in SAS-2:

07-090r3 (Transmit IDENTIFY three times) [Elliott]

07-392r2 (Remove AWT reset on receipt of OPEN_REJECT (RETRY)) [Penokie]

07-482r1 (PHY CHANGE COUNT increment due to zoning changes) [Besmer]

07-424r1 (Initiator Side Transport layer write flowcharts) [Penokie]

07-103r3 (Changes to Report Phy Broadcast Counts logging and retrieval method) [Hartshorn]

07-480r0 (More phy test patterns - TRAIN, TRAIN_DONE, and idle dwords) [Elliott]

11. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

Monday, January 14, 2008 commencing at 9:00 a.m. in Santa Ana, CA at the Embassy Suites Hotel (Reservations: 714-241-3800) hosted by Western Digital Corp.

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

12. Adjournment

The meeting was adjourned at 5:32 p.m. on Monday November 5, 2007.