

Accredited Standards Committee*

InterNational Committee for Information Technology Standards (INCITS)

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Date: April 19, 2007

Reply to: John Lohmeyer

To: T10 Membership
From: John Lohmeyer
Subject: SAS Protocol WG -- April 18-19, 2007
Houston, TX

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Miscellaneous topics
5. General Protocol topics
 - 5.1 SAM-4 SAS-2 FCP-4 QUERY TASK SET task management function (07-066) [Elliott]
 - 5.2 SAM-4 SAS-2 FCP-4 QUERY UNIT ATTENTION task management function (07-067) [Elliott]
 - 5.3 SAS-2:UML changes for logical phys (07-094) [Penokie]
 - 5.4 SAS-2 Redundant primitive sequence error handling (07-089) [Elliott]
 - 5.5 SAS-2 Remove Messages Between State Machines annex (07-124) [Elliott]
 - 5.6 SAS-2 Target handling of retransmit write DATA frames (07-128) [Sheffield]
 - 5.7 SAS-2 CRC fixes (07-130) [Tuikov]
 - 5.8 SAS2: ATTACHED SAS ADDRESS for virtual phys (07-154) [Sheffield]
 - 5.9 SAS-2 Clarify scope of retransmitted XFER_RDY (07-166) [Sheffield]
 - 5.10 SAS-2: Clarify detection of a redundant primitive sequence (07-168) [Sheffield]
 - 5.11 SAS-2 SMP function result for incomplete descriptor lists (07-176) [Elliott]
 - 5.12 SAS-2 Connection request livelock avoidance (07-178) [Elliott]
 - 5.13 SAS-2: Add SNTT timer to SP_27:SAS_Settings (07-167) [Sheffield]
 - 5.14 SAS-2 Port layer wide port ordering (07-177) [Elliott]
 - 5.15 SAS-2: Allow omission of AIP for internal destination ports (07-189) [Sheffield]
 - 5.16 SAS-2 Changes to Report Phy Event logging and reporting (07-102) [Tyson Hartshorn]
 - 5.17 SAS-2 Changes to Report Phy Broadcast Counts logging and retrieval method (07-103) [Tyson Hartshorn]
6. Zoning topics
 - 6.1 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 DISCOVER response Attached Device Name for SATA (06-476) [Elliott]
 - 7.3 SAS-2 Self-Configuration Status Updates (07-039) [Hartshorn, Johnson]
 - 7.4 SAS-2: REPORT BROADCAST function (07-075) [Penokie]
 - 7.5 SAS-2 Add expander reduced functionality to REASON field (07-155) [Elliott]
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]
 - 8.3 SAS-2 BERT usage of far-end loopback modes (07-194r0) [Bent Hessen-Schmidt]

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9. New Business
10. Review of Recommendations
11. Meeting Schedule
12. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer called the meeting to order at 1:00 p.m. Wednesday, April 18, 2007. He thanked Rob Elliott of HP and Kurt Cox of Amphenol 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:

- 5.16 SAS-2 Changes to Report Phy Event logging and reporting [Tyson Hartshorn]
- 5.17 SAS-2 Changes to Report Phy Broadcast Counts logging and retrieval method [Tyson Hartshorn]
- 8.3 SAS-2 BERT usage of far-end loopback modes (07-194r0) [Bent Hessen-Schmidt]

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

none

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. Kevin Marks	P	Dell, Inc.
Mr. Mickey Felton	A#	EMC Corp.
Mr. William Martin	P	Emulex
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.
Dr. Mark Seidel	A	Intel Corp.
Mr. Pak Seto	V	Intel Corp.
Mr. Robert Sheffield	P	Intel Corp.
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. David Uddenberg	V	LSI Corp.
Mr. Paul Wassenberg	A	Marvell Semiconductor, Inc.
Mr. Rick Hernandez	V	PMC-Sierra
Mr. Tim Symons	P	PMC-Sierra
Mr. Stephen Finch	P	STMicroelectronics, Inc.
Mr. Jim Scott	P	Vitesse Semiconductor
Mr. Mark Evans	A	Western Digital

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

This item was approved in March by T10 at the request of the CAP working group.

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

This item was approved in March by T10 at the request of the CAP working group.

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

George Penokie briefly reviewed 07-094r0, SAS-2:UML changes for logical phys. The group suggested changes and George agreed to prepare revision 1 for consideration at the next meeting.

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

Rob Elliott presented 07-089r0, SAS-2 Redundant primitive sequence error handling. This proposal identifies a number of error cases for which the recipient's primitive detection rules are unclear, especially in light of the fact that 6 Gbps usage of Decision Feedback Equalization increases the likelihood that multiple bit errors may occur. The group gave Rob suggestions on clearer wording. Rob agreed to revise his proposal for consideration at the next meeting.

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

Rob Elliott presented 07-124r0, SAS-2 Remove Messages Between State Machines annex. Mark Evans moved and Steve Finch seconded that 07-124 be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

5.6 SAS-2 Target handling of retransmit write DATA frames (07-128) [Sheffield]

Bob Sheffield presented 07-128r0, SAS-2 Target handling of retransmit write DATA frames. Bob Sheffield moved and Rob Elliott seconded that 07-128r0 be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

5.7 SAS-2 CRC fixes (07-130) [Tuikov]

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

5.8 SAS2: ATTACHED SAS ADDRESS for virtual phys (07-154) [Sheffield]

Bob Sheffield presented 07-154r0, SAS2: ATTACHED SAS ADDRESS for virtual phys. This is a clarification of what is returned in the ATTACHED SAS ADDRESS field for virtual phys. The group gave Bob some suggested changes for this field. Bob agreed to prepare a revision 1. It was suggested that if the changes are made for the ATTACHED SAS ADDRESS field, similar changes should be made to other fields. Rob eventually agreed to do this as an editorial task.

Bob Sheffield moved and Tim Symons seconded that 07-154r1, r0 as revised, be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

5.9 SAS-2 Clarify scope of retransmitted XFER_RDY (07-166) [Sheffield]

Bob Sheffield presented 07-166r0, SAS-2 Clarify scope of retransmitted XFER_RDY. The group suggested changes and Bob agreed to prepare revision 1 for consideration at the next meeting.

5.10 SAS-2: Clarify detection of a redundant primitive sequence (07-168) [Sheffield]

This topic was discussed in conjunction with agenda item 5.4. Bob Sheffield said he would consider whether to revise it for consideration at the next meeting.

5.11 SAS-2 SMP function result for incomplete descriptor lists (07-176) [Elliott]

Rob Elliott presented 07-176r0, SAS-2 SMP function result for incomplete descriptor lists. The proposal would add a new SMP function result, INCOMPLETE DESCRIPTOR LIST, for cases where the actual number of descriptors present in the frame received are less than specified by the NUMBER OF <DESCRIPTORS> field. The group suggested changes and Rob agreed to prepare revision 1. Rob Elliott moved and Kevin Marks seconded that 07-176r1, r0 as revised, be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

5.12 SAS-2 Connection request livelock avoidance (07-178) [Elliott]

Rob Elliott presented 07-178r0, SAS-2 Connection request livelock avoidance. The proposal would clarify rules on rejecting connection requests so as to avoid livelock situations. Rob Elliott moved and Bob Sheffield seconded that 07-178r0 be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

5.13 SAS-2: Add SNTT timer to SP_27:SAS_Settings (07-167) [Sheffield]

Bob Sheffield presented 07-167r0, SAS-2: Add SNTT timer to SP_27:SAS_Settings. Bob Sheffield moved and Kevin Marks seconded that 07-167r0 be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

5.14 SAS-2 Port layer wide port ordering (07-177) [Elliott]

Rob Elliott presented 07-177r0, SAS-2 Port layer wide port ordering. This proposal would relax ordering rules in SAS-2 and would instead rely on proposed SAM-4 rules (see 06-341r1, SAM-4 Response Fence for protocol services). The group suggested changes and Rob agreed to prepare revision 1 for consideration at the next meeting.

5.15 SAS-2: Allow omission of AIP for internal destination ports (07-189) [Sheffield]

Bob Sheffield presented 07-189r0, SAS-2: Allow omission of AIP for internal destination ports. The group suggested changes and Bob agreed to prepare a revision 1 for consideration at the next meeting.

5.16 SAS-2 Changes to Report Phy Event logging and reporting (07-102) [Hartshorn]

Tyson Hartshorn presented 07-102r0, SAS-2 Changes to Report Phy Event logging and reporting. The group suggested changes and Tyson agreed to prepare revision 1 for consideration at the next meeting.

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

Tyson Hartshorn presented 07-103r0, SAS-2 Changes to Report Phy Broadcast Counts logging and retrieval method. The group suggested changes and Tyson agreed to prepare revision 1 for consideration at the next meeting.

6. Zoning topics

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

Rob Elliott presented 07-373r1, SAS-2 Zone manager key. The group suggested changes and Rob agreed to prepare revision 2 for consideration at 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 DISCOVER response Attached Device Name for SATA (06-476) [Elliott]

Rob Elliott presented 06-476r1, SAS-2 DISCOVER response Attached Device Name for SATA. The group suggested changes and Rob agreed to prepare revision 2 for consideration at the next meeting.

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

Tyson Hartshorn presented 07-039r1, SAS-2 Self-Configuration Status Updates. This proposal would 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. The group provided Tyson suggestions and he agreed to prepare a new revision for consideration at the next meeting.

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

George Penokie presented 07-075, SAS-2: REPORT BROADCAST function. The group provided George suggestions and he agreed to prepare revision 1 for consideration at the next meeting.

7.5 SAS-2 Add expander reduced functionality to REASON field (07-155) [Elliott]

Rob Elliott presented 07-155r0, SAS-2 Add expander reduced functionality to REASON field. Rob Elliott moved and Kevin Marks seconded that 07-155r0 be recommended for inclusion in SAS-2. In absence of objections, the motion passed unanimously.

8. Physical WG overlap topics

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

Rob Elliott reviewed 07-091r1, SAS-2 SMP function support for SNW-3 phy capabilities. The group provided Rob suggestions and he agreed to prepare revision 2 for consideration at the next meeting.

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

Rob Elliott reviewed 07-119r1, SAS-2 Far-end loopback phy test functions. He suggested that loopback mode be optional in SAS-2. The group discussed mechanisms to enter loopback mode, the maximum time to enter loopback mode (1 ms proposed), and whether the request can be rejected. The group provided Rob additional suggestions and he agreed to prepare revision 2 for consideration at the next meeting.

8.3 SAS-2 BERT usage of far-end loopback modes (07-194r0) [Bent Hessen-Schmidt]

Bent Hessen-Schmidt presented 07-194r0, SAS-2 BERT usage of far-end loopback modes. Several people objected to several provisions that would require hardware changes to existing designs. Bent agreed to prepare a revision to the proposal to reflect these concerns. Further work will occur as part of 07-119 (see agenda item 8.2)

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:

- 07-124r0 (SAS-2 Remove Messages Between State Machines annex) [Elliott]
- 07-128r0 (SAS-2 Target handling of retransmit write DATA frames) [Sheffield]
- 07-167r0 (SAS-2: Add SNTT timer to SP_27:SAS_Settings) [Sheffield]
- 07-154r1 (SAS2: ATTACHED SAS ADDRESS for virtual phys) [Sheffield]
- 07-176r1 (SAS-2 SMP function result for incomplete descriptor lists) [Elliott]
- 07-178r0 (SAS-2 Connection request livelock avoidance) [Elliott]
- 07-155r0 (SAS-2 Add expander reduced functionality to REASON field) [Elliott]

11. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

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 6:30 p.m. on Thursday April 19, 2007.