Accredited Standards Committee*
InterNational Committee for Information Technology Standards (INCITS)

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- May 7, 2007
          Bellevue, WA

Agenda

1. Opening Remarks
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    5.2 SAS-2 Redundant primitive sequence error handling (07-089) [Elliott]
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    5.5 SAS-2: Clarify detection of a redundant primitive sequence (07-168) [Sheffield]
    5.6 SAS-2 Port layer wide port ordering (07-177) [Elliott]
    5.7 SAS-2: Allow omission of AIP for internal destination ports (07-189) [Sheffield]
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9. New Business
    9.1 SAS: Introduction to SM-HBA (07-221) [Nixon]
10. Review of Recommendations
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Results of Meeting

1.   Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, May 7, 2007. He thanked Bob Griswold of Microsoft 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:

    6.2   SAS-2 Function result for 256 zone support (07-233) [Symons]

3.   Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for T10 member-ship. 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:

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SAS Protocol Working Group Attendance Report - May 2007


          Name                      S          Organization
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Mr. Chris Fore                     P  Adaptec, Inc.
Mr. Paul von Stamwitz              P  AMCC
Mr. Steve Robalino                 A  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. Ralph O. Weber                 P  ENDL Texas
Mr. David Freeman                  V  Finisar
Mr. Nathan Hastad                  P  General Dynamics
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. 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. Steven Schauer                 V  LSI Corp.
Mr. David Geddes                   P  Marvell Semiconductor, Inc.
Mr. Robert Griswold                A  Microsoft Corp.
Mr. Tim Symons                     P  PMC-Sierra
Mr. Michael Rogers                 A  Samsung
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Mr. Gerald Houlder                    P  Seagate Technology
Mr. Stephen Finch                     P  STMicroelectronics, Inc.
Mr. Anders Liverud                    AV Tandberg Storage
Mr. Charlie Curtin                    V  Vitesse Semiconductor
Mr. Jim Scott                         P  Vitesse Semiconductor
Mr. Mark Evans                        A  Western Digital

34 People Present

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

No miscellaneous topics were presented to the group.

5.   General Protocol topics

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

George Penokie presented the UML changes needed to represent the logical Phys added by multiplexing (07-094r1). George noted some extra plus signs in the UML drawings and promised a new revision to remove them.

The group asked for explanations of several of the feature representations and George answered all questions.

George Penokie moved that 07-094r2 (r1 as revised) be recommended for inclusion in SAS-2. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

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

Rob Elliott presented a proposal to correct 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). The group discussed additional error cases.

Confusion about the meaning of the word 'consecutive' pushed the group to ask that the word be removed, but this left some readers questioning what their hardware implementations were doing.

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

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

In the absence of Luben Tuikov, Rob Elliott presented a proposal to correct an error in the SAS-2 CRC equations (07-130r1). The usage of ellipses in the proposal was questioned, the group agreed to either write out all the inter-mediate equations or completely remove them.

Rob agreed to transmit the group's comments to Luben for inclusion in a new revision.

5.4 SAS-2 Clarify scope of retransmitted XFER_RDY & RESPONSE (07-166) [Sheffield]

Bob Sheffield presented a proposal restrict the usage of retransmitted XFER_RDYs and their response (07-166r1). The group requested minor changes and Bob agreed to prepare a new revision.

Bob Sheffield moved that 07-166r2 (r1 as revised) be recommended for inclusion in SAS-2. Brian Day seconded the motion. The motion passed 14:0:4.

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

Bob Sheffield asked that this topic be removed from this and future agendas.

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

Rob Elliott presented a proposal to push decisions about the handling of wide-port ordering issues up to higher layers (07-177r1). The group requested a few minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-177r2 (r1 as revised) be recommended for inclusion in SAS-2. Bill Martin seconded the motion. The motion passed 10:1:11.

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

Bob Sheffield asked that this topic be removed from this and future agendas.

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

Tyson Hartshorn presented a proposal to retrieve Phy event information or logs on multiple Phys rather than querying each Phy individually (07-102r1). The group raised issues about how the information being reported was organized and the application of target resources to make things easier for initiators.

Substantial changes were agreed and Tyson promised a new revision for consideration at the next meeting.

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

Tyson Hartshorn presented a proposal to retrieve Phy broadcast counts on multiple Phys, rather than querying each Phy individually (07-103r1). The group asked that instead of redefining the existing function, a completely new function be defined.

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

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

Rob Elliott presented a proposal to point SAS-2 in the direction of requiring that three IDENTIFY frames be sent in SAS-3 (07-090r0). The group discussed the overall viability of the proposal and eventually agreed that it was an appropriate direction for SAS-x to head, in the face of higher transfer rates and slightly more error prone testing environments (07-090r0).

The group requested that a note indicating possible future changes in SAS-3 be removed and Rob agreed to revise the proposal in this manner. The group discussed adding a preferential recommendation between one and three times and agreed not to add such text.

Rob Elliott moved that 07-090r1 (r0 as revised) be recommended for inclusion in SAS-2. Bill Martin seconded the motion. The motion passed 5:1:13.

5.11 SAS-2 ResetStatus port selector fixxes (07-228) [Day]

Brian Day presented a proposal to correct wording problems introduced by 06-478r2.

Brian Day moved that 07-228r0 be recommended for inclusion in SAS-2. Gerry Houlder seconded the motion. The motion passed 14:0:8.

6.   Zoning topics

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

Rob Elliott presented a proposal to define a zone manager password (06-373r2). Questions were raised about the usefulness of the proposal. Possibly the strongest statement in support appeared to be the proposition that vendor specific solutions will be invented if nothing is standardized.

The group suggested some alternatives to editor's note 2 and requested other minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 06-373r3 (r2 as revised) be recommended for inclusion in SAS-2. Tim Symons seconded the motion. The motion passed 8:1:10.

6.2   SAS-2 Function result for 256 zone support (07-233) [Symons]

Tim Symons presented a proposal to add an error code to be returned when 256 zones are not supported (07-233r0).

Tim Symons moved that 07-233r0 be recommended for inclusion in SAS-2. Jim Scott seconded the motion. In the absence of any 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, discussion of this topic was deferred to the next meeting.

7.2   SAS-2 WWN-based Attached Device Name for SATA (06-476) [Elliott]

Rob Elliott presented a proposal to define the conversion from SATA IDENTIFY frame information to SAS Attached Device Name field contents in the SAS DISCOVER frame (06-476r2). He noted that the hashing part of previous revisions of the proposal had been separated out into another proposal.

Rob Elliott moved that 06-476r2 be recommended for inclusion in SAS-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

7.3   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 SMP function and to provide indicators in Report General and Discover List SMP functions to determine if new events have been added (07-039r2).

The group requested several changes and Tyson 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 a proposal to report the number of various Broadcast types originated by a particular Phy (07-075r1). The group asked that the Expander Change Count field that appears in every SMP function be added and a few other *pro forma* changes, before calling for several substantive changes related to what descriptors are returned under what circumstances, what information is contained in the descriptors, and how the various counters are handled.

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

8.   Physical WG overlap topics

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

Rob Elliott reviewed a proposal to map SNW-3 support in the Phy to the SMP functions (07-091r2). He noted that the mode page and log page changes have been separated into other proposals (see 8.2).

The group discussed issues relating to how Phys support training before beginning to ask Rob for substantive changes to the proposal text.

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

8.2 SAS-2 Mode and log page support for SNW-3 phy capabilities (07-214) [Elliott]

Rob Elliott presented a proposal to define mode page access to SNW-3 information in Phys (07-214r0).

The group requested several changes and Rob agreed to prepare a new revision for consideration by the next meeting.

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

Rob Elliott presented a proposal to define a far-end loopback testing mechanism for SAS (07-119r2). The group discussed issues related to fairly coordinating the testing status between the device and the testing hardware. Among the issues of concern was providing a way for the device to tell the test equipment that it is not properly trained to allow a bit-error-rate test to be performed.

The group requested several changes and Rob agreed to prepare a new revision for consideration by the next meeting.

9.   New Business

9.1 SAS: Introduction to SM-HBA (07-221) [Nixon]

Bob Nixon introduced the group to the SM-HBA (ANSI/INCITS 428-2007) features oriented toward managing SAS HBAs (07-221r0).

10. Review of Recommendations

The following documents were recommended for consideration by the Plenary:

    For inclusion in SAS-2:
    07-166r2 (Clarify scope of retransmitted XFER_RDY & RESPONSE) [Sheffield]
    07-177r2 (Port layer wide port ordering) [Elliott]
    07-090r1 (Transmit IDENTIFY three times) [Elliott]
    07-228r0 (ResetStatus port selector fixxes) [Day]
    06-476r2 (WWN-based Attached Device Name for SATA) [Elliott]

06-373r3 (Zone manager password) [Elliott]
07-233r0 (Function result for 256 zone support) [Symons]
07-094r2 (UML changes for logical phys) [Penokie]

11. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

Monday, July 9, 2007 commencing at 9:00 a.m. in Colorado, CO at the Antlers Hilton Hotel (Reservations: http://www.hilton.com/en/hi/groups/personalized/coscshf_lsi07/index.jhtml) hosted by LSI Corp.

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

12. Adjournment

The meeting was adjourned at 7:38 p.m. on Monday May 7, 2007.