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

Date: September 12, 2006
Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- September 11, 2006
            Nashua, NH

Agenda

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Results of Meeting

1.   Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, September 11, 2006. He thanked Zane Daggett of Hitachi Cable Manchester 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:

   8.4   Negotiated Physical Link Rate question [Day]

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:

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            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. Kenneth Hirata                A   Emulex
Mr. Robert H. Nixon               P   Emulex
Mr. Ralph O. Weber                P   ENDL Texas
Mr. Walt Hubis                    V   Engenio Information Tech.
Mr. David Freeman                 V   Finisar
Mr. Mike Fitzpatrick              P   Fujitsu
Mr. Nathan Hastad                 P   General Dynamics
Mr. Wayne Bellamy                 V   Hewlett Packard Co.
Mr. Rob Elliott                   P   Hewlett Packard Co.
Mr. Steven Fairchild              V   Hewlett Packard Co.
Mr. Zane Daggett                  P   Hitachi Cable Manchester
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. Joel Silverman                AV  Kawasaki Microelectronics Am
Mr. Dennis Moore                  P   KnowledgeTek, Inc.
Mr. David Uddenberg               V   LSI Logic
Mr. Praveen Viraraghavan          V   LSI Logic Corp
Mr. Brian Day                     V   LSI Logic Corp.
Mr. Steve Johnson                 V   LSI Logic Corp.
Mr. John Lohmeyer                 P   LSI Logic Corp.
Mr. David Geddes                  P   Marvell Semiconductor, Inc.
Mr. Tim Symons                    P   PMC-Sierra
Mr. Gerald Houlder                P   Seagate Technology
Mr. William Martin                P   Sierra Logic, Inc.
Mr. Stephen Finch                 AV  STMicroelectronics
Mr. Anders Liverud                AV  Tandberg Storage
Mr. Charlie Curtin                V   Vitesse
Mr. Jim Scott                     A.  Vitesse Semiconductor
Mr. Curtis Stevens                P   Western Digital

37 People Present

Status Key:  P    -  Principal
             A,A# -  Alternate
             AV   -  Advisory Member
             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 Support multiple STP affiliations (06-188) [Elliott]

Rob Elliott presented a proposal to define how multiple affiliations are supported (06-188r1). The group requested minor changes in one note and Rob agreed to prepare a new revision.

Rob Elliott moved that 06-188r2 (r1 as modified) be recommended for inclusion in SAS-2. Ralph Weber seconded the motion. The motion passed 4:2:14.

5.2 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 (06-381r5). He described a newly devised method where multiplexing would be negotiated as part of the Phy speed negotiation.

After discussing the two options (A – State Machine negotiated, and B – Phy negotiated), Rob asked for a straw poll choosing between them. The straw poll results were 1 for Option A and 12 for Option B.

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

5.3 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 (06-299r1). Kevin Marks moved that 06-299r1 be recommended for incorporation in SAS-2. Bob Sheffield seconded the motion. In the absence of any objections, the motion passed unanimously.

5.4 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 (06-322r1). He noted that since the last meeting reviewers had suggested broader application of the proposed changes.

The group suggested several complex improvements in the proposal and Rob agreed to prepare a new revision for consideration at the next meeting.

5.5 SAS2: Transport-layer handling of extraneous retransmit DATA frames (06-371) [Sheffield]

Bob Sheffield presented a proposal to have retransmitted DATA frames discarded if the original frames were received correctly (06-371r0). Substantial problems were raised with the usage of the word 'matches' in the state machine definition for the actions to be performed. Bob agreed to work with George Penokie offline to ensure the proposal fully covered all issues using acceptable terminology. The group requested several other changes and Bob agreed to prepare a new revision for consideration at the next meeting.

5.6 SAS-2: Store-and-Forward Expander Devices (06-386 and 06-422) [Sheffield]

Bob Sheffield presented an overview of a plan to define Store-and-Forward capabilities in Expanders (06-422r0). The group raised numerous issues with the reliably, performance, and error recovery aspects of the proposal.

In response to calls for data demonstrating the performance improvements to be gained by the proposed mechanism, Bob agreed to model the effects of the changes and prepare a report on the results for consideration at the next meeting.

Bob agreed to reflect responses to several of the issues raised in a new revision of 06-386.

Bob Sheffield asked for a straw poll on whether the working group should commit resources to further development of Storage and Forward. The straw poll was 6 yes and 8 no.

5.7 SAS-2 Changes to ATTACHED SATA DEVICE bit (06-402) [Day]

Brian Day presented a proposal to correct errors in the state machine definition for the discovery of SATA devices (06-402r0). Brian Day moved that 06-402r0 be recommended for inclusion in SAS-2. Bill Martin second the motion. In the absence of any objections, the motion passed unanimously.

6.   Zoning/expander topology topics

6.1   SAS-2 Zone Configuration model (06-358) [Symons]

Tim Symons presented a proposed model for Zoning Configuration (06-358r4). The group requested several minor changes and Tim agreed to prepare a new revision.

Tim Symons moved that 06-358r5 (r4 as modified) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of objections, the motion passed unanimously.

6.2   SAS-2 Enable and disable zoning by management identifier key (06-373) [Elliott]

Rob Elliott introduced the group to a proposal to add management identifier keys (aka passwords) to critical zoning configuration functions (06-373r0). The group requested that the proposal be coordinated with the proposals approved earlier in the day and Rob agreed to prepare a new revision for consideration at the next meeting.

6.3   SAS-2 OPEN_REJECT RETRY during zoning changes (06-384) [Elliott]

Rob Elliott presented a proposal to define a retryable reject for those instances where zoning configuration changes are in progress (06-384r1). Rob Elliott moved that 06-384r1 be recommended for inclusion in SAS-2. Kevin Marks seconded the motion. In the absence of objections, the motion passed unanimously.

6.4   SAS-2 Enable disable zone management function revision (06-418) [Symons]

Tim Symons presented a proposal restrict the ENABLE DISABLE ZONING SMP function to when the Expander is locked (06-418r0). The group detected several omissions and Tim agreed to prepare a revised proposal. The proposal was revised substantially during the lunch hour and the group reviewed the revised proposal in detail.

Tim Symons moved that 06-418r1 (r0 as modified) be recommended for inclusion in SAS-2. Curtis Stevens seconded the motion. The motion passed 13:0:5.

7.   SMP function topics

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

Tim Symons presented a proposal to define the CONFIGURE ZONE PERMISSION SMP function (06-202r8). The group requested enhancements in the handling of several 'ignored' zone permissions bits and a few other minor changes. Tim agreed to prepare a new revision.

Tim Symons moved that 06-202r9 (r8 as revised) be approved for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of any objections, the motion passed unanimously.

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

Steve Johnson asked that discussion of this topic be removed from future agendas.

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

Ralph Weber led the group in a discussion of how to map SMP functions onto SCSI commands using the SSP transport (06-313r0). The group agreed that the only option which was acceptable to operating systems was unacceptable to Expander vendors. Therefore, this topic will be removed from future agendas.

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

Tim Symons presented a proposal to time-limit the interval during which an Expander device can be locked for zoning changes (06-326r1). The group discovered that the interval being timed was not clearly specified and major changes were needed to address the issues.

Tim Symons moved that 06-326r2 (r1 as modified) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of any objections, the motion passed unanimously.

8. New Business

8.1 SAS-2: Transport Layer Retries Fix (06-405) [Penokie]

George Penokie presented a proposal to remove text incorrectly added by a previous proposal (06-405r0). George Penokie moved that 06-405r0 be recommended for incorporation in SAS-2. Steve Finch seconded the motion. In the absence of any objections, the motion passed unanimously.

8.2 SAS2: Race condition for transition out of SP12:SAS_Fail state (06-408) [Martin]

Bill Martin presented a proposal to correct a state machine race condition (06-408r0). The group requested a grammatical change and Bill agreed to prepare a new revision.

Bill Martin moved that 06-408r1 (r0 as modified) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of any objections, the motion passed unanimously.

8.3 SAS-2 IDENTIFY address frame REASON field (06-409) [Elliott]

Rob Elliott presented a proposal to add a REASON field to the IDENTIFY address frame to indicate the reason why the Phy is going through a Link Reset (06-409r0). The group requested minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 06-409r1 (r0 as modified) be recommended for inclusion in SAS-2. Curtis Stevens seconded the motion. In the absence of any objections, the motion passed unanimously.

8.4 Negotiated Physical Link Rate question [Day]

Brian Day asked when does Negotiated Physical Link Rate change out of 2 (hex) and 4 (hex). Brian agreed to prepare a proposal reflecting the preferences of the group for consideration at the next meeting.

9.   Review of Recommendations

The following documents were recommended for consideration by the Plenary:

>   For inclusion in SAS-2 (by Seattle WG):
>   06-286r5 (SMP ZONE LOCK) [Symons]
>   06-201r6 (SMP CONFIGURE PHY ZONE function) [Symons]
>   06-203r6 (SMP REPORT ZONE PERMISSION function) [Symons]
>   06-288r6 (SMP ZONE ACTIVATE) [Symons]
>   06-289r6 (SMP ZONE UNLOCK) [Symons]
>   06-377r1 (Broadcast (Activate)) [Symons]
>
>   For inclusion in SAS-2 (by this WG):
>   06-358r5 (Zone Configuration model) [Symons]
>   06-202r9 (SMP CONFIGURE ZONE PERMISSION function) [Symons]
>   06-326r2 (SMP Zone Lock Timer) [Symons]
>   06-418r1 (Enable disable zone management function revision) [Symons]
>   06-384r1 (OPEN_REJECT RETRY during zoning changes) [Elliott]
>   06-402r0 (Changes to ATTACHED SATA DEVICE bit) [Day]
>   06-299r1 (Clarifications of the SCSI power conditions in SAS) [Owens and Marks]
>   06-405r0 (Transport Layer Retries Fix) [Penokie]
>   06-408r1 (Race condition for transition out of SP12:SAS_Fail state) [Martin]
>   06-409r1 (IDENTIFY address frame REASON field) [Elliott]
>   06-188r2 (Support multiple STP affiliations) [Elliott]

10. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

>   Tuesday, November 7, 2006 commencing at 9:00 a.m. in Las Vegas, NV at the Atrium Suites Las Vegas Hotel
>   (1-866-404-5286) hosted by Hitachi GST.

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

11. Adjournment

The meeting was adjourned at 7:30 p.m. on Monday September 11, 2006.