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

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- September 17, 2007
           Vancouver, BC Canada

Agenda

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9. New Business
   9.1   SAS-2 Add SMP Report General Version Information (07-403) [Besmer]
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Results of Meeting

1.   Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, September 17, 2007. He thanked Tim Symons of PMC-Sierra 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.

   5.8   SAS-2 SMP Discovery List Field Alignment (07-401) [Besmer]
   9.1   SAS-2 Add SMP Report General Version Information (07-403) [Besmer]
   9.2   SAS-2: Indeterminate response length to a SMP REPORT GENERAL function (07-397) [Penokie]

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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          Name                     S         Organization
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Mr. Kevin Marks                    P  Dell, Inc.
Mr. William Martin                 P  Emulex
Mr. Ralph O. Weber                 P  ENDL Texas
Ms. Monica Li                      A# 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.
Dr. Mark Seidel                    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. John Lohmeyer                  P  LSI Corp.
Mr. Steven Schauer                 V  LSI Corp.
Mr. David Uddenberg                V  LSI Corp.
Mr. Gregory Tabor                  P  Maxim Integrated Products
Mr. Grant Brydon                   V  PMC-Sierra
Mr. Truong Nguyen                  V  PMC-Sierra
Mr. Tim Symons                     P  PMC-Sierra
Mr. Neil Wanamaker                 V  PMC-Sierra
Mr. Gerald Houlder                 P  Seagate Technology
Mr. Stephen Finch                  P  STMicroelectronics, Inc.
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Mr. Jorgen Walle-Jensen          V  Tandberg Storage
Mr. Mahbubul Bari                A# Vitesse Semiconductor
Mr. Charlie Curtin               V  Vitesse Semiconductor
Mr. Mark Evans                   P  Western Digital


28 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 Redundant primitive sequence error handling (07-089) [Elliott]

Rob Elliott ask that discussion of 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), be deferred to the next meeting.

5.2 SAS-2: Transport layer write flowcharts (07-317) [Penokie]

George Penokie presented a series of flowcharts that depicted the operation of transport layer retries for write commands (07-317r1). The group discussed several minor issues in the target-side aspects of the proposal but no changes were requested.

On the initiator side, the group suggested that returning to a zero-based accounting for bytes transferred made more sense because of the target's limited visibility into the application client's data. George agreed to switch back to zero-based accounting, and promised a new revision of the proposal for consideration at the next meeting.

The group asked that the document be split into separate proposals for target side and initiator side behavior so that the target side proposal could be voted upon at this meeting.

George Penokie moved that 07-317r2 (r1 as modified to retain only the target side behavior) be recommended for inclusion in SAS-2. Mark Evans seconded the motion. In the absence of objections, the motion passed unanimously.

5.3 SAS-2 Add minimum number of dwords after Identify Frame (07-334) [Houlder]

Gerry Houlder presented a proposal to add a requirement that at least three non-deleteable primitives be transmitted after an IDENTIFY (07-334r1). He noted that the requirement was needed to support older hardware.

The group asked that the words 'and before transmitting SOAF' be deleted from the note.

Gerry Houlder moved that 07-334r2 (r1 as modified) be recommended for inclusion in SAS-2. Bill Martin seconded the motion. In the absence of objections, the motion passed unanimously.

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

Rob Elliott presented a proposal to require sending IDENTIFY frames three times (07-090r2). The group requested minor editorial changes and Rob agreed to prepare a new revision.

Steve Finch raised objections regarding how the sending of one or three IDENTIFY frames was represented in the state machine definitions. He was concerned that a state completes after the first of three IDENTIFY frames are sent, leaving the remaining two to be sent "in the background". This could result in concurrent attempts to transmit dwords from different parts of the overall state machine.

The group discussed several ways of resolving this conundrum and Rob agreed to modify the proposal to enhance the figure about how multiple transmitters relate to each other via modeled multiplexers. Several details of this resolution needed to be adjusted before the group accepted it.

Rob Elliott moved that 07-090r3 (r2 as modified) be recommended for inclusion in SAS-2. Bill Martin seconded the motion for the purpose of extending the discussion.

Bill expressed the belief that the group should review the changes more carefully before voting. Rob walked the group through the changes he planned to make. Rob Elliott and Bill Martin agreed to withdraw the motion.

5.5 SAS 2 - Only issue BROADCAST(CHANGE) for initial Spinup Hold (07-388) [Day]

Brian Day presented a proposal to have Expanders only issue a BROADCAST(CHANGE) on the initial time they enter the Spinup Hold state on a SATA drive (07-388r0). The group requested changes to clarify the cascading requirements in several subclauses and Brian agreed to prepare a new revision of the proposal.

Brian Day moved that 07-388r1 (r0 as modified) be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of objections, the motion passed unanimously.

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

George Penokie presented a proposal to add the disconnect time limit field from the Disconnect-Reconnect mode page to SAS-2 (07-391r0). He noted that no state machine changes were included in the proposal and suggested that detailed consideration of the document would need to be deferred to the next meeting. George solicited opinions on the overall plan.

Steve Finch ask if the limitation applies between initiators or only to one initiator. George indicated that the intent was to apply the behavior on a per-initiator basis, and proposed text revisions to accomplish that result.

Mark Evans asked if the change applies to any OPEN_REJECT. George indicated that RETRY is his major concern and perhaps PATHWAY BLOCKED. The group located a few other OPEN_REJECTs and George noted additional changes for the proposal.

The time units in the proposal were questioned and George agreed to reconsider the choice and modify it in the next revision.

Mark Evans pressed George to consider moving the control to the SAS port-specific mode page, because the function being controlled was not really the function described for the Disconnect-Reconnect mode page and because the control needed to be applied differently to SAS ports in different SAS domains. George agreed to consider these issues when preparing the new revision for consideration at the next meeting.

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

George Penokie presented a proposal change the effects on AWT of OPEN_REJECT (07-392r0). Rob Elliott noted that new SAS features have given OPEN_REJECT new meanings which had not been considered when the AWT counter effects were defined. The group requested several changes and George agreed to prepare a new revision of the proposal for consideration at the next meeting.

5.8 SAS-2 SMP Discovery List Field Alignment (07-401) [Besmer]

Brad Besmer presented a proposal to move fields in the SMP DISCOVER function response to preserve dword alignment (07-401r0). Brad Besmer moved that 07-401r0 be recommended for inclusion in SAS-2. Rob Elliott seconded the motion. In the absence of any objections, the motion passed unanimously.

6.   Zoning topics

6.1 SAS-2 Zone phy information clarifications (07-305) [Elliott]

Rob Elliott presented a proposal that was drafted in response to a Note that a recent Editor's meeting identified as a problem (07-305r2). He explained the savable data and currently saving bits in the proposal, as well as other enhancements. The group requested a few minor changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-305r3 (r2 as modified) be recommended for inclusion in SAS-2. Tim Symons 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, discussion of this topic was deferred to the next meeting.

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

In the absent of Tyson Hartshorn, Brad Besmer presented a proposal to merge the REPORT PHY BROADCAST COUNTS features into the REPORT BROADCAST SMP function (07-103r1). The group noted several problems in the proposal and Brad agreed to prepare a new revision for consideration at the next meeting.

8.   Physical WG overlap topics

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

Rob Elliott requested that discussion of the proposal to define a far-end loopback testing mechanism for SAS (07-119) be deferred to the next meeting.

9.   New Business

9.1 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). He noted that approval of the proposal in agenda item 9.2 would necessitate approving this proposal, so the group switched to the next topic.

After that discussion ended, Brad agreed to reconsider the need for a version field and asked that further consideration of the proposal be deferred to the next meeting.

9.2 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 (07-397r0). The group raised concerns about the proposed REPORT GENERAL response data and George agreed to revise the proposal to eliminate additions to the data. Concerns were raised about all the SMP functions with respect to the REPORT GENERAL class of issues, and George agreed to add details of their behavior in the revised proposal.

Due to the complexity of the changes, George stated that the revised proposal would be discussed during the next meeting.

10.   Review of Recommendations

The following documents were recommended for consideration by the Plenary:

> For inclusion in SAS-2:
> 07-317r2 ((Target) Transport layer write flowcharts) [Penokie]
> 07-334r2 (Add minimum number of dwords after Identify Frame) [Houlder]
> 07-388r1 (Only issue BROADCAST(CHANGE) for initial Spinup Hold) [Day]
> 07-401r0 (SMP Discovery List Field Alignment) [Besmer]
> 07-305r3 (Zone phy information clarifications) [Elliott]

11.   Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

> Monday, November 5, 2007 commencing at 9:00 a.m. in Las Vegas, NV at the Atrium Suites Hotel (Reservations: 866-404-5286) hosted by Hitachi Global Storage Technology.

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

12.   Adjournment

The meeting was adjourned at 4:56 p.m. on Monday September 17, 2007.