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

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Date:	September 14, 2005
Reply to:	John Lohmeyer

To: T10 Membership
From: Mark Overby & John Lohmeyer
Subject: SAT Working Group -- September 13, 2005
                 Vancouver, BC, CA

Agenda

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Results of Meeting

1.   Opening Remarks

Steve Johnson called the meeting to order at 0900 Tuesday, September 13, 2005. He thanked Rachelle Trent and Kelly Pollock and PMC-Sierra for hosting the meeting. As usual, the people present introduced themselves.

2.   Approval of Agenda

The draft agenda was approved as revised.

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. Ron Roberts                     A  Broadcom Corp.
Mr. Kevin Marks                     P  Dell, Inc.
Mr. Kenneth Hirata                  A  Emulex
Mr. Ralph O. Weber                  P  ENDL Texas
Mr. Walt Hubis                      V  Engenio Information Tech.
Mr. Wayne Bellamy                   V  Hewlett Packard Co.
Mr. Dan Colegrove                   P  Hitachi Global Storage Tech.
Mr. Robert Sheffield                P  Intel Corp.
Mr. Brad Besmer                     V  LSI Logic Corp.
Mr. Steve Johnson                   V  LSI Logic Corp.
Mr. John Lohmeyer                   P  LSI Logic Corp.
Mr. Owen Parry                      V  LSI Logic Corp.
Mr. Avraham Shimor                  P  M-Systems
Mr. Mark Evans                      P  Maxtor Corp.
Mr. Mark Overby                     P  Nvidia Corp.
Mr. Greg Elkins                     V  QLogic Corp.
Mr. Jim Hatfield                    V  Seagate Technology
Mr. William Martin                  P  Sierra Logic, Inc.
Mr. Curtis Stevens                  P  Western Digital
Mr. Rich Ramos                      V  Xyratex

20 People Present

Status Key:  P    -  Principal
             A,A# -  Alternate
             AV   -  Advisory Member
             L    -  Liaison
             V    -  Visitor
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4. Old Business

4.1 SAT Work Items List (04-391) [Sheffield]

Bob Sheffield reviewed the latest list of work items (04-391r8) and updated the current state of tasks and owners with group feedback.

4.2 SAT - LOG SENSE command and SMART (05-142r3) [Bellamy]

Wayne Bellamy reviewed the current revision of his proposal for LOG SENSE and SMART operations.

Wayne reviewed the list of changes from revision 2 to revision 3. Wayne received minor editorial feedback on revision 3 of the proposal. A discussion ensued about the temperature report in the informational exceptions mode page. There was significant discussion about using SCT, a T13 technical report, to obtain the temperature. There were comments made that this was important for inclusion into SAT. It was suggested that Wayne add the SCT link for temperature into a separate proposal so that this proposal can be incorporated now. Curtis agreed to bring in a proposal to explain this translation. Wayne agreed that this would be the right path.

Wayne Bellamy moved, Bob Sheffield seconded, that 05-142r3 be recommended for inclusion into SAT. The motion passed with 8 ayes, 1 nays, and 2 abstaining (8:1:2). Curtis Stevens voted no because he felt that the SCT material needed to be incorporated into this proposal.

4.3   SAT, START STOP UNIT command mapping (05-226r2) [Evans]

Mark Evans reviewed the latest revision of his proposal for the translation of START STOP UNIT.

Wayne Bellamy pointed out that if the unit is being stopped, the ATA device may return status before the device is actually spun down. A discussion ensued from this about what the right thing to do would be. Mark agreed to add a note stating that possibility. Kevin Marks and Bob Sheffield also noted that this proposal does not address the issue of if a SATL receives a command while in the stopped state. It was noted that a SATL will have to remember the state, since the ATA device in the standby state will just spin up and complete the ATA command. This is different that the expected SCSI behavior of having and error (NOT READY).

Mark Overby noted that the READ VERIFY SECTOR may not force the media to spin up. A lengthy discussion was held. It was pointed out that RADY VERIFY doesn't force media access if the sector was previous verified. Further discussion revolved around having a potentially hierarchical set of forcing the media to spin up. Mark Evans suggested that instead of LBA 0, the SATL pick a pseudo-random LBA and increase the probability that the sector was not previously verified. It was pointed out that there were problems with any method suggested to force a media access. It was generally agreed to that the READ VERIFY with a pseudo-random LBA was sufficient and that error checking was not needed since all error cases would force the media to spin up (that were not because of the SATL having a bug).

Mark Evans agreed to turn a new revision with the feedback from the group for the next meeting. Mark completed a revision before the end of this meeting and revision 3 was reviewed.

Mark Evans moved, Jim Hatfield seconded, that 05-226r3 be recommended for inclusion into SAT. The motion passed with unanimous consent.

4.4   SAT: Add 16-byte CDBs and PIO modes (05-247r2) [Sheffield]

Bob Sheffield reviewed 05-247r2, the latest revision of his proposal to add 16-byte commands, PIO modes, and command table cleanup to SAT. The group reviewed the proposal page by page.

Bob received general editorial and clarification feedback from the group during the review and were captured as notes in the proposal that Bob presented.

During the discussion of READ CAPACITY (16) it was noted that the text should not imply any mapping between reported capacity by the ATA drive and reported capacity to the SCSI application client. Steven Johnson also noted that there should not be any text implying a specific usage of that space. The discussion revolved around why a SATL may not report an exact mapping. Possibilities ranged from the SATL storing persistent data, to creating alternate sector size mappings. Text was discussed, as a possibility, that would state a mapping of no greater than 1 less than the ATA reported capacity, but Ralph Weber reminded the group of a conversation that was had regarding a drive that has a 4k physical and logical mapping and a SATL may want to present a 512-byte interface to the application client. It was generally agreed to that the note that Bob had suggested in his proposal should be deleted and the reported capacity should be left flexible without a specific implementation usages defined. Steve also suggested that if a standardized way of reporting this was desired it should be the subject of a separate proposal.

Bob requested a straw poll if BYTCHK in VERIFY and WRITE AND VERIFY be unspecified or leave as is (prohibiting BYTCHK of 1). 4 people voted to make it unspecified, 4 people voted to leave it as is. Bob decided that he would make the change to unspecified. Mark Overby and Bill Martin both commented that they felt it was important to allow the SATL to differentiate and provide value. After further discussion, Steve Johnson suggested that we craft language that allows the implementation, but specifies the behavior. Mark and Bill agreed that would be a good idea. Bob added language to his proposal to allow for the behavior and specify the implementation for this, as there was a very clear and simple implementation. Bill also suggested that language be added, in general, to SAT

to cover the situation if the SATL chooses not to support optional behavior to return check condition with the appropriate ASC. Bob added this to his proposal.

Bob Sheffield moved 05-247r3, Mark Overby seconded, be recommended for inclusion into SAT. The motion passed with unanimous consent.

4.5 SAT Task Management (05-108r2) [Johnson]

Steve Johnson presented the latest revision of his proposal, 05-108r2, to modify the descriptions for task management in SAT.

Steve received editorial and minor clarification feedback from the group and made such changes in his proposal.

Steve Johnson reviewed the behavior of ABORT TASK and ABORT TASK SET about what happens with multi-initiatiors. A length discussion ensued about how to notify the other initiators that the tasks they own are aborted. Mark Overby noted that the current proposal defines different behavior based on the QErr bit not the TST bit. After some discussion, it was agreed that the QErr bit had no effect on this behavior. After much discussion, a solution was suggested to Steve by Ralph Weber and Mark Evans about what to do for the multi-initiator case to report that commands were cleared since the ATA device cannot single out a command to be replaced. The suggestion was to have a command on each I_T nexus report unit attention, with an ASC of COMMANDS CLEARED BY OTHER INITIATOR. Steve Johnson made changes based on text inputs from the committee to clean up the language and to clarify the correct behavior assuming TST is required to be 0. It was noted during this discussion that the control mode page translation needs to be made a critical item and there was general agreement on that.

Steve Johnson moved, Bob Sheffield seconded, that 05-108r3 be recommended for inclusion into SAT. The motion passed with 9 ayes, 1 nays, and 0 abstentions (9:1:0). Wayne Bellamy noted that he objected to the unit attention to reflect the clearing of the other commands.

5. New Business

5.1 SAT - SEND DIAGNOSTIC Command and Self Test Results (05-245r0) [Bellamy]

Wayne Bellamy reviewed his proposal for handling the SEND DIAGNOSTIC command and returning the self test results. Wayne solicited feedback from Curtis Stevens and Jim Hatfield about what is the right thing to return for the different self tests. Jim and Curtis agreed to research and get back to Wayne for the next conference call or the October meeting.

5.2 Microsoft Logo Requirements [Overby]

Mark Overby displayed a requirement from the latest Microsoft Vista logo requirements which required RESERVE and RELEASE commands for RAID environments. Since SATL's were targeted at RAID (as well as other) environments, Mark pointed out that we may need to describe a translation for the obsolete RESERVE and RELEASE commands. There was significant discussion about how this was a bad requirement since those commands had been obsoleted and really were going to be difficult to implement and that there was shipping product already that would not be able to support this environment. Wayne Bellamy pointed out that in a multi-initiator environment, he saw a valid need for these commands.

Mark suggested that he could take a cut at one way to implement RESERVE and RELEASE as there is a simple translation for the single-initiator environment and there might be a way to do RESERVE and RELEASE for the multi-initiator environment. However, this may end up being an impossibility and he would just make a best effort to attempt a translation.

5.3　Standardization use of SATL-specific areas of the media [Bellamy]

Wayne Bellamy brought up the issue of wanting to define a standardized method of identifying the storage that a SATL may use for storage. A discussion further ensued about if SATL's really need to specify and standardize this behavior. There was significant debate between Wayne and others about the viability of portability of SATL implementations. SATL's were compared to RAID implementations that do not have significant standardization or portability. Curtis Stevens stated that if we want to standardize it that this needs to be done in a way that is supportable with existing ATA methods and means. There was general agreement with that assessment. Curtis suggested that anyone who wanted to do this for standardization should use PARTIES standard and HPA defined in ATA/ATAPI-7.

Steven Johnson (and others) suggested that if Wayne (or others) felt that this was very important, they should bring a proposal.

6.　Review of (SAT) Working Draft

Due to a lack of time, this item was deferred to the next meeting.

7.　Review of Recommendations

The following documents were recommended for inclusion in SAT during this meeting:

05-142r4 (SAT - LOG SENSE command and SMART) [Bellamy]
05-247r3 (SAT - Add 16 Byte CDBs and PIO) [Sheffield]
05-108r3 (SAT - Task Management) [Johnson]
05-226r3 (SAT - START STOP UNIT Translation) [Evans]

8.　Meeting Schedule

A SAT Working Group meeting is scheduled for:

　　Tuesday November 8, 2005 from 9:00 a.m. to 6:00 p.m. in Austin, TX at the Driskill, hosted by Dell.

　　Monday October 17, 2005 from 9:00 a.m. to 5:00 p.m. in Las Vegas, NV at the Monte Carlo Hotel.

　　A conference call was requested for October 7th, 10am PST. Bob Sheffield will post an announcement for the conference call.

9.　Adjournment

The meeting was adjourned at 6:05 p.m. on Tuesday, September 13, 2005.