T10/07-041r0: Minutes of
SCSI Media Changer (SMC) Working Group
for January 15, 2007, 2:30 PM – 7:00 PM EST

1. Introductions   Group

Michael Banther called the meeting to order at 2:10 PM EST. He thanked Roger Cummings and Symantec for hosting the meeting. Roger Cummings agreed to serve as the secretary of the meeting.

2. Approval of the Agenda   Michael Banther

Michael Banther presented the agenda. Kevin Butt made a motion to accept the agenda as modified. Paul Suhler seconded the motion. The group passed the motion unanimously.

3. Attendance and Membership   Michael Banther

Michael Banther reviewed the T10 attendance rules with the group and directed prospective new members to John Lohmeyer. The attendance report appears below.

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SMC-3 Working Group Attendance Report - January 2007

            Name                    S          Organization
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Mr. Noud Snelder                    V  BDT
Mr. Kevin Marks                     P  Dell, Inc.
Mr. Curtis Ballard                  V  Hewlett Packard
Mr. Michael Banther                 A  Hewlett Packard Co.
Mr. Kevin Butt                      A  IBM Corp.
Mr. Robert Payne                    P  Iomega Corp.
Mr. Geoffrey Barton                 V  Overland Storage
Mr. Paul Entzel                     P  Quantum Corp.
Dr. Paul Suhler                     A  Quantum Corp.
Mr. Rod Wideman                     V  Quantum Corp.
Mr. Roger Cummings                  P  Symantec

11 People Present

Status Key:  P    - Principal
             A,A# - Alternate
             AV   - Advisory Member
             L    - Liaison
             V    - Visitor
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4. INCITS Patent Policy   Michael Banther

Michael Banther directed the group to a reading of the [T10 Short Summary](#) of the INCITS Patent Policy.

5. Approval of Previous Minutes   Group

Roger Cummings asked for any problems with the minutes of the November meeting (06-498r0), or the minutes of the 11/30/2006 conference call (07-003r0). Roger himself noted that the document referenced in Action Item 65 should be 06-420r1, not 06-470r1. Noud had two corrections for the teleconference minutes – in section 4.3 two instances of SPC-4 should be SPC-3, and Roger then noted that there we two Action Item #68 in the minutes. No other problems were identified. Paul Suhler made a motion to accept the November meeting minutes as modified, and the 11/30/2006 conference call minutes as modified. Kevin Butt seconded the motion. The group passed the motion unanimously.

6. Review of Action Items   Roger Cummings

Roger Cummings reviewed the outstanding action items, and the status of each item was reported as listed below:

06-002 [Michael Banther] Reporting of virtual libraries / partitioning to host.

Carryover

06-004 [Roger Cummings] Change the 3rd paragraph of 5.3.1 to clarify addresses and volumes.

Carryover

06-005 [Roger Cummings] Revise 05-271r2 and post as 05-271r3.

Carryover

06-012 [Rod Wideman] Bring a proposal for a new command/framework per November discussion item 7.4.

Carryover

06-020 [Robert Payne] Define a philosophy for Write Exclusive Persistent Reservations in SMC.

Carryover

06-044 [Roger Cummings] Solicit additional vendor-specific sense codes from library vendors per June discussion item 4.4.

Carryover

06-045 [Rod Wideman] Bring a proposal for new sense codes for SMC (06-110r0) per June discussion item 4.4.

Closed by 07-018r0 (& other future proposals)

06-051 [Noud Snelder] Update references in SMC-3 to point to SPC-3 and SAM-3.

Carryover.

06-057 [Group] Review 06-397r1 and return alternative column contents to Noud where there is disagreement.

Closed. HP & Quantum had responded with comments.

06-060 [Curtis Ballard] Create and post 06-272r1 (r0 as revised at the September meeting).

Closed

06-061 [Kevin Marks] Create and post 06-395r2 (r1 as revised at the November meeting plus editorial corrections).

Closed

06-062 [Noud Snelder] Create and post 06-397r1 (r0 revised as per discussion at the November meeting & also incorporating e-mail feedback).

Closed

06-063 [Halvard Eriksen] Investigate use of LOGICAL UNIT NOT READY, INITIALIZING COMMAND REQUIRED error code.

Carryover

06-064 [Rod Wideman] Send e-mail to Erich Oetting to see if he can shed light on Tape Alert differences between SSC-2 & SMC-2.

Closed.

06-065 [Michael Banther] Create and post 06-420r1 (r0 as revised at the November meeting).

Carryover

06-066 [Noud Snelder] Incorporate 06-452r1 into the next revision of SMC-3.

Carryover

06-067 [Noud Snelder] Create and post 06-456r2 (r1 as revised at the November 30 conference call).

Closed

06-068 [Noud Snelder] Create and post 06-442r1 (r0 as revised at the November 30 conference call).

Closed

06-069 [Curtis Ballard] To address the subject of a prevent medium removal condition occurring in a data transfer device, with specific reference to section 4.2.2 of ADC.

Closed by 07-015r0 and agenda item 8.1

06-070 [Michael Banther] Create and post 06-477r1 (r0 as revised at the November 30 conference call).

Carryover

7.   Old Business   Group

7.1   Working List for ISV feedback (SMC/SSC/ADC/SPC) (05-315r3).   Kevin Butt

Kevin Butt requested that this item be deferred to the next meeting.

7.2   SMC-3: Element Statistics log page for SMC (06-394r1)   Kevin Marks

Kevin Marks introduced the changes in the new revision of his proposal. There was a long discussion of what happens if the barcode cannot be read, and Curtis Ballard stated that he knew of libraries that "did not know the difference between not there and not recognized". Kevin asked how many attempts were made to read the barcode, and was told that this was specific to the library, and that sometimes the procedure is to ask for successive hits multiple times (e.g. to ask for 5 hits on 2 separate occasions). Curtis suggested that the "Number of Volume Tags Read" parameter be structured in terms of inventory operations.

Curtis also questioned if the 28 byte length of the parameter format was appropriate, and suggested it be extended to 32 bytes. Kevin agreed to add four bytes for vendor specific usage.

Kevin Butt suggested adding a field near the start that gave the offset to the vendor specific information as this would make future extensions to the format much easier.

Noud Snelder expressed a concern about the overall 64 Kbyte limit, and noted that a large library might approach 2000 elements. However it was noted that a starting element address can be given, and the consensus of the group was that the limit would not be an issue.

Kevin Marks accepted an Action Item to create & post a new revision of his proposal

7.3   SMC-3: Diagnostics Data log page (06-395r2)   Kevin Marks

Kevin Marks introduced the changes in the new revision of his proposal. Kevin Butt asked if the intent of these pages was to only log errors seen by the host, and Kevin Marks replies that he was not sure on that point, but would ask his guys again what their approach would be to logging recovered errors.

Transport positioning errors were discussed at length, and the wording in the proposal was revised. A reference to the recovered error mode page was suggested.

Doubts were raised about the term "pick operation", and Letter Ballot comments on that subject were foreseen. Also, it was agreed to change the paragraph discussing "at most one" bit being set (near the bottom of page 5) from a "may" to a "shall".

Kevin Butt noted that two instances of "medium" on page 8 should be "volume".

There was discussion of adding qualification of when a medium transport error occurs.

Kevin Marks accepted an Action Item to create & post a new revision of his proposal.

7.4   SMC-3 Error codes overview (06-397r1)   Noud Snelder

Noud Snelder presented his proposal for making error codes consistent for SMC devices. Use of the "Initializing Command Required" code was questioned and Curtis Ballard stated that some of their older products used that code to indicate that an Initialize Element command is required before a Move Medium command is processed. Curtis noted that newer products do not have this usage because elements are initialized automatically.

Noud stated that a "VS" in the comment field meant that the usage was not explained in SMC-3. Kevin Butt was not sure if that was the right approach, given that two separate usages for a code could both be described if necessary. Kevin specifically asked why the Mechanical Positioning Error was marked as VS, Noud responded that the usage is vendor specific, and Robert Payne noted that the details of each product's mechanics are VS. Rod Wideman was not sure that we could adequately describe when the code was reported, and Kevin Butt was of the opinion that we just need to define what we want the user to do as a result. Curtis Ballard reported that they have extensively used the "Random Positioning Error" code to reported recovered mechanical positioning errors, but he did not recommend this usage. Roger Cummings pointed out that some of the Tape Alert work was also addressing the "when", and Rod was of the opinion that a small number of commands can cause the Mechanical Positioning Error code, and specific text could be placed in those commands about this error. Robert asked if the code was listed as VS because of uncertainty of what causes it, and Rod noted that today the code is just listed, with no description of when it is generated, or how it is used. As a result of the discussion, Noud said that he would change the Mechanical Positioning

code from VS, and it will be described in SMC-3. Curtis Ballard said that he would like to see the "LU Not Ready, Manual Intervention Required" code handled the same way.

Rod Wideman stated that the survey that he had conducted had identified an opportunity for a whole set of positioning errors, and he felt that "No Reference Position found" should be the basis for these codes. HP or IBM reported that they do not use the No Reference Position code, and thus the group felt is that it should be possible to create a single definition for that code.

The group then considered the codes that referenced "trays", and agreed that there was no definition in SMC-3 for a "tray" and that the codes seemed to be more applicable to MMC devices. Rod Wideman stated that he was OK with making these codes VS. Roger Cummings asked if this simply meant that we codes were not described, and Kevin Butt replied that there was a nuance in that silence meant that future standardization was possible, and VS meant that it was not. The consensus of the group was that the tray-related codes would be removed from the proposal.

Rod stated that the goal of this presentation should be to identify the codes for which we need descriptions in SMC-3. Roger Cummings noted that applications tended to put codes into one of three categories, namely those that effect program logic, those that cause specific behavior at the control terminal, and those that are just logged. Kevin Butt agreed and felt that moving codes from the second of these categories to the first was what was wanted the feedback that had been received from application vendors. Michael Banther clarified that he wanted to specify when an ASC was created, but not to restrict usage to ONLY that situation, because he believed that this would stifle innovation. Rod saw much of this work addressing codes that are commonly viewed as being in the 3rd case, where there are ASC/ASCQs that are not defined in SMC-3 that we need to decide if we want to use.

The group then moved on to consider the codes associated with cleaning. Curtis stated that the Cleaning Requested code could be used when moving a volume from a drive that needed cleaning. HP accepted an Action Item to bring a proposal to define the usage of the "Cleaning Requested" and "Cleaning Failure" codes.

Rod Wideman stated that the Cleaning Request Rejected situation becomes an Illegal Request when cleaning media is expired. The group consensus was to leave it in the list awaiting a proposal owner.

The group agreed to move the "Medium Not Present – MAM Accessible" code to the table of code for which the "M" should be deleted.

The group of codes including "magazine" was next discussed. Kevin Butt mentioned that magazines were mentioned in the Extended Device Capabilities Mode Page, and Rod Wideman was not sure about the locked/unlocked codes. The group consensus was to stay silent on those codes, and that the other codes were still wanted. Kevin accepted an Action Item to bring a proposal for the Medium Magazine sense codes.

Rod Wideman suggested that we should stay silent on codes that are more specific that the existing Media Load of Eject code, and there was consensus on this point.

Of the remaining codes, there was agreement to remove the "M" for the "Operation Request or State Change input" and "No seek Complete" codes, and that we need a description in SMC-3 for the "Operator Medium Removal Request". The group also agreed to stay silent on the two "Warning –" codes.

There was a long discussion about the definition of Offline, with the conclusion that this is not possible without a Ready state definition. It was reported that there is already an Action Item in ADC to do this, and Noud agreed to update the definition in his proposal to match the ADC usage. Noud then accepted an Action Item to create & post a new revision of his proposal.

There was a similarly long discussion about the definition of "Magazine", that culminated with Noud making a motion that the definition of Magazine as in the first 3.1.X of 06-397r1 as follows:

Magazine: A structure consisting of one or more import/export elements or storage elements that is used to contain a set of volumes within the media changer. Some media changer devices allow an operator to remove the magazine from the media changer.

The motion was seconded by Kevin Butt, and passed unanimously. Actions Items were assigned to Noud to incorporate this definition in the next revision of SMC-3, and to remove the definition from the next revision of the proposal.

Rod Wideman accepted an Action Item to define a new ASC/ASCQ for "Logical Unit Not Ready – Robotics Disabled".

Noud then accepted an Action Item to create & post a new revision of his proposal.

7.5   SMC-3, Report Element Information (06-272r1)   Curtis Ballard

Curtis Ballard described the changes in the latest revision of his proposal. He reported that most of the changes were to the upfront information. He had changed to a 16 byte CDB to take advantage of the "Number of Elements" structure used elsewhere. He noted that the A3 opcode in the proposal was incorrect given this change. Rod Wideman suggested placing the Starting Element address field on a four byte boundary, and Curtis suggested placing the Page Code ahead of it in the CDB. He was asked to justify the creation of a new command, and responded that this would avoid the continual overloading of the Read Element Status command. Paul Entzel suggested making the descriptor be of length N and putting the descriptor length up into the CDB itself. Curtis agreed to this approach.

Noud Snelder accepted an Action Item to define which commands can be processed during the Not Ready state.

Curtis accepted an Action Item to create & post a new revision of his proposal.

7.6   SMC-3 TapeAlert Enhancements (06-420r0)   Michael Banther

Michael Banther requested that that this item be deferred to the next meeting.

7.7   SMC-3 Discussion: Visibility of Volumes in Elements (06-421r1)   Curtis Ballard

This item was not addressed because of a lack of time.

7.8   SMC-3 New Additional Sense Codes for Media Changers (06-110r0)   Rod Wideman

Rod Wideman requested that this item be deferred to the next meeting.

7.9   SMC-3 Add PREVENT ALLOW MEDIA REMOVAL command (06-442r1)   Noud Snelder

This item was not addressed because of a lack of time.

7.10 SMC-3 Support column in mode page codes and subpage codes table (06-456r2) Noud Snelder

This item was not addressed because of a lack of time.

7.11 SMC-3 Command table and INQUIRY clean-up (06-477r0) Michael Banther

Michael Banther request that that this item be deferred to the next meeting.

8. New Business Group

8.1 SMC-3 Clarification of reporting drive prevented media removal (07-015R0) Curtis Ballard

This item was not addressed because of a lack of time.

8.2 SMC-3 New Additional Sense Codes Usage (07-018r0) Rod Wideman

This item was not addressed because of a lack of time.

8.3 SMC-3 Medium transport element subclause correction (07-024r0) Rod Wideman

This item was not addressed because of a lack of time.

9. Next Meeting Requirements Michael Banther

Subject to approval by the T10 Plenary, the group will hold a meeting on March 12, 2007 during the T10 plenary week in Memphis, TN beginning upon the completion of the ADI-2 Working Group and completing no later than 7PM CST. The group discussed the need for an interim teleconference, and concluded enough work had been deferred from this meeting to justify a call. A date of Wednesday February 21 at 8am PST, 1600 GMT for two hours was selected, and HP volunteered to host the call

10. Review New and Outstanding Action Items Roger Cummings

Roger Cummings reviewed the following items with the meeting:

06-002 [Michael Banther] Reporting of virtual libraries / partitioning to host.

06-004 [Roger Cummings] Change the 3rd paragraph of 5.3.1 to clarify addresses and volumes.

06-005 [Roger Cummings] Revise 05-271r2 and post as 05-271r3.

06-012 [Rod Wideman] Bring a proposal for a new command/framework per November discussion item 7.4.

06-020 [Robert Payne] Define a philosophy for Write Exclusive Persistent Reservations in SMC.

06-044 [Roger Cummings] Solicit additional vendor-specific sense codes from library vendors per June discussion item 4.4.

06-051 [Noud Snelder] Update references in SMC-3 to point to SPC-3 and SAM-3.

06-057 [Group] Review 06-397r1 and return alternative column contents to Noud where there is disagreement.

06-063 [Halvard Eriksen] Investigate use of LOGICAL UNIT NOT READY, INITIALIZING COMMAND REQUIRED error code.

06-065 [Michael Banther] Create and post 06-420r1 (r0 as revised at the November meeting).

06-066 [Noud Snelder] Incorporate 06-452r1 into the next revision of SMC-3.

06-069 [Michael Banther] Create and post 06-477r1 (r0 as revised at the November 30 conference call).

07-001 [Kevin Marks] Create and post 06-394r2 (r1 as revised at the January meeting).

07-002 [Kevin Marks] Create and post 06-395r2 (r2 as revised at the January meeting).

07-003 [HP] Create a proposal to define the usage of the "Cleaning Requested" and "Cleaning Failure" error codes.

07-004 [Kevin Butt] Create a proposal for the "Medium Magazine" error codes.

07-005 [Noud Snelder] Create & post 06-397r2 (r1 as revised at the January meeting).

07-006 [Rod Wideman] Define a new ASC/ASCQ for "Logical Unit Not Ready – Robotics Disabled".

07-007 [Noud Snelder] Incorporate the approved definition of "Magazine" in the next revision of SMC-3.

07-008 [Noud Snelder] Remove the approved definition of "Magazine" from the next revision of 06-397r1.

07-009 [Noud Snelder] Define which commands can be processed during the Not Ready state.

07-010 [Curtis Ballard] Create & post 06-272r2 (r1 as revised at the January meeting).

11. Adjournment   Group

Rod Wideman made a motion for adjournment. Kevin Butt seconded the motion. The group passed the motion unanimously. Michael Banther adjourned the group at 7:01 PM EST.