To: INCITS Technical Committee T10

From: Kevin Butt, IBM

Date: March 14, 2007 8:35 am

Document: T10/07-131r0

Subject: Responses to ISV Response

1. Revisions

1. 05-315r0 - Incorporate the minutes from Sept 1 SMC-3 Telecon
2. 05-315r1 - Incorporate minutes from Sept 29 SSC telecon and Sept meeting cycle minutes. Incorporate November ADC WG minutes.
3. 05-315r3 - Incorporated March SMC Working Group comments. Updated to reflect current state.
4. 07-131r0 - Updated to reflect state on 11 Mar 2007 and modified document number to 07-131r0

2. Introduction

This document contains the responses to 05-175 and the Working Groups discussions related to them. There is a section for each standard with each item listed under the standard(s) they apply to. There is a prioritization by standard since there are unique working groups (albeit mostly the same people). There is also a difficulty listed of standardizing or solving the problem.

Scale of A - C with A being highest and C lowest.

3. Responses

3.1 SSC-3

3.1.1 {??? Need Owner ???} Mandate that commands return CHECK CONDITION status with the sense key set to NOT READY and the additional sense code set to MEDIUM NOT PRESENT after returning GOOD status to a LOAD/UNLOAD command with LOAD set to zero and HOLD set to zero (SSC-3; EMC);

<< Owner, Priority B, Difficulty A >>

We believe that the desired behavior is that there is a consistent ASC/ASCQ to report that a Move Medium command may be issued. This is really a system issue where the tape drive cannot tell the Application client what the library will do.

Discussion centered on needing ASC/ASCQ's for

1) Tape Ejected and not able to be sensed by the drive - Medium Not Present

2) Tape Ejected and the Medium can be sensed and manipulated (e.g. loaded) by the drive

3) Tape at the Hold Point and can be manipulated by the drive.

Discussion about clarifying the Load/Unload command.

Need to continue in WG during next meeting cycle.

3.1.2 {??? Need Owner ???} Standardize all of the conditions/events that set sense key and additional sense code values (SMC-3, SSC-3, SPC-4?; CA);

<< Owner, Priority B, Difficulty A >>

ASC/ASCQ should represent physical states.

1) Every new proposal needs to specify the ASC/ASCQ related to that proposal.

2) Need to go through the current standard and clarify any ambiguity and come to an agreement. Accepted in principle but nobody volunteered to own the proposal.

3.1.3 {COMPLETE} Provide a standard command to return the error history (e.g. count, error codes, and time stamps) for the device, device server, and removable medium (SMC-3, SSC-3, SPC-4?; CA);

<< Owner, Priority A, Difficulty C >>

A lot of this exists in Log pages and Rod's proposal in ADC. Dell has a proposal 05-213r1. The discussion revolved around asking Dell if they would consider adding a TimeStamp field and timestamp type field to their proposal. Also, ask CA if that would cover their concerns.

Answered by 05-213r5.

3.1.4 {COMPLETE} Add an interface [i.e. parameters for a key and bit mask for standardized algorithm(s)] for encryption/decryption in a stream device server (SSC-3?,

SPC-4?; CA);

<< Owner: Michael Banthar, Priority A+, Difficulty A+ >>

This was done in 06-172r1, 06-051r7, 06-385r1, and 06-391r0 and present in SSC-3r03. This has provided the basic fullfillment of this request.

3.1.5 {WORKING} Add a uniform method (e.g. command) to determine if the medium or the device caused an error (SSC-3, SPC-4?; CA);

<< Owner: Kevin Butt, Priority C, Difficulty A >>

TapeAlert is our intent to do this. Review TapeAlert flags for which mean media vs. hardware vs. firmware.

TapeAlert Delineation (06-138r2) proposed by Kevin Butt-IBM is the work related to this.

3.1.6 {WORKING} Add a mode parameter to allow an application client to set the Early Warning size (SSC-3; CA);

<< Owner: Kevin Butt, Priority A, Difficulty A >>

Implement by optional Early Early Warning.

Configurable EW (05-423r3) is addressing this issue

3.1.7 {??? Need Owner ???} Add a parameter to a stream device server that contains the serial number of the media changer containing the removable medium device, and add a method for an application client within the media changer to set this parameter (ADC-2, SSC-3; CA);

<< Owner, Priority A, Difficulty B >>

This sounds like a vital product page. The tunnelling command (Rod Wideman's proposal to ADC) sounds like the correct approach. Need to specify Serial Number?

AI: Paul Entzel to discuss with Rod Wideman

3.1.8 {INVITE}Add a method to differentiate between a stream device server acting on a virtual removable medium device and one acting on a physical removable medium device (SSC-3; CA); and

<< Owner, Priority C, Difficulty A >>

The working group appreciates this input but by a straw poll none of the participants wished to create this proposal because the working group found it too controversial. T10 is an open standards body and would provide due diligence in reviewing a proposal presented by any body that wished to present it.

AI: Kevin Butt to send response to CA.

3.1.9 {INVITE}A special set of commands (e.g. the host ID is included in Read/Write command) for VTL that allows multiple concurrent streams to write to a VTL Tape drive. (SSC-3; CA).

<< Owner, Priority C, Difficulty A >>

There may be better methods to get to the intended use. Can you consider existing methods such as enabling multiple logical units for each stream. If this does not answer your concern then we do not understand the concept behind the request.

Respond to CA.

3.2 SMC-3

3.2.1 {WORKING} Standardize all of the conditions/events that set sense key and additional sense code values (SMC-3, SSC-3, SPC-4?; CA);

<< Owner:
Rod Wideman for Vendor-Specific. (06-110)
Noud Snelder is owner of effort to standardize all conditions and events when they are used,
Priority A, Difficulty A >>

[SMC Telecon] Response to be sent to CA "We believe this is valuable and are beginning work on this. We will begin with vendor-specific values first then branch out to standard specified values." Should be expanded to include additional sense data included in the READ ELEMENT STATUS data. All companies bring in what they use both vendor-specific and standard.

[2006Mar03] 06-110 is document for work towards vendor-specific sense codes and move them to standard codes. Codes and when they are used. Noud signed up to own the effort to standardize existing conditions and events when ASCQ's are used for those with an 'M' in the list.

[11 Mar 2007] The standardized codes are currently being worked by Noud Snelder under proposal SMC-3 Error codes overview (06-397r1)

[11 Mar 2007] The effort to standardize vendor-specific error code is being worked on in the proposal SMC-3 New Additional Sense Codes for Media Changers (06-110r0) which is being transitioned to 07-018r0 and additional.

3.2.2 {WORKING} Provide a standard command to return the error history (e.g. count, error codes, and time stamps) for the device, device server, and removable medium (SMC-3, SSC-3, SPC-4?; CA);

<< Owner Kevin Marks - Dell
Priority B or C,
Difficulty C >>

[SMC Telecon] Response to be sent to CA "What is lacking in Log Page 7? (information or vendors supporting it?) See proposal 06-182.

[11 Mar 2007] 06-182r3 SMC-3, Statistics log page for SMC was include in SMC-3r4 and addresses Medium Changer statistics.

[11 Mar 2007] There are two proposals to add SMC specific error histories. These have been brought forward by Kevin Marks from Dell. They are SMC-3: Element Statistics log page for SMC (06-394r2) and SMC-3: Diagnostics Data log page (06-395r3)

3.2.3 {WORKING} Enhance READ ELEMENT STATUS data to include medium type (i.e. technology, generation, and special cartridge type; not sure if CA wants it to apply to

storage elements only or all element types; SMC-3; CA);

<< Owner: Curtis Ballard & Rod Wideman, Priority A, Difficulty B >>

[SMC Telecon] Response to be sent to CA "We have been working this with 05-259r0 and 05-153r1 as well as an Action for Rod Wideman of ADIC."

[11 Mar 2007] SMC-3, Report Element Information (06-272r1) is being proposed by Curtis Ballard of HP

3.2.4 {REJECTED} Enhance READ ELEMENT STATUS data to include WRITE PROTECT bit in storage element pages (SMC-3; CA);

<< Owner: Kevin Butt, Priority C, Difficulty A >>

[SMC Telecon] Response to be sent to CA "We believe this would be very good to do but we think it is not solveable as a general solution." Seems to require a mount of the medium. Closed - Can't do it.

3.2.5 {COMPLETE} Enhance READ ELEMENT STATUS data to include medium type support (i.e. technology, generation, and special cartridge type) for Data Transfer elements (SMC-3; CA);

<< Owner: Curtis Ballard, Priority A, Difficulty B >>

[SMC Telecon 01Sept] Response to be sent to CA "This is attempted to be addressed in 06-046 has been withdrawn." and replaced with 06-272.

[11 Mar 2007] 06-046r7 SMC-3, REPORT SUPPORTED VOLUME TYPES command was approved and is a partial resolution of this item.

3.2.6 {WORKING} Add an additional sense code and text to the TEST UNIT READY command so that an application client can detect when the opening and closing of an Import/Export element door has resulted in a change in the medium inventory (SMC-3, SPC-4; CA);

<< Owner: Rod Wideman, Priority A, Difficulty B ; AI exists>>

[SMC Telecon] Response to be sent to CA "Create a UA to address medium inventory has changed. Specifics TBD." (06-110)

[11 Mar 2007] SMC-3 New Additional Sense Codes for Media Changers (06-110r0) is addressing this request as well as 3.2.7. Replaced by 07-018r0.

3.2.7 {SEE CROSS_REFERENCE} Add an additional sense code and text to the TEST UNIT READY command so that an application client can detect when a SCSI device associated with a Data Transfer element has been removed or replaced (SMC-3, SPC-4; CA);

<< Owner: Rod Wideman, Priority C, Difficulty C ; AI exists>>

Combine with 3.2.6."

3.2.8 {INVITE}Add a method to differentiate between a medium changer device server acting on a virtual library and one acting on a physical library (SMC-3; CA);

<< Owner: None, Priority C, Difficulty B ; Complete>>

[SMC Telecon 01Sept2005] Response to be sent to CA "The working group appreciates this input but by a straw poll none of the participants wished to create this proposal because the working group found it too controversial. T10 is an open standards body and would provide due diligence in reviewing a proposal presented by any body that wished to present it."

3.3 SPC-4

3.3.1 {SEE CROSS_REFERENCE} Standardize all of the conditions/events that set sense key and additional sense code values (SMC-3, SSC-3, SPC-4?; CA);

<< See 3.1.2 and 3.2.1>>

3.3.2 {SEE CROSS_REFERENCE} Provide a standard command to return the error history (e.g. count, error codes, and time stamps) for the device, device server, and removable medium (SMC-3, SSC-3, SPC-4?; CA);

<< See 3.1.3 and 3.2.2>>

3.3.3 {??? Need Owner ???} Provide an application client-level reservation capability (SPC-4; CA);

<< Owner, Priority ??, Difficulty A >>

While there is no effort on going related to application client level reservation capability, there is a distantly related item happening in CAP. This is more a command authentication rather than a reservation. This may or may not be strictly at an application client level. It is intended to allow the application client to move from one partition to another.

8.1　Capability based Command Security (07-069r1) [Penokie]

3.3.4 {COMPLETE} Add an interface [i.e. parameters for a key and bit mask for standardized algorithm(s)] for encryption/decryption in a stream device server (SSC-3?, SPC-4?; CA);

<< Owner, Priority A+, Difficulty A+ >>

This was done in 06-172r1, 06-051r7, 06-385r1, and 06-391r0. This has provided the basic fullfillment of this request. However, in addition to the basics there are many encryption proposals currently active in both SSC-3 WG and CAP. All other items a enhancements to the basics. We are calling this item closed.

Additional enhancements are on the Agendas for discussion during the March Plenary week:

From CAP WG

5.1.1　Security Association Model for SPC-4 (06-369r7) [Weber]

5.1.2　SPC-4: Establishing a Security Association using IKEv2 (06-449r1) [Ball & Black]

5.1.6　SPC-4 Digital Signing of Microcode (07-100r0) [Banther]

From SSC-3 WG

5.2.1　Using NIST AES Key-Wrap for Key Establishment (06-225r4) [Ball]

5.2.2　Authentication Concerns for Encrypted Key Transfer (06-329r0) [Cummings]

5.2.3　Using Public-Key Cryptography for Key Wrapping (06-389r5) [Avida]

5.2.4 SSC-3 Encryption KAD Lengths and Nonces (06-412r3) [Suhler]

5.2.5 SSC-3 Keyless Copy of Encrypted Data (06-462r2) [Butt]

5.2.6 Alternative method for keyless tape copy (06-502r0) [Entzel]

6.2.1 SSC-3: Encryption Error Behavior when usupported medium is loaded (07-005r1) [Butt]

6.3 Minutes: SSC-3 Feb 14 Telecon (07-070r0) [Butt]

SSC-3 Additional controls for keyless copy (07-016r1) [Entzel]

3.3.5 {SEE CROSS_REFERENCE} Add a uniform method (e.g. command) to determine if the medium or the device caused an error (SSC-3, SPC-4?; CA);

<< See 3.1.5>>

3.4 ADC-2

3.4.1 {??? Need Owner ???} Add a parameter to a stream device server that contains the serial number of the media changer containing the removable medium device, and add a method for an application client within the media changer to set this parameter (ADC-2, SSC-3; CA);

<< Owner, Priority ??, Difficulty C >>

[Nov ADI WG] We need to wait on SSC to decide how it wants to report this. Then we can build the roads for this.