

Accredited Standards Committee\*

## InterNational Committee for Information Technology Standards (INCITS)

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Date: November 10, 2005

Reply to: John Lohmeyer

To: T10 Membership  
From: Ralph Weber and John Lohmeyer  
Subject: SCSI Commands, Architecture, & Protocol Working Group Meeting -- November 9, 2005  
Austin, TX

### Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SCSI Architecture Model Topics
  - 4.1 SAM-3: Converting to UML part 1 (04-023) [Penokie]
  - 4.2 SAM-4: Addressing more than 16384 logical units (05-376) [Penokie]
  - 4.3 SAS-2, SAM-4, SPC-4, NOTIFY (POWER FAILURE EXPECTED) Fixes (05-370) [Penokie]
  - 4.4 LUN Presentation Format (no document) [Elliott]
5. Command Set Topics
  - 5.1 Reservations Proposals
    - 5.1.1 Persistent Reservation Issue #346 (05-346) [Cummings]
  - 5.2 SCSI Primary Commands Proposals
    - 5.2.1 SPC-4: Log Page-Subpages (04-389) [Butt]
    - 5.2.2 SPC-4: Log Command Corrections (05-232) [Penokie]
    - 5.2.3 SPC-4, Combinations of bits and fields in the LOG SELECT CDB and log parameters (05-242) [Evans]
    - 5.2.4 SPC-4: Statistics and Performance Log Pages (05-248) [Penokie]
    - 5.2.5 SPC-4 Remove restriction on counting log parameters (05-308) [Banther]
    - 5.2.6 SPC Security Commands proposal (05-157) [Houlder]
    - 5.2.7 SPC-4 Create well known LUN for security commands (05-252) [Houlder]
    - 5.2.8 SPC-4: Self Describing Command Timeouts (05-284) [Butt]
    - 5.2.9 SMC-3 & SPC-4: Remove Attached Media Changer model (05-317) [Entzel]
    - 5.2.10 SPC-4: Extended self test completion time value update (05-360) [Overby]
    - 5.2.11 SPC-4: EBACKERR bit Error Reporting Clarification (05-375) [Penokie]
    - 5.2.12 SPC-4 Unit attention condition trivial wording changes (05-379) [Elliott]
    - 5.2.13 SPC-4 Mode Page Policy MLUS bit correction (05-380) [Elliott]
    - 5.2.14 SPC-4: Deferred microcode downloads (05-383) [Penokie]
    - 5.2.15 SPC-4 SBC-3 SMC-3 Allow more commands through Write Exclusive reservations (05-368) [Elliott]
    - 5.2.16 SPC-4 New ASC/ASCQs for Device Port Address (05-406) [Galloway]
  - 5.3 SCSI Block Commands Proposals
    - 5.3.1 SBC-3, SPC-4: Application ownership of protection information Reference Tag (05-156) [Penokie]
    - 5.3.2 SBC-3 SPC-4 Background scan additions (05-340) [Elliott]
    - 5.3.3 SBC-3: SPC-4: Disabling Reassign on Write Long Logical Blocks (05-374) [Penokie]
  - 5.4 SCSI Enclosure Services Proposals
    - 5.4.1 SES-2 Display element enhancements (05-011) [Elliott]
    - 5.4.2 SES-2: Add RQST MISSING to DEVICE and ARRAY DEVICE element Control page (05-300) [Marks]

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- 5.4.3 SES-2 Cooling element enlarge Actual Fan Speed field (05-372) [Elliott]
- 5.4.4 SES-2: Update Table 116 – CONNECTOR TYPE field to SAS-1.1 names (05-400) [Marks]
- 5.5 Other Proposals
  - 5.5.1 Possible inconsistencies in integrity check value algorithm field definition/usage (05-314) [Weber]
  - 5.5.2 OSD-2 Four New Multi-Object Commands (05-328) [Weber]
- 6. SCSI Protocol Topics
- 7. Old Business
  - 7.1 Style Guide (05-085) [Penokie]
- 8. New Business
  - 8.1 Presentation of the IEEE P1667 Authentication Standard for Transient Storage Devices (05-399) [Shimor]
  - 8.2 IEEE OUI Tutorial (no document) [Elliott]
- 9. Review of Working Drafts
- 10. Review of Recommendations to the Plenary
- 11. Meeting Schedule
- 12. Adjournment

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, November 9, 2005. He thanked Kevin Marks of Dell for hosting the meeting. As usual, the people present introduced themselves.

As is customary, the people attending introduced themselves.

### 2. Approval of Agenda

The draft agenda was approved with the following additions or changes:

- 4.4 LUN Presentation Format (no document) [Elliott]
- 8.2 IEEE OUI Tutorial (no document) [Elliott]

No items were added/revised during the course of the meeting.

### 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:

Name	S	Organization
Ms. Pat Thaler	P	Agilent Technologies
Mr. Ron Roberts	A	Broadcom Corp.
Mr. Kevin Marks	P	Dell, Inc.
Mr. Robert H. Nixon	P	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
Mr. Mike Fitzpatrick	P	Fujitsu
Mr. Michael Banther	V	Hewlett Packard Co.
Mr. Rob Elliott	P	Hewlett Packard Co.
Mr. Steven Fairchild	V	Hewlett Packard Co.
Mr. Christopher Williams	V	Hewlett Packard Co.
Mr. George O. Penokie	P	IBM / Tivoli Systems
Mr. Kevin Butt	A	IBM Corp.
Mr. Robert Sheffield	P	Intel Corp.
Mr. Robert Payne	P	Iomega Corp.
Mr. Pat LaVarre	P	Lexar Media, Inc.
Mr. Brian Day	V	LSI Logic Corp.
Mr. John Lohmeyer	P	LSI Logic Corp.
Mr. Avraham Shimor	P	M-Systems
Mr. Greg Elkins	V	Marvell Semiconductor
Mr. Mark Evans	P	Maxtor Corp.
Mr. David Peterson	AV	McDATA
Ms. Emily Hill	P	Microsoft Corp.
Mr. Mark Overby	P	Nvidia Corp.
Mr. James Williams	P	Oracle
Mr. Bill Galloway	P	Pivot3, Inc.
Mr. Paul Entzel	P	Quantum Corp.
Dr. Paul Suhler	A	Quantum Corp.
Mr. Gerald Houlder	P	Seagate Technology
Mr. William Martin	P	Sierra Logic, Inc.
Mr. Charles Binford	A	Sun Microsystems, Inc.
Mr. Erich Oetting	A#	Sun Microsystems, Inc.
Mr. Curtis Stevens	P	Western Digital
Mr. Jeff Williams	P	Xiotech Corp.
Mr. Rich Ramos	P	Xyratex

34 People Present

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

## 4. SCSI Architecture Model Topics

### 4.1 SAM-3: Converting to UML part 1 (04-023) [Penokie]

George Penokie presented the latest revision of the proposal to model SAM-4 in UML (04-023r3). The group identified several needed corrections and George agreed to prepare a new revision for consideration at the next meeting.

#### **4.2 SAM-4: Addressing more than 16384 logical units (05-376) [Penokie]**

George Penokie presented a proposal to extend the number of logical units allowed in a single-level target to values larger than 16,384 (05-376r4). The group identified several minor phrasing issues and George agreed to prepare a corrected revision of the proposal.

George Penokie moved that 05-376r5 (r4 as modified) be recommended for inclusion in SAM-4. Bob Nixon seconded the motion. The motion passed 17:0:5.

#### **4.3 SAS-2, SAM-4, SPC-4, NOTIFY (POWER FAILURE EXPECTED) Fixes (05-370) [Penokie]**

George Penokie presented an updated version of the NOTIFY (POWER FAILURE EXPECTED) correction proposal (05-370r1) which was first presented to the SAS Working Group (minutes in 05-417). Typographical errors were identified and George agreed to prepare a new revision.

George Penokie moved that 05-370r2 (r1 as revised) be recommended for inclusion in SAS-2, SAM-4, and SPC-4. Mark Evans seconded the motion. The motion passed 16:0:5.

#### **4.4 LUN Presentation Format (no document) [Elliott]**

Rob Elliott presented several different formats in which LUN values are displayed to end users and asked the group if there would be support for additions to SAM-4 which would advise on how such displays should appear. The group supported development of a detailed proposal and Rob agreed to prepare a document for consideration at the next meeting.

### **5. Command Set Topics**

#### **5.1 Reservations Proposals**

##### **5.1.1 Persistent Reservation Issue #346 (05-346) [Cummings]**

Prior to the meeting, Roger Cummings sent an e-mail requesting that discussion of this topic be deferred to the next meeting.

#### **5.2 SCSI Primary Commands Proposals**

##### **5.2.1 SPC-4: Log Page-Subpages (04-389) [Butt]**

Kevin Butt asked that discussion of this topic be deferred to the next meeting.

##### **5.2.2 SPC-4: Log Command Corrections (05-232) [Penokie]**

George Penokie asked that discussion of this topic be deferred to the next meeting.

##### **5.2.3 SPC-4, Combinations of bits and fields in the LOG SELECT CDB and log parameters (05-242) [Evans]**

Mark Evans presented a proposal to clarify the definitions of Log Select, Log Sense, and Log Page formats (05-242r1). With the assistance of Michael Banther, the proposal was updated to remove the restriction on counting log parameters (see agenda item 5.2.5). Other corrections were noted and Mark agreed to prepare a new revision of the proposal.

Mark Evans moved that 05-242r2 (r1 as modified) be recommended for inclusion in SPC-4. Michael Banther seconded the motion. The motion passed 16:0:3.

#### **5.2.4 SPC-4: Statistics and Performance Log Pages (05-248) [Penokie]**

George Penokie asked that discussion of this topic be deferred to the next meeting.

#### **5.2.5 SPC-4 Remove restriction on counting log parameters (05-308) [Banther]**

This topic was covered and resolved as part of agenda item 5.2.3. Michael stated that this item can be removed from future agendas.

#### **5.2.6 SPC Security Commands proposal (05-157) [Houlder]**

Gerry Houlder presented the latest revision of the Trusted Out and Trust In commands definitions (05-157r6). The group discovered that pad bytes are not required on Trusted In commands. Minor editor changes were requested.

Gerry agreed to prepare a new revision of the proposal for consideration at the next meeting.

#### **5.2.7 SPC-4 Create well known LUN for security commands (05-252) [Houlder]**

Gerry Houlder asked that discussion of this topic be deferred until 05-157 (see agenda item 5.2.6) is approved.

#### **5.2.8 SPC-4: Self Describing Command Timeouts (05-284) [Butt]**

Kevin Butt asked the group for help in preparing the next revision of 05-284, a proposal which gives application clients guidance on timeouts on a per-command basis. In response to the issue Kevin raised, the group recommended the addition of more reserved bytes in the timeout descriptors to permit future enhancements, as opposed to attempting to workout such details at this time.

Kevin agreed to prepare a new revision of the proposal for consideration at the next meeting.

#### **5.2.9 SMC-3 & SPC-4: Remove Attached Media Changer model (05-317) [Entzel]**

Paul Entzel presented a proposal to remove media changer 'vampire' commands (05-317r2). The group requested that the MChnger bit be made obsolete in SPC-4, rather than modifying the definition subclause and Paul agreed to prepare a new revision of the proposal.

Paul Entzel moved that 05-317r3 be recommended for inclusion in SPC-4, SMC-3, SBC-3, and SSC-3. Erich Oetting seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.2.10 SPC-4: Extended self test completion time value update (05-360) [Overby]**

Mark Overby presented a proposal to clarify the meaning of FFFFh in the extended self-test completion time field in the Control mode page (05-360r1). The group requested a minor editorial change and Mark agreed to prepare a new revision.

Mark Overby moved that 05-360r2 (r1 as modified) be recommended for inclusion in SPC-4. Curtis Stevens seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.2.11 SPC-4: EBACKERR bit Error Reporting Clarification (05-375) [Penokie]**

George Penokie presented a proposal to clarify the lack of relationships between the EBACKERR bit and other bits in the Informational Exceptions Control mode page (05-375r1).

George Penokie moved that 05-375r1 be recommended for inclusion in SPC-4. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.2.12 SPC-4 Unit attention condition trivial wording changes (05-379) [Elliott]**

Rob Elliott presented series of wording clarifications for cases where unit attention conditions are generated, including a change that clarifies that all initiators receive unit attention notifications when the content of a block descriptor changes in mode pages (05-379r0).

Rob Elliott moved that 05-379r0 be recommended for inclusion in SPC-4. Bill Galloway seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.2.13 SPC-4 Mode Page Policy MLUS bit correction (05-380) [Elliott]**

Rob Elliott presented a proposal to correctly identify the mode page in which the multiple logical units share, MLUS, bit appears as the Protocol-Specific Port mode page (05-380r0).

Rob Elliott moved that 05-380r0 be recommended for inclusion in SPC-4. Bill Galloway seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.2.14 SPC-4: Deferred microcode downloads (05-383) [Penokie]**

George Penokie presented a proposal to allow delays between the downloading of and the activation of microcode (05-383r2). The group requested changes in the names of the Write Buffer modes created by the proposal. Other changes, including renumbering of mode code values, were requested.

Concerns were raised regarding the relationship between the Start/Stop Unit command and the new Write Buffer modes and George took several notes identifying areas needing additional consideration.

George agree to prepare a new revision of the proposal for discussion at the next meeting.

#### **5.2.15 SPC-4 SBC-3 SMC-3 Allow more commands through Write Exclusive reservations (05-368) [Elliott]**

Rob Elliott presented a proposal to allow Read Attribute, Read Buffer, Receive Diagnostic Results, Report Supported Operation Codes, and Report Supported Task Management Functions (05-368r0). Concerns were raised regarding the need for the changes.

The SMC-3 redefinition of reservation conflicts with SPC-4 was resolved by changing the SMC-3 row to reference SPC-4 instead of redefining the requirements.

Rob agreed to make the requested changes for consideration at the next meeting.

#### **5.2.16 SPC-4 New ASC/ASCQs for Device Port Address (05-406) [Galloway]**

Bill Galloway presented a proposal to add three additional sense codes for iSCSI addressing changes (05-406r1).

Bill Galloway moved that 05-406r1 be recommended for inclusion in SPC-4. Mark Evans seconded the motion. The motion passed 18:0:5.

### 5.3 SCSI Block Commands Proposals

#### 5.3.1 SBC-3, SPC-4: Application ownership of protection information Reference Tag (05-156) [Penokie]

George Penokie presented a proposal to extend the usage of the protection information reference tag in SBC-3 (05-156r6). Several changes were requested and George agreed to prepare a new revision of the proposal.

George Penokie moved that 05-156r7 (r6 as modified) be recommended for inclusion in SBC-3 and SPC-4. Ron Roberts seconded the motion. The motion passed 10:3:7.

#### 5.3.2 SBC-3 SPC-4 Background scan additions (05-340) [Elliott]

Rob Elliott presented a proposal to enhance the background media scan function (05-340r1). He noted the changes made in response to issues raised by the September meeting. Several concerns were raised regarding definitions in the proposal and Rob agreed to prepare a revised proposal for consideration at the next meeting.

#### 5.3.3 SBC-3: SPC-4: Disabling Reassign on Write Long Logical Blocks (05-374) [Penokie]

George Penokie presented a proposal to prevent reassignment of blocks that have been intentionally made bad by Write Long commands (05-374r1). Concerns were raised regarding the additional resources required in disk drives in order to implement the feature. The group requested several changes and George agreed to prepare a new revision.

George Penokie moved that 05-374r2 (r1 as modified) be recommended for inclusion in SBC-3 and SPC-4. Mark Evans seconded the motion. The motion passed 5:1:9.

### 5.4 SCSI Enclosure Services Proposals

#### 5.4.1 SES-2 Display element enhancements (05-011) [Elliott]

Rob Elliott requested that discussion of this topic be deferred to the next meeting.

#### 5.4.2 SES-2: Add RQST MISSING to DEVICE and ARRAY DEVICE element Control page (05-300) [Marks]

Kevin Marks presented a proposal to add a bit indicating removal of drives from a storage array (05-300r0). He noted that the method currently used to indicate manual drive removal produces the same indication as when the drive fails. As a result, working drives are returned to the factory for unneeded repairs.

Gerry Houlder moved that 05-300r0 be recommended for inclusion in SES-2. Greg Elkins seconded the motion. In the absence of any objections, the motion passed unanimously.

#### 5.4.3 SES-2 Cooling element enlarge Actual Fan Speed field (05-372) [Elliott]

Rob Elliott presented a proposal to allow the representation of fan speeds greater than 10,230 rpm (05-372r0).

Rob Elliott moved that 05-372r0 be recommended for inclusion in SES-2. Kevin Marks seconded the motion. In the absence of any objections, the motion passed unanimously.

#### 5.4.4 SES-2: Update Table 116 – CONNECTOR TYPE field to SAS-1.1 names (05-400) [Marks]

Kevin Marks presented a proposal match the connector names listed in SES-2 to the connector names listed in SAS-1.1 (05-400r0).

Kevin Marks moved that 05-400r0 be recommended for inclusion in SES-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

## **5.5 Other Proposals**

### **5.5.1 Possible inconsistencies in integrity check value algorithm field definition/usage (05-314) [Weber]**

Ralph Weber presented the proposal to describe the integrity check value algorithm field consistently throughout OSD-2 and noted that members of the SNIA OSD TWG had indicated a preference for the usage shown in the proposal (05-314r1). Rob Elliott noted that he had reviewed the proposal and found no significant errors in it.

### **5.5.2 OSD-2 Four New Multi-Object Commands (05-328) [Weber]**

Ralph Weber reported that the changes requested by the September working group had been made and that no issues had been raised by the SNIA OSD TWG.

## **6. SCSI Protocol Topics**

No SCSI Protocol topics were presented to the meeting.

## **7. Old Business**

### **7.1 Style Guide (05-085) [Penokie]**

George Penokie asked that discussion of this topic be deferred to the next meeting.

## **8. New Business**

### **8.1 Presentation of the IEEE P1667 Authentication Standard for Transient Storage Devices (05-399) [Shimor]**

Due to the late hour, Avraham Shimor requested that this topic be handled as a liaison report during the T10 Plenary meeting.

### **8.2 IEEE OUI Tutorial (no document) [Elliott]**

Rob Elliott described the problems with out-of-date OUI usage tutorials for SCSI devices on the IEEE web site. The group agreed that a proposal to update the tutorials was in order and Rob volunteered to draft it. Pat Thaler and George Penokie volunteered to review and contribute to the contents of the proposal.

## **9. Review of Working Drafts**

No requests were made to review working drafts at this meeting.



## 10. Review of Recommendations to the Plenary

Ralph Weber noted that the following recommendations have been made to the T10 plenary:

For inclusion in SAM-4:

05-376r5 (Addressing more than 16384 logical units) [Penokie]

For inclusion in SPC-4:

05-242r2 (Combinations of bits and fields in the LOG SELECT CDB and log parameters) [Evans]

05-360r2 (Extended self test completion time value update) [Overby]

05-375r1 (EBACKERR bit Error Reporting Clarification) [Penokie]

05-379r0 (Unit attention condition trivial wording changes) [Elliott]

05-380r0 (Mode Page Policy MLUS bit correction) [Elliott]

05-406r1 (New ASC/ASCQs for Device Port Address) [Galloway]

For SPC-4 and SBC-3:

05-156r7 (Application ownership of protection information Reference Tag) [Penokie]

05-374r2 (Disabling Reassign on Write Long Logical Blocks) [Penokie]

For inclusion in SAS-2, SAM-4, and SPC-4:

05-370r2 (NOTIFY (POWER FAILURE EXPECTED) Fixes) [Penokie]

For inclusion in SPC-4, SMC-3, SBC-3, and SSC-3:

05-317r3 (Remove Attached Media Changer model) [Entzel]

For inclusion in SES-2:

05-300r0 (Add RQST MISSING to DEVICE and ARRAY DEVICE element Control page) [Marks]

05-372r0 (Cooling element enlarge Actual Fan Speed field) [Elliott]

05-400r0 (Update Table 116 - CONNECTOR TYPE field to SAS-1.1 names) [Marks]

## 11. Meeting Schedule

The next meeting of the SCSI Commands, Architecture, and Protocols Working Group will be Wednesday, January 11, 2006 from 9 a.m. to 8 p.m. (or until all agenda items are completed). The meeting will be in Scottsdale, AZ at the Embassy Suites Hotel Phoenix - Scottsdale (Reservations: <http://www.b-there.com/arm/t10phx2006>) hosted by Intel.

## 12. Adjournment

The meeting was adjourned at 8:25 p.m. on Wednesday November 9, 2005.