

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

**Doc. No.:** T10/08-354r1

**Date:** September 17, 2008

**Reply to:** John Lohmeyer

To: T10 Membership  
From: Ralph Weber and John Lohmeyer  
Subject: SCSI Commands, Architecture, & Protocol Working Group Meeting -- September 10-11, 2008  
Colorado Springs, CO

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SCSI Architecture Model Topics
  - 4.1 SAM-5 Response Fence for protocol services (06-341) [Elliott]
  - 4.2 SAM-5 SCSI Initiator and Target Port capability attributes (07-429) [Elliott]
5. Command Set Topics
  - 5.1 SCSI Primary Commands Proposals
    - 5.1.1 SPC-4: Group Persistent Reservations - Proposal (08-025) [Butt]
    - 5.1.2 SPC-4 SBC-3 SAS-2.1 Power condition enhancements (08-126) [Elliott]
    - 5.1.3 SPC-4 SBC-3 Adding more low power options (08-184) [Houlder]
    - 5.1.4 Too much to do ... Not enough Progress Counters (08-263) [Weber]
    - 5.1.5 Revoking the provisional TrustedFlash Security Protocol Assignment (SPC-4) (08-289) [Geldman]
    - 5.1.6 SPC-4 Remove restrictions on sense data valid bits (08-321) [Houlder]
    - 5.1.7 Restrict SPC-4 and SAM-5 codes to FC-SB-4 use (08-327) [Butt]
    - 5.1.8 SPC-4: Reporting SPC-2 Reservation Holder (08-342) [Butt]
    - 5.1.9 SPC-4: Correction to IKEv2-SCSI Certificate Request Payload (08-346) [Suhler]
    - 5.1.10 SPC-4, SBC-3: Reporting Thin Provisioning Support (08-357) [Black]
  - 5.2 SCSI Block Commands Proposals
    - 5.2.1 SBC-3 Set pseudo format, a.k.a. DIF Granularity (08-044) [Sheffield]
    - 5.2.2 SBC - Thin Provisioning (08-149) [Knight]
    - 5.2.3 SBC-3 Model for encrypting disk drives (08-192) [Houlder]
    - 5.2.4 SBC-3 Letter Ballot Target Dates [Evans]
    - 5.2.5 SBC-3: TRIM: Behavior of subsequent READs (08-347) [Black, Knight]
    - 5.2.6 TRIM bit for WRITE SAME (08-356) [Black]
    - 5.2.7 Thin Provisioning - Management Commands (08-341) [Knight]
  - 5.3 SCSI Enclosure Services Proposals
  - 5.4 Other Proposals
    - 5.4.1 OSD-2 Conditional Attributes Setting (08-112) [Weber]
    - 5.4.2 SAT-2: NV Cache Translation (08-018) [Overby]
    - 5.4.3 Project Proposal for OSD-3 (08-331) [Weber]
6. SCSI Protocol Topics
  - 6.1 USB Attached SCSI Proposals
    - 6.1.1 UAS Clause 4 (Model) (08-281) [Stevens]

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## 6.1.2 UAS Clause 6 (Usage) (08-282) [Stevens]

7. Old Business
  - 7.1 Long-standing keyword omitted from Style Guide (08-295) [Weber]
8. New Business
9. Review of Working Drafts
  - 9.1 USB Attached SCSI Working Draft (UAS) [Stevens]
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. Wednesday, September 10, 2008. He thanked LSI for hosting the meeting. As usual, the people present introduced themselves.

### 2. Approval of Agenda

The draft agenda was approved with no additions or changes.

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                 |
|----------------------|-------|------------------------------|
| -----                | ----- | -----                        |
| Mr. David Peterson   | P     | Brocade                      |
| Mr. Kevin Marks      | P     | Dell, Inc.                   |
| Mr. David Black      | A     | EMC Corp.                    |
| Mr. Sean Dolan       | A     | EMC Corp.                    |
| Mr. Gary S. Robinson | P     | EMC Corp.                    |
| Mr. William Martin   | P     | Emulex                       |
| Mr. Robert H. Nixon  | A     | Emulex                       |
| Mr. Ralph O. Weber   | P     | ENDL Texas                   |
| Mr. Mike Fitzpatrick | P     | Fujitsu                      |
| Mr. Curtis Ballard   | A     | Hewlett Packard Co.          |
| Mr. Rob Elliott      | P     | Hewlett Packard Co.          |
| Mr. Dan Colegrove    | P     | Hitachi Global Storage Tech. |
| Mr. Kevin Butt       | P     | IBM Corp.                    |
| Mr. Dennis Moore     | P     | KnowledgeTek, Inc.           |
| Mr. John Geldman     | P     | Lexar Media, Inc.            |
| Mr. Joe Breher       | V     | Lingua Data                  |
| Mr. John Lohmeyer    | P     | LSI Corp.                    |
| Mr. George Penokie   | A     | LSI Corp.                    |
| Mr. Robert Sheffield | A     | LSI Corp.                    |

|                      |    |                           |
|----------------------|----|---------------------------|
| Mr. Robert Griswold  | A  | Microsoft Corp.           |
| Mr. Chris Fore       | A  | NetApp                    |
| Mr. Frederick Knight | P  | NetApp                    |
| Mr. Mark Overby      | P  | Nvidia Corp.              |
| Mr. Geoffrey Barton  | V  | Overland Storage          |
| Mr. Thomas Friend    | V  | Oxford Semiconductor Ltd. |
| Mr. Matthew Stephens | V  | Oxford Semiconductor Ltd. |
| Mr. Tim Symons       | P  | PMC-Sierra                |
| Mr. Craig W. Carlson | AV | QLogic Corp.              |
| Dr. Paul Suhler      | P  | Quantum Corp.             |
| Mr. Dave Landsman    | A  | SanDisk Corporation       |
| Mr. Gerald Houlder   | P  | Seagate Technology        |
| Mr. Dale LaFollette  | P  | Sun Microsystems, Inc.    |
| Mr. Paul von Behren  | V  | Symantec                  |
| Mr. Halvard Eriksen  | AV | Tandberg Storage          |
| Mr. Mark Evans       | P  | Western Digital           |
| Mr. Curtis Stevens   | A  | Western Digital           |
| Mr. Alan Westbury    | V  | Xyratex                   |

37 People Present

Status Key: P - Principal  
 A - Alternate  
 AV - Advisory Member  
 E - Emeritus  
 L - Liaison  
 V - Visitor

## 4. SCSI Architecture Model Topics

### 4.1 SAM-5 Response Fence for protocol services (06-341) [Elliott]

Rob Elliott requested that discussion of the proposal to reflect transport layer ordering of commands and task management functions in SAM-5 (06-341r1) be deferred to the next meeting.

### 4.2 SAM-5 SCSI Initiator and Target Port capability attributes (07-429) [Elliott]

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

## 5. Command Set Topics

### 5.1 SCSI Primary Commands Proposals

#### 5.1.1 SPC-4: Group Persistent Reservations - Proposal (08-025) [Butt]

Kevin Butt asked that discussion of the proposal to define team reservations (08-025r3) be deferred to the next meeting.

#### 5.1.2 SPC-4 SBC-3 SAS-2.1 Power condition enhancements (08-126) [Elliott]

Rob Elliott asked that the proposal to define a new power management model for SCSI (08-126r1) be deferred to the next meeting.

### **5.1.3 SPC-4 SBC-3 Adding more low power options (08-184) [Houlder]**

Gerry Houlder presented a proposal to add a small number of new low power options in the Power Conditions Mode Page (08-184r2). The group requested numerous changes. A noteworthy change concerned transitions from any Idle state to Active. Previously, the power consumption had been limited to being less than the power consumed during transitions from a Standby state to Active. The group agreed that rules regarding use of the Notify (Enable Spinup) primitive in SAS dictated that transitions from Idle to Active now had to be limited to consuming no more power than normal operation in the Active state.

Gerry agreed to prepare a new revision for consideration at a future meeting or conference call.

### **5.1.4 Too much to do ... Not enough Progress Counters (08-263) [Weber]**

Ralph Weber presented a proposal to define a way for Request Sense to report multiple progress counters. (08-263r1). The group requested additional changes and reiterated their concerns expressed in July. Ralph agreed to prepare a new revision for consideration at a future meeting.

### **5.1.5 Revoking the provisional TrustedFlash Security Protocol Assignment (SPC-4) (08-289) [Geldman]**

John Geldman noted that an SDcard meeting is scheduled for next week at which issues related to this proposal are on the agenda. John then asked that discussion of the proposal that requested removal of the SD Card TrustedFlash specification security protocol code (08-289r0) be deferred to the next meeting.

### **5.1.6 SPC-4 Remove restrictions on sense data valid bits (08-321) [Houlder]**

Gerry Houlder presented a proposal to allow descriptor format sense data to contain descriptors with the Valid bit set to zero (08-321r0). The group requested substantial changes in the way sense key specific data is represented for sense keys other than those listed in the table. Gerry agreed to prepare a new revision of the proposal.

Concerns were raised about potential backwards compatibility issues with existing software. Gerry agreed to post a reflector message describing the change and soliciting issues.

Further discussion of the proposal was deferred to the next meeting.

### **5.1.7 Restrict SPC-4 and SAM-5 codes to FC-SB-4 use (08-327) [Butt]**

Kevin Butt presented a proposal to allocate Logical Unit Number and SPC-4 service action codes for use by FC-SB-4 (08-327r1). The group requested a simplification of the LUN definition and a reduction in the number of service action codes assigned.

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

### **5.1.8 SPC-4: Reporting SPC-2 Reservation Holder (08-342) [Butt]**

Kevin Butt presented a proposal to report SPC-2 reservation holders via the Persistent Reserve In command (08-342r1). The proposal included a request to change the behavior a command specified only in SPC-2.

Using a Log Page was proposed as a way to work around the issues raised by the existing SPC-2 requirements. Details of the Log Page approach and possible options were discussed. Kevin promised to revise the proposal for consideration at the next meeting.

### **5.1.9 SPC-4: Correction to IKEv2-SCSI Certificate Request Payload (08-346) [Suhler]**

Paul Suhler presented a proposal to correct a vague (and erroneous) definition of the Certificate Request payload in IKEv2-SCSI (08-346r0). The group requested several complicated changes and Paul agree to prepare a new revision for consideration at the next meeting. David Black volunteered to assist with updating the proposal to allow a single Certificate Request payload to specify more than one certificate authority.

### **5.1.10 SPC-4, SBC-3: Reporting Thin Provisioning Support (08-357) [Black]**

David Black presented a proposal to assign an Inquiry data bit to indicate support for Thin Provisioning (08-357).

When the debate failed to conclusively select one of the options in the proposal (or even one of the options tabled by members of the group), David Black requested a straw poll on where best to indicate support for Thin Provisioning based on the following choices:

- a) Inquiry data before byte 36;
- b) READ CAPACITY(16) parameter data;
- c) Extended Inquiry Data VPD page; and
- d) Block Device characteristics VPD page.

The straw poll results were as follows:

- a) 9 votes for – Inquiry data before byte 36
- b) 10 votes for – READ CAPACITY(16) parameter data
- c) 13 votes for – Extended Inquiry Data VPD page
- d) 5 votes for – Block Device characteristics VPD page

David Black and Fred Knight agreed to take the advice provided by the straw poll into account when preparing the next revision of 08-149 (see agenda item 5.2.2).

## **5.2 SCSI Block Commands Proposals**

### **5.2.1 SBC-3 Set pseudo format, a.k.a. DIF Granularity (08-044) [Sheffield]**

Bob Sheffield presented a proposal to define a pseudo-format mechanism to allow two DIF formats to exist on a single disk (08-044r3). The group agreed to split the problem that Bob was trying to solve into two portions. The major new portion was defining new DIF Types or equivalent to represent half of the previously proposed pseudo formats. Picking a suitably flexible mechanism for this new definition was deferred to a future meeting.

### **5.2.2 SBC - Thin Provisioning (08-149) [Knight]**

Fred Knight presented a proposal to define thin provisioning in SBC-3 (08-149r2). The group requested numerous and substantial changes. Fred agreed to prepare a new revision for consideration at the next meeting or an interim conference call.

### **5.2.3 SBC-3 Model for encrypting disk drives (08-192) [Houlder]**

Gerry Houlder presented a proposal to define an encryption/locking model for SBC-3 (08-192r1).

Gerry Houlder moved that 08-192r1 be recommended for inclusion in SBC-3. John Goldman seconded the motion. The motion passed 6:0:6.

### **5.2.4 SBC-3 Letter Ballot Target Dates [Evans]**

Mark Evans led a discussion of content and target dates for SBC-3. The group agreed that SBC-3 needs to include the Pseudo Format feature, new DIF formats, power management, and the Thin Provisioning I/O path definition.

Owing to the indeterminate nature of the completion schedule for some of the topics to be included in SBC-3, the group agreed to reconsider this agenda item at the next meeting.

### **5.2.5 SBC-3: TRIM: Behavior of subsequent READs (08-347) [Black, Knight]**

On behalf of himself and Fred Knight, David Black presented a proposal which documented issues related to Reading blocks after they are Thin Provisioning Trimmed (08-347r0). The group discussed the concerns raised by

the proposal, discovered that the T13 Trim command was designed to meet different use cases, and agreed to change the Trim command to the Punch command in the applicable SBC proposals.

David Black and Fred Knight agreed to consider a bevy of issues raised during the discussion when preparing the next revision of 08-149 (see agenda item 5.2.2).

#### **5.2.6 TRIM bit for WRITE SAME (08-356) [Black]**

David Black presented a proposal to define a Trim bit in the Write Same command (08-356r0). Since the group was generally amenable to the proposal, David agreed to refine it, align it with the ongoing work in 08-149 (see agenda item 5.2.2), and present the revised proposal for further consideration at the next meeting.

#### **5.2.7 Thin Provisioning - Management Commands (08-341) [Knight]**

Due to the late hour, the Fred agreed to defer consideration of this proposal to the next meeting.

### **5.3 SCSI Enclosure Services Proposals**

No SES proposals were present to the group.

### **5.4 Other Proposals**

#### **5.4.1 OSD-2 Conditional Attributes Setting (08-112) [Weber]**

Ralph Weber asked that discussion of this topic be deferred to OSD-3.

#### **5.4.2 SAT-2: NV Cache Translation (08-018) [Overby]**

In the absence of Mark Overby, the group agreed that discussion of his proposal to define Non-volatile cache commands for SAT-3 (08-018r3) be deferred to the next meeting.

#### **5.4.3 Project Proposal for OSD-3 (08-331) [Weber]**

Ralph Weber presented a project proposal for OSD-3 (08-331r0). Ralph Weber moved that 08-331r0 be recommended for forwarding to INCITS. Kevin Marks seconded the motion. In the absence of objections, the motion passed unanimously.

## **6. SCSI Protocol Topics**

### **6.1 USB Attached SCSI Proposals**

#### **6.1.1 UAS Clause 4 (Model) (08-281) [Stevens]**

Curtis Stevens presented draft text for the UAS Model clause (08-281r2). The group requested numerous changes and Curtis agreed to prepare a new revision for consideration during a conference call.

#### **6.1.2 UAS Clause 6 (Usage) (08-282) [Stevens]**

Curtis Stevens presented draft text for the UAS Usage clause (08-282r1). The group requested numerous changes and Curtis agreed to prepare a new revision for consideration at the next meeting or during a conference call.

## 7. Old Business

### 7.1 Long-standing keyword omitted from Style Guide (08-295) [Weber]

Ralph Weber presented a proposal to restore the 'expected' keyword to the T10 Style Guide (08-295r0). Bill Martin reported that his review of all T10 standards found no instances of 'expected' whose usage varied from the definition found in an English dictionary.

Ralph withdrew the proposal from further consideration, and asked that this item be removed from future agendas.

## 8. New Business

There was no new business.

## 9. Review of Working Drafts

### 9.1 USB Attached SCSI Working Draft (UAS) [Stevens]

Curtis Stevens reviewed the content of the UAS working draft as part of discussing documents 08-281 and 08-282 (see agenda items 6.1.1 and 6.1.2, respectively). He noted some editorial changes which would be included in the next UAS revision, but made no commitment regarding when that revision would be generated.

## 10. Review of Recommendations to the Plenary

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

For inclusion in SBC-3:  
08-192r1 (SBC-3 Model for encrypting disk drives) [Houlder]

For inclusion in recommendations to INCITS:  
08-331r0 (Project Proposal for OSD-3) [Weber]

## 11. Meeting Schedule

An Idle Power Management conference call organized by Gerry Houlder was recommended for Wednesday, October 1 at 10–noon CDT. The primary purpose of the call was to discuss the latest revision of 08-184.

A Thin Provisioning conference call organized by Fred Knight was recommended for Friday, October 3 at 9–11 am PDT.

A UAS Model conference call organized by Curtis Stevens was recommended for Wednesday, October 15 at 9–10 am PDT.

The next meeting of the SCSI Commands, Architecture, and Protocols Working Group will be Wednesday, November 5-6, 2008 from 9 a.m. until 7 p.m. and resuming Thursday, September 11, 2008 from 9 a.m. until noon. The meeting will be in Santa Ana, CA at the Embassy Suites Hotel (Reservations: <http://embassy-suites.hilton.com/en/es/groups/personalized/STAESES-XWD-20081031/index.jhtml>) hosted by Western Digital Technologies, Inc.

## 12. Adjournment

The meeting was adjourned at 12:05 p.m. on Thursday September 11, 2008.