

Accredited Standards Committee\*

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

**Doc. No.:** T10/08-210r1

**Date:** May 14, 2008

**Reply to:** John Lohmeyer

To: T10 Membership  
From: Ralph Weber and John Lohmeyer  
Subject: SCSI Commands, Architecture, & Protocol Working Group Meeting -- May 7-8, 2008  
San Jose, CA

## 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]
  - 4.3 SAM-4 Letter Ballot comments resolution document (07-478) [Penokie]
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 Capability-based Command Security (CbCS) [the rewrite] (08-145) [Weber]
    - 5.1.4 Bogus Sense Key in SPC-4 SA Creation Parameter Data Error Handling (08-177) [Weber]
    - 5.1.5 IKEv2-SCSI Message ID field size correction (08-178) [Weber]
    - 5.1.6 SCSI device name cleanup in SPC-4 (08-180) [Weber]
    - 5.1.7 SPC-4 SBC-3 Adding more low power options (08-184) [Houlder]
    - 5.1.8 SPC-4, Even more log page cleanup (08-199) [Evans]
    - 5.1.9 SPC-4 - common definition for CODE SET (08-194) [Ballard]
    - 5.1.10 Allowing SPC-4 ESP-SCSI descriptors in variable length CDBs (08-214) [Weber]
    - 5.1.11 SPEC\_I\_PT clarification (08-231) [Knight]
  - 5.2 SCSI Block Commands Proposals
    - 5.2.1 SBC-3 DIF Granularity (08-044) [Sheffield]
    - 5.2.2 SBC-3 SPC-4: Protection Type 3 Reference Tag Clarification (08-116) [Penokie]
    - 5.2.3 SBC - Thin Provisioning (08-149) [Knight]
    - 5.2.4 Non-volatile cache becoming volatile (08-156) [Penokie]
  - 5.3 SCSI Enclosure Services Proposals
    - 5.3.1 SES-2 revision 19 letter ballot comment resolution as of ses2r19d (08-049) [Elliott]
  - 5.4 Other Proposals
    - 5.4.1 OSD-2 Conditional Attributes Setting (08-112) [Weber]
    - 5.4.2 SAS: Add low power transceiver options (08-015) [Houlder]
    - 5.4.3 Fixes for five OSD-2 bugs (08-179) [Weber]
    - 5.4.4 Set Attributes error handling in OSD-2 (08-181) [Weber]
    - 5.4.5 OSD-2 Snapshots and related enhancements (08-182) [Weber]
    - 5.4.6 SAT-2: NV Cache Translation (08-018) [Overby]

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**INCITS Secretariat, Information Technology Industry Council (ITI)**

1250 Eye Street NW, Suite 200, Washington, DC 20005-3922

Email: [incits@itic.org](mailto:incits@itic.org) Telephone: 202-737-8888 FAX: 202-638-4922

6. SCSI Protocol Topics
  - 6.1 USB Attached SCSI Proposals
    - 6.1.1 UAS First Draft (08-221r0) [Stevens]
7. Old Business
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, May 7, 2008. He thanked Mark Overby of Nvidia 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. Robert Snively	A	Brocade
Mr. William McFerrin	V	DataPlay
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. Nathan Hastad	P	General Dynamics
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. Sivan Tal	V	IBM Corp.
Mr. Robert Payne	P	Iomega Corp.
Mr. Joel Silverman	P	Kawasaki Microelectronics Am
Mr. John Geldman	P	Lexar Media, Inc.
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
Dr. Paul Suhler	P	Quantum Corp.
Mr. Michael Rogers	A	Samsung
Mr. Yoni Shternhell	A	SanDisk Corporation
Mr. Schelto vanDoorn	V	Schelto
Mr. Martin Furuhjelm	V	Seagate Technology
Mr. Julian Gorfajn	V	Seagate Technology
Mr. Gerald Houlder	P	Seagate Technology
Mr. Stephen Finch	P	STMicroelectronics, Inc.
Mr. Erich Oetting	P	Sun Microsystems, Inc.
Mr. Georg Boasson	V	Tandberg Storage
Mr. Mark Evans	P	Western Digital
Mr. Curtis Stevens	A	Western Digital
Mr. Alan Westbury	V	Xyratex

40 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, and noted that the proposal will be carried over to SAM-5.

#### **4.3 SAM-4 Letter Ballot comments resolution document (07-478) [Penokie]**

George Penokie reviewed the several corrections to the Letter Ballot comments resolutions (07-478r6). The group requested several changes and George agreed to prepare a new revision. He also stated that SAM-4 r13i will be uploaded reflecting all the comment resolutions.

George noted that he plans to request forwarding of SAM-4 r14 to first public review at the T10 plenary.

### **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 reviewed a proposal to define a new power management model for SCSI (08-126r1). In response to requests made in March, Rob had revised the proposal to define a complex high-level management structure, especially a VPD page that returns information about the power management properties of an open-ended set of power management states. The group discussed the proposed management at length and suggested several enhancements. Rob promised to revise the proposal for further consideration at the next meeting.

##### **5.1.3 Capability-based Command Security (CbCS) [the rewrite] (08-145) [Weber]**

Ralph Weber and Sivan Tal reviewed the rewrite of the 07-454r5 CbCS proposal (08-145r2). The group requested several changes, the most notable of which was requiring the CbCS management device server to set the CbCS bit to zero in the Extended Inquiry VPD page. Ralph agreed to prepare a new revision.

Sivan Tal moved that 08-145r3 (r2 as revised) be recommended for inclusion in SPC-4. Ralph Weber seconded the motion. In the absence of objections, the motion passed unanimously.

##### **5.1.4 Bogus Sense Key in SPC-4 SA Creation Parameter Data Error Handling (08-177) [Weber]**

Ralph Weber presented a proposal to change incorrect uses of NOT READY sense key to ILLEGAL REQUEST in specific SA creation instances (08-177r0).

Ralph Weber moved that 08-177r0 be recommended for inclusion in SPC-4. Kevin Butt seconded the motion. In the absence of objections, the motion passed unanimously.

##### **5.1.5 IKEv2-SCSI Message ID field size correction (08-178) [Weber]**

Ralph Weber presented a proposal to change the IKEv2-SCSI Message ID code values to 4-byte codes, as befitted the specified field size, in place of the existing 2-byte codes (08-178r0).

Ralph Weber moved that 08-178r0 be recommended for inclusion in SPC-4. Bob Nixon seconded the motion. In the absence of objections, the motion passed unanimously.

#### **5.1.6 SCSI device name cleanup in SPC-4 (08-180) [Weber]**

Ralph Weber presented a proposal to align the SPC-4 device name nomenclature with SAM-4 (08-180r0).

Ralph Weber moved that 08-118r0 be recommended for inclusion in SPC-4. Bill Martin seconded the motion. In the absence of objections, the motion passed unanimously.

#### **5.1.7 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 (08-184r0). The group suggested some changes and Gerry agreed to prepare a new revision for the next meeting.

#### **5.1.8 SPC-4, Even more log page cleanup (08-199) [Evans]**

Mark Evans presented a proposal to correct and clarify the definition of log pages (08-199r0). The group requested numerous editorial corrections and Mark agreed to prepare a new revision.

Mark Evans moved that 08-199r1 (r0 as revised) be recommended for inclusion in SPC-4. Bill Martin seconded the motion. In the absence of objections, the motion passed unanimously.

#### **5.1.9 SPC-4 - common definition for CODE SET (08-194) [Ballard]**

Curtis Ballard presented a proposal to define a common code set nomenclature for all fields that contain code set enumerations (08-194r0). The group requested numerous editorial changes and Curtis agreed to prepare a new revision.

Curtis Ballard moved that 08-194r1 (r0 as revised) be recommended for inclusion in SPC-4. Bob Nixon seconded the motion. In the absence of objections, the motion passed unanimously.

#### **5.1.10 Allowing SPC-4 ESP-SCSI descriptors in variable length CDBs (08-214) [Weber]**

Ralph Weber presented a proposal to allow ESP-SCSI descriptors to be placed in variable length CDBs and CDB extension (08-214r0). He noted that the feature needs to be used in data-in ESP-SCSI data is being used in order to thwart known plaintext attacks.

The group noted an instance of 'know' that should be 'known' and Ralph agreed to prepare a new revision. Ralph Weber moved that 08-214r1 (r0 as revised) be recommended for inclusion in SPC-4. Kevin Butt seconded the motion. In the absence of objections, the motion passed unanimously.

#### **5.1.11 SPEC\_I\_PT clarification (08-231) [Knight]**

Fred Knight presented a proposal to clarify the use of the SPEC\_I\_PT list in persistent reservations (08-231r0). The group requested that the specific sense key and additional sense code be removed from the proposed new text because other errors might be detected. Fred agreed to prepare a new revision.

Curtis Ballard moved that 08-231r1 (r0 as revised) be recommended for inclusion in SPC-4. Gerry Houlder seconded the motion. In the absence of objections, the motion passed unanimously.

## **5.2 SCSI Block Commands Proposals**

### **5.2.1 SBC-3 DIF Granularity (08-044) [Sheffield]**

Bob Sheffield presented a proposal to define a logical block virtualization feature to mirror host software Virtualization (08-044r1). The group raised concerns about generating errors when wrong LBAs are accessed, attempts to

redefining the meaning of the LBA and Transfer Length fields based on field settings in the CDBs, and several other areas.

Bob agreed to prepare a new revision for the next meeting.

### **5.2.2 SBC-3 SPC-4: Protection Type 3 Reference Tag Clarification (08-116) [Penokie]**

George Penokie presented a proposal to clarify that the Type 3 Reference Tag is the same as the Application Tag (08-116r1). The group requested changes to make the requirements more clear, and George agreed to prepare a new revision

George Penokie moved that 08-116r2 (r1 as revised) be recommended for inclusion in SBC-3 and SPC-4. Bob Nixon seconded the motion.

Rob Elliott raised several questions about the organization of the fields. He suggested that two one-bit fields be joined into a single two-bit field.

George and Bob agreed to withdraw the motion to recommend the proposal, so that the additional changes could be reviewed more carefully.

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

Fred Knight asked that discussion of the thin disk provisioning proposal be deferred to the next meeting.

### **5.2.4 Non-volatile cache becoming volatile (08-156) [Penokie]**

George Penokie presented a proposal to modify SBC-3 and SPC-4 to deal with the fact that non-volatile cache may become volatile (i.e., when the battery dies) (08-156r2).

George Penokie moved that 08-156r2 be recommended for inclusion in SBC-3 and SPC-4. Gerry Houlder seconded the motion. In the absence of objections, the motion passed unanimously.

## **5.3 SCSI Enclosure Services Proposals**

### **5.3.1 SES-2 revision 19 letter ballot comment resolution as of ses2r19d (08-049) [Elliott]**

Rob Elliott reviewed that SES-2 letter ballot comment resolutions (08-049r3). He noted that a request will be made to forward SES-2 to first public review during the T10 plenary.

## **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 the next meeting.

### **5.4.2 SAS: Add low power transceiver options (08-015) [Houlder]**

Gerry Houlder asked that discussion of this topic be deferred to the next meeting.

### **5.4.3 Fixes for five OSD-2 bugs (08-179) [Weber]**

Due to the late hour, Ralph Weber asked that discussion of this topic be deferred to the next meeting.

### **5.4.4 Set Attributes error handling in OSD-2 (08-181) [Weber]**

Ralph Weber asked that discussion of this topic be deferred to the next meeting.

#### **5.4.5 OSD-2 Snapshots and related enhancements (08-182) [Weber]**

Ralph Weber asked that discussion of this topic be deferred to the next meeting.

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

Due to the late hour, Mark Overby asked that discussion of this topic be deferred to the next meeting.

### **6. SCSI Protocol Topics**

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

##### **6.1.1 UAS First Draft (08-221r0) [Stevens]**

Curtis Stevens presented an introduction to USB (08-241r0). John Goldman presented a performance analysis that demonstrated the need for the UAS project (08-240r0).

Curtis Stevens led a review an initial draft of the UAS (08-221r0). The group requested several changes and Curtis agreed to prepare a new revision.

Curtis Stevens moved that 08-221r1 (r0 as revised) be recommended as the content for UAS r00. Mark Overby seconded the motion. In the absence of objections, the motion passed unanimously.

### **7. Old Business**

There was no old business.

### **8. New Business**

There was no new business.

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

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

There was no UAS draft to review (see agenda item 6.1.1).

### **10. Review of Recommendations to the Plenary**

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

For inclusion in SPC-4:

- 08-145r3 (Capability-based Command Security (CbCS) [the rewrite]) [Weber]
- 08-177r0 (Bogus Sense Key in SA Creation Parameter Data Error Handling) [Weber]
- 08-178r0 (iKEv2-SCSI Message ID field size correction) [Weber]
- 08-180r0 (SCSI device name cleanup in SPC-4) [Weber]
- 08-194r1 (Common definition for CODE SET) [Ballard]
- 08-199r1 (Even more log page cleanup) [Evans]
- 08-214r1 (Allowing ESP-SCSI descriptors in variable length CDBs) [Weber]
- 08-231r1 (SPEC\_I\_PT clarification) [Knight]

For inclusion in SPC-4 and SBC-3:

- 08-156r2 (Non-volatile cache becoming volatile) [Penokie]

As the content for UAS:  
08-221r1 (UAS First Draft) [Stevens]

## **11. Meeting Schedule**

The next meeting of the SCSI Commands, Architecture, and Protocols Working Group will be Wednesday, July 16, 2008 from 9 a.m. until 7 p.m. and resuming Thursday, July 17, 2008 from 9 a.m. until noon. The meeting will be in Anchorage, AK at the Sheraton Anchorage Hotel (Reservations: 907-276-8700) hosted by Emulex.

## **12. Adjournment**

The meeting was adjourned at 1:00 p.m. on Thursday May 8, 2008.