

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

**Doc. No.:** T10/07-116r0

**Date:** March 15, 2007

**Reply to:** John Lohmeyer

To: T10 Membership  
From: Ralph Weber and John Lohmeyer  
Subject: SCSI Commands, Architecture, & Protocol Working Group Meeting -- March  
14-15, 2007  
Memphis, TN

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SCSI Architecture Model Topics
  - 4.1 SAM-4: Comments from Adam Richter (07-105) [Penokie]
  - 4.2 SAM-4 Response Fence for protocol services (06-341) [Elliott]
  - 4.3 SAM-4 SAS-2 FCP-4 QUERY TASK SET task management function (07-066) [Elliott]
  - 4.4 SAM-4 SAS-2 FCP-4 QUERY UNIT ATTENTION task management function (07-067) [Elliott]
  - 4.5 SAM-4: Task Tag Length and FCP (07-139) [Peterson]
5. Command Set Topics
  - 5.1 SCSI Primary Commands Proposals
    - 5.1.1 SPC-4: ASC/ASCQ Reservations for ATA REQUEST SENSE (07-081) [Overby]
    - 5.1.2 SPC-4 Error History proposal (06-362) [Houlder]
    - 5.1.3 SPC-4 Persistent reservations self-preempting clarification (07-080) [Elliott]
    - 5.1.4 SPC-4: Duplicate persistent reservation wording removal (07-111) [Penokie]
    - 5.1.5 Stop fruitless attempts to shackle users via the IALUAE Control Ext. Mode bit (07-077) [Weber]
    - 5.1.6 SPC-4: Encapsulated SCSI Commands (07-029) [Weber]
  - 5.2 SCSI Block Commands Proposals
    - 5.2.1 SBC-3: Update Block Limits VPD Page for ORWRITE (07-110) [Cummings]
    - 5.2.2 SBC-3 Maximum transfer sizes for XPWRITE XDWRITE XDREAD PRE-FETCH (07-113) [Elliott and Houlder]
  - 5.3 SCSI Enclosure Services Proposals
    - 5.3.1 SAS-2 SES-2 Enclosure Connector Information (07-087) [Besmer]
    - 5.3.2 SES-2 Additional Element Status Bay Number for Fibre Channel (07-092) [Elliott]
    - 5.3.3 SES-2 Cooling element Requested Speed Code of zero (07-095) [Elliott]
    - 5.3.4 SES-2 Add failure indicator support to most elements (07-097) [Elliott]
    - 5.3.5 SES-2 Remove IDENT bit from nonsensical elements (07-104) [Elliott]
    - 5.3.6 SES-2 Overall element handling (07-096) [Elliott]
    - 5.3.7 SES-2 Additional Element Status for Enclosure Services Controller Electronics (07-098) [Elliott]
    - 5.3.8 SES-2 Enclosure element Power Cycle request (07-118) [Elliott]
  - 5.4 Other Proposals
6. SCSI Protocol Topics
7. Security

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- 7.1 SPC-4: Editorial change: IEEE P1667 to IEEE 1667 (07-056) [Shimor]
- 7.2 SPC-4 Digital Signing of Microcode (07-100) [Banther]
- 7.3 Security Association Model for SPC-4 (06-369) [Weber]
- 7.4 SPC-4: Establishing a Security Association using IKEv2 (06-449) [Ball & Black]
- 7.5 Capability based Command Security (07-069) [Penokie]
- 8. Old Business
- 9. New Business
- 10. Review of Working Drafts
- 11. Review of Recommendations to the Plenary
- 12. Meeting Schedule
- 13. Adjournment

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Wednesday, March 14, 2007. He thanked Chris Lyon of the SCSI Trade Association for hosting the meeting. As usual, the people present introduced themselves.

### 2. Approval of Agenda

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

- 5.1.2 SPC-4 Error History proposal (06-362) [Houlder]

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:

CAP Working Group Attendance Report - March 2007

Name	S	Organization
Mr. Chris Fore	P	Adaptec, Inc.
Mr. David Peterson	P	Brocade
Mr. Robert Snively	A	Brocade
Mr. Gideon Avida	P	Decru
Mr. Kevin Marks	P	Dell, Inc.
Mr. David Black	A	EMC Corp.
Mr. Mickey Felton	A#	EMC Corp.
Mr. William Martin	P	Emulex
Mr. Robert H. Nixon	A	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
Mr. Walt Hubis	V	Engenio Information Tech.
Mr. Mike Fitzpatrick	P	Fujitsu
Mr. Michael Banther	A	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. Dan Colegrove	P	Hitachi Global Storage Tech.
Mr. Sivan Tal	V	IBM
Mr. Kevin Butt	A	IBM Corp.
Mr. George O. Penokie	P	IBM Corp.
Mr. Robert Sheffield	P	Intel Corp.
Mr. Joel Silverman	P	Kawasaki Microelectronics Am
Mr. John Geldman	P	Lexar Media, Inc.
Mr. John Lohmeyer	P	LSI Logic Corp.
Mr. David Geddes	P	Marvell Semiconductor, Inc.
Mr. Paul Wassenberg	A	Marvell Semiconductor, Inc.
Mr. Landon Noll	AV	NeoScale Systems Inc.
Mr. Frederick Knight	A	Network Appliance
Mr. Mark Overby	P	Nvidia Corp.
Mr. Geoffrey Barton	V	Overland Storage
Mr. Takaharu Ai	A	Panasonic AVC Networks Co.
Mr. Tim Symons	P	PMC-Sierra
Mr. Matthew Ball	V	Quantum Corp.
Mr. Paul Entzel	P	Quantum Corp.
Dr. Paul Suhler	A	Quantum Corp.
Mr. Michael Rogers	A	Samsung
Mr. Avraham Shimor	P	SanDisk Corporation
Mr. Gerald Houlder	P	Seagate Technology
Mr. Stephen Finch	P	STMicroelectronics, Inc.
Mr. Erich Oetting	P	Sun Microsystems, Inc.
Mr. Jim Scott	P	Vitesse Semiconductor
Mr. Mark Evans	A	Western Digital
Mr. Curtis Stevens	P	Western Digital
Mr. Rich Ramos	P	Xyratex

44 People Present

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

## 4. SCSI Architecture Model Topics

### 4.1 SAM-4: Comments from Adam Richter (07-105) [Penokie]

George Penokie presented a series of corrections to SAM-4 based on comments received from Adam Richter (07-105r1). The group requested several editorial changes and helped prepare responses to some of the comments. George agreed to prepare a new revision.

The group agreed that correcting the Task Set Management Examples subclause would be handled in a separate proposal and George would remove it from 07-105.

George Penokie moved that 07-105r2 (r1 as revised) be recommended for inclusion in SAM-4. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **4.2 SAM-4 Response Fence for protocol services (06-341) [Elliott]**

Rob Elliott requested that discussion of his proposal to reflect transport layer ordering of commands and task management functions in SAM-4 (06-341r1) be deferred to the next meeting.

#### **4.3 SAM-4 SAS-2 FCP-4 QUERY TASK SET task management function (07-066) [Elliott]**

Rob Elliott presented a proposal to define a task management function to detect whether any tasks from the sending initiator are in the task set (07-066r0). The group requested a few wording changes and Rob agreed to prepare a new revision of the proposal.

The group requested that the discussion of FCP-4 changes be removed from the proposal and Rob agreed to make the change in r1.

Rob Elliott moved that 07-066r1 (r0 as revised) be recommended for inclusion in SAM-4 and SAS-2. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **4.4 SAM-4 SAS-2 FCP-4 QUERY UNIT ATTENTION task management function (07-067) [Elliott]**

Rob Elliott presented a proposal to add a task management function to return pending Unit Attention information without clearing the Unit Attention conditions (06-067r0). The group requested several changes and Rob agreed to prepare a new revision of the proposal.

The group requested that the discussion of FCP-4 changes be removed from the proposal and Rob agreed to make the change in r1.

Rob Elliott moved that 07-067r1 (r0 as revised) be recommended for inclusion in SAM-4 and SAS-2. Mark Evans seconded the motion. The motion passed 11:0:11.

#### **4.5 SAM-4: Task Tag Length and FCP (07-139) [Peterson]**

Dave Peterson presented a proposal to remove the task tag size statements in SAM-4 (07-139r0). The group discussed adding a task tag length informative annex as a replacement for the lost information and Dave agreed to revise the proposal to add a table in Annex A.

Dave Peterson moved that 07-139r1 (r0 as revised) be recommended for inclusion in SAM-4. Erich Oetting seconded the motion. The motion passed 7:4:9.

Note: The two-week rule was invoked at the T10 meeting and this item was remanded back to the CAP working group for further discussion.

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

#### **5.1 SCSI Primary Commands Proposals**

##### **5.1.1 SPC-4: ASC/ASCQ Reservations for ATA REQUEST SENSE (07-081) [Overby]**

Mark Overby presented a proposal to define a range of additional sense codes for use by T13 (07-081r1). The group instructed Mark to request specific additional sense codes and to not limit their use to ATA. Mark agreed to prepare a new revision of the proposal for consideration at the next meeting.

##### **5.1.2 SPC-4 Error History proposal (06-362) [Houlder]**

Gerry Houlder presented a proposal to define a method for retrieving error history information (06-362r4). The group raised several concerns (most notably concerns regarding rewrites of the Read Buffer Descriptor mode

usage). Due to the lack of time for sufficient discussion at this meeting, Rob agreed to prepare a new revision for consideration at a teleconference later scheduled for March 27, 2007.

### **5.1.3 SPC-4 Persistent reservations self-preempting clarification (07-080) [Elliott]**

Rob Elliott presented a proposal to correctly define unit attention usage behavior when a Registrants Only reservation type is changed by the reservation holder (07-080r1). The group requested minor wording changes and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-080r2 (r1 as revised) be recommended for inclusion in SPC-4. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.1.4 SPC-4: Duplicate persistent reservation wording removal (07-111) [Penokie]**

George Penokie presented a proposal to remove duplicate wording that describes actions taken when reservations are released or preempted (07-111r0). The group requested minor changes and George agreed to prepare a new revision.

Rob Elliott moved that 07-111r1 (r0 as revised) be recommended for inclusion in SPC-4. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.1.5 Stop fruitless attempts to shackle users via the IALUAE Control Ext. Mode bit (07-077) [Weber]**

Ralph Weber presented a proposal to remove mode page control over secondary asymmetric target port mode state changes (07-077r0). He noted that secondary asymmetric target port mode state changes result from things that are outside the target's control such as power failures on target port hardware.

Ralph Weber moved that 07-077r0 be recommended for inclusion in SPC-4. Mark Evans seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.1.6 SPC-4: Encapsulated SCSI Commands (07-029) [Weber]**

Ralph Weber presented a proposal to define a mechanism for encapsulating one SCSI CDB in another (07-029r0). Concerns were raised regarding the recursive use of the encapsulation mechanism, the need for placing some encapsulation parameters at the end of the encapsulation CDB, and several other problems. Ralph agreed to prepare a new revision of the proposal for consideration at the next meeting.

## **5.2 SCSI Block Commands Proposals**

### **5.2.1 SBC-3: Update Block Limits VPD Page for ORWRITE (07-110) [Cummings]**

On behalf of the absent Roger Cummings, Rob Elliott presented a proposal to correct two Transfer Length related field definitions in the Block Limits VPD page (07-110r0).

Rob Elliott moved that 07-110r0 be recommended for inclusion in SBC-3. Kevin Marks seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.2.2 SBC-3 Maximum transfer sizes for XPWRITE XDWRITE XDREAD PRE-FETCH (07-113) [Elliott and Houlder]**

Rob Elliott presented a proposal to update information returned by the XOR Control and Block Limits mode pages as it relates to the XPWRITE XDWRITE XDREAD and PRE-FETCH commands (07-113r0).

Rob Elliott moved that 07-113r0 be recommended for inclusion in SBC-3. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

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

#### **5.3.1 SAS-2 SES-2 Enclosure Connector Information (07-087) [Besmer]**

Rob Elliott reported that the SAS Protocol working group (minutes in 07-114) recommended 07-087r1 for inclusion in SAS-2 and SES-2.

#### **5.3.2 SES-2 Additional Element Status Bay Number for Fibre Channel (07-092) [Elliott]**

Rob Elliott presented a proposal to add the bay number field already approved for the SAS element to the Fibre Channel element (07-092r0).

Rob Elliott moved that 07-092r0 be recommended for inclusion in SES-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.3.3 SES-2 Cooling element Requested Speed Code of zero (07-095) [Elliott]**

Rob Elliott presented a proposal to correct the definition of the Requested Speed code value of zero so that it means do not change the fan speed (07-095r0).

Rob Elliott moved that 07-095r0 be recommended for inclusion in SES-2. Mark Overby seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.3.4 SES-2 Add failure indicator support to most elements (07-097) [Elliott]**

Rob Elliott presented a proposal to add failure controls to all elements where it makes sense (07-097r0). The group requested the correction of a cut and paste error in the proposal. The group also requested that the definitions be modified to prevent initiator actions from clearing fault LEDs, if any, activated by the hardware. Rob agreed to prepare a new revision.

Rob Elliott moved that 07-097r1 (r0 as revised) be recommended for inclusion in SES-2. Bob Nixon seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.3.5 SES-2 Remove IDENT bit from nonsensical elements (07-104) [Elliott]**

Rob Elliott presented a proposal to remove the Ident bit from the Language element and the Simple Subenclosure element and change them back to reserved (07-104r0). The group requested that the two bits be kept. Rob modified the proposal to leave the bits defined and provide them with some useful meaning.

Rob Elliott moved that 07-104r1 (r0 as revised) be recommended for inclusion in SES-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **5.3.6 SES-2 Overall element handling (07-096) [Elliott]**

Rob Elliott presented a proposal to allow overall element status to be reported when individual status information is not available by removing the Mandatory/Optional column for the individual status bits in a table (07-096r0). The group requested several changes including elimination of attempts to prioritize reports handling and Rob agreed to prepare a new revision.

Rob Elliott moved that 07-096r1 (r0 as revised) be recommended for inclusion in SES-2. Gerry Houlder seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.3.7 SES-2 Additional Element Status for Enclosure Services Controller Electronics (07-098) [Elliott]**

Rob Elliott presented a proposal to modify Enclosure Service Electronics elements to better support SAS Expander devices (07-098r0).

Rob Elliott moved that 07-098r0 be recommended for inclusion in SES-2. Kevin Marks seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.3.8 SES-2 Enclosure element Power Cycle request (07-118) [Elliott]**

Rob Elliott presented a proposal to define a mechanism by which an enclosure could be instructed to power off at a specified time in the future, wait for a specified interval, and power on (07-118r0). The group rebelled at the complexity of the proposal. Rob accepted several suggestions for simplifying the proposal and promised a new revision for consideration at the next meeting.

## **5.4 Other Proposals**

No other proposals were presented to the group.

## **6. SCSI Protocol Topics**

No SCSI Protocol topics were presented to the group.

## **7. Security**

### **7.1 SPC-4: Editorial change: IEEE P1667 to IEEE 1667 (07-056) [Shimor]**

George Penokie presented a proposal to change P1667 to 1667 based on the IEEE publication of the referenced standard (07-056r0).

Kevin Butt moved that 07-056r0 be recommended for inclusion in SPC-4. Erich Oetting seconded the motion. In the absence of objections, the motion passed unanimously.

### **7.2 SPC-4 Digital Signing of Microcode (07-100) [Banther]**

Michael Banther presented a proposal to provide for returning a Check Condition status with appropriate sense data when a microcode digital signature cannot be validated (07-100r0).

Bob Snively moved that 07-100r0 be recommended for inclusion in SPC-4. Michael Banther seconded the motion. In the absence of objections, the motion passed unanimously.

### **7.3 Security Association Model for SPC-4 (06-369) [Weber]**

Ralph Weber presented a proposal to add a Security Association model to SPC-4 (06-369r7). The group identified several errors in the proposal and Ralph agreed to prepare a new revision.

Ralph Weber moved that 06-369r8 (r7 as revised) be recommended for inclusion in SPC-4. Matt Ball seconded the motion. In the absence of any objections, the motion passed unanimously.

### **7.4 SPC-4: Establishing a Security Association using IKEv2 (06-449) [Ball & Black]**

David Black and Matt Ball presented a proposal to define an IKEv2-based method for establishing a Security Association (06-449r2). The group provided substantial input on several editor's notes (e.g., it was agreed to keep support for AUTH NONE in the proposal). Matt Ball and David Black agreed to prepare a new revision for consideration at the next meeting.

## 7.5 Capability based Command Security (07-069) [Penokie]

George Penokie and Sivan Tal presented a proposal to secure SCSI commands with a capability-based encapsulation modelled on the OSD security mechanism (07-069r2). The group requested numerous changes and George agreed to prepare a new revision for consideration at the next meeting.

## 8. Old Business

There was no old business.

## 9. New Business

There was no old business.

## 10. Review of Working Drafts

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

## 11. 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:

07-105r2 (Comments from Adam Richter) [Penokie]

07-139r1 (Task Tag Length and FCP) [Peterson]

For inclusion in SAM-4 and SAS-2:

07-066r1 (QUERY TASK SET task management function) [Elliott]

07-067r1 (QUERY UNIT ATTENTION task management function) [Elliott]

For inclusion in SPC-4:

07-056r0 (Editorial change: IEEE P1667 to IEEE 1667) [Shimor]

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

06-369r8 (Security Association Model for SPC-4) [Weber]

07-080r2 (Persistent reservations self-preempting clarification) [Elliott]

07-111r1 (Duplicate persistent reservation wording removal) [Penokie]

07-077r0 (Stop fruitless attempts to shackle users via the IALUAE Control Ext. Mode bit) [Weber]

For inclusion in SBC-3:

07-110r0 (Update Block Limits VPD Page for ORWRITE) [Cummings]

07-113r0 (Maximum transfer sizes for XPWRITE XDWRITE XDREAD PRE-FETCH) [Elliott and Houlder]

For inclusion in SES-2:

07-092r0 (Additional Element Status Bay Number for Fibre Channel) [Elliott]

07-095r0 (Cooling element Requested Speed Code of zero) [Elliott]

07-097r1 (Add failure indicator support to most elements) [Elliott]

07-104r1 (Clarify IDENT bit for unusual elements) [Elliott]

07-096r1 (Overall element handling) [Elliott]

07-098r0 (Additional Element Status for Enclosure Services Controller Electronics) [Elliott]



## **12. Meeting Schedule**

A CAP-lite meeting to discuss security topics will be held Tuesday, April 17, 2007 in Houston, TX hosted by Hewlett-Packard and Amphenol at a TBD location.

The next full meeting of the SCSI Commands, Architecture, and Protocols Working Group will be Wednesday, May 9, 2007 from 9 a.m. until 7 p.m. and resuming Thursday, May 10, 2007 from 9 a.m. until noon. The meeting will be in Bellevue, WA at the Hyatt Regency Hotel (425-462-1234) hosted by Microsoft Corp.

## **13. Adjournment**

The meeting was adjourned at 12:25 p.m. on Thursday March 10, 2007.