

Accredited Standards Committee\*  
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Date: November 8, 2001

Reply to: John Lohmeyer

To: T10 Membership  
From: Ralph Weber and John Lohmeyer  
Subject: SCSI Commands, Architecture, & Protocol Working Group Meeting -- November 7, 2001  
Seaside, CA

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SCSI Architecture Model Topics
  - 4.1 Names, Addresses, Identifiers, Oh my! (01-084) [Penokie]
  - 4.2 Replacing Task Identifiers in SAM-2 (01-196) [Weber]
  - 4.3 It's the I\_T Nexus, Stupid (01-093) [Weber]
  - 4.4 SCSI MIB (01-163) [Krueger/Penokie]
  - 4.5 Liaison report on SCSI MIB activities [Cummings]
  - 4.6 SAM-2 Issues from Editors' Meeting [Weber]
  - 4.7 Unit attention issue (00-359 and 01-299) [Gardner/Weber]
  - 4.8 SAM-2 Data Transfer Ordering Requirements (01-309) [Gardner]
  - 4.9 SAM-2 SPC-3 Eliminate SCSI-2 references and describe CA (01-318) [Elliott]
  - 4.10 Progress Indication with REQUEST SENSE (01-316) [Entzel]
5. Command Set Topics
  - 5.1 SCSI Device Memory Export Protocol (00-312) [Barry]
  - 5.2 SAN Management & Mode Pages (01-046) [Cummings]
  - 5.3 REPORT ADDRESSABLE TARGETS well-known LUN Function [Terrell]
  - 5.4 SPC-3 letting persistent reservations ignore target ports (01-099) [Elliott]
  - 5.5 SPC-3 letting persistent reservations ignore initiator ports (01-100) [Elliott]
  - 5.6 SPC-3 Request Sense Information field for long LBAs (01-199) [Elliott]
  - 5.7 Access Controls for SPC-3 (the rewrite) (01-268) [Weber/Hafner]
  - 5.8 Interlocking BUSY, RESERVATION CONFLICT and TASK SET FULL (01-267) [Satran/Hafner]
  - 5.9 SBC-2 Long LBA PMI support for READ CAPACITY (01-246) [Elliott]
  - 5.10 Report Supported Operation Codes Command (01-253) [Penokie]
  - 5.11 Proposal for an additional Persistent Reservations Type in SPC-3 (01-204) [Cummings]
  - 5.12 Proposed change to UA requirement on SET DEVICE IDENTIFIER command (01-305) [Paul Entzel]
  - 5.13 SMC-2 INITIALIZE ELEMENT STATUS WITH RANGE command (01-308) [Elliott]
6. SCSI Protocol Topics
  - 6.1 SRP Initiator Inactivity Timeout (01-038) [Simpson]
7. Old Business
8. New Business
9. Review of Documents
  - 9.1 SBC-2 Review [Elliott]
10. Review of Recommendations to the Plenary
11. Meeting Schedule
12. Adjournment

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**NCITS Secretariat, Information Technology Industry Council (ITI)**  
1250 Eye Street NW, Suite 200, Washington, DC 20005-3922  
Email: ncits@itic.org Telephone: 202-737-8888 FAX: 202-638-4922

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 9:00 a.m., Wednesday November 7, 2001. He thanked Ron Roberts and Sondra Heiser of Adaptec for hosting the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated.

### 2. Approval of Agenda

The draft agenda was approved with the following changes:

- 4.9 SAM-2 SPC-3 Eliminate SCSI-2 references and describe CA (01-318) [Elliott]
- 4.10 Progress Indication with REQUEST SENSE (01-316) [Entzel]

The following agenda items were added/revised during the course of the meeting:

none

### 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	Electronic Mail Address
Mr. Ron Roberts	P	Adaptec, Inc.	Ron_Roberts@adaptec.com
Dr. Claudio DeSanti	P	Andiamo Systems, Inc.	cds@andiamo.com
Mr. Robert Snively	P	Brocade Comm. Systems, Inc.	rsnively@brocade.com
Mr. Kha-Sin Teow	V	Brocade Communications	khasin@brocade.com
Mr. David Peterson	P	Cisco Systems, Inc.	dap@cisco.com
Mr. Robert C. Elliott	P	Compaq Computer Corp.	Robert.Elliott@compaq.com
Mr. Robert Griswold	P	Crossroads Systems, Inc.	rgriswold@crossroads.com
Mr. James A. Lott, Jr.	A	Dallas Semiconductor	jim.lott@dalsemi.com
Mr. Robert H. Nixon	P	Emulex	bob.nixon@emulex.com
Mr. Ralph O. Weber	P	ENDL Texas	roweber@acm.org
Mr. Gene Whetstone	V	Foxconn	gene.whetstone@foxconn.com
Mr. Eugene Lew	P	Fujitsu	elew@fcpa.fujitsu.com
Mr. Nathan Hastad	P	General Dynamics	nathan.j.hastad@gd-is.com
Mr. Randy Haagens	P	Hewlett Packard Co.	randy_haagens@hp.com
Ms. Marjorie Krueger	AV	Hewlett Packard Co.	marjorie_krueger@hp.com
Mr. George O. Penokie	P	IBM / Tivoli Systems	gop@us.ibm.com
Mr. Kevin Butt	AV	IBM Corp.	kdbutt@us.ibm.com
Dr. Jim Hafner	V	IBM Corp.	hafner@almaden.ibm.com
Mr. Cris Simpson	P	Intel Corp.	cris.simpson@intel.com
Mr. John Lohmeyer	P	LSI Logic Corp.	lohmeier@t10.org
Mr. Edward A. Gardner	P	Ophidian Designs	eag@ophidian.com
Mr. Charles Binford	P	Pirus Networks	charles.binford@pirus.com

Mr. Paul Entzel	P	Quantum Corp.	paul.entzel@quantum.com
Mr. Larry Lamers	V	San Valley	ljlammers@ieee.org
Mr. Gerald Houlder	P	Seagate Technology	gerry_houlder@seagate.com
Mr. Erich Oetting	P	Storage Technology Corp.	erich_oetting@stortek.com
Mr. Kenneth Moe	P	Sun Microsystems, Inc.	kenneth.moe@sun.com
Mr. Vit Novak	A	Sun Microsystems, Inc.	vit.novak@sun.com
Mr. Paul D. Aloisi	P	Texas Instruments	Paul_Aloisi@ti.com
Mr. Donald R. Getty	A	Texas Instruments	donald_getty@ti.com
Mr. Ron Mathews	AV	UNISYS Corporation	ronald.mathews@unisys.com
Mr. Roger Cummings	P	Veritas Software	roger.cummings@veritas.com
Mr. Bob Schatz	V	Veritas Software	bschatz@veritas.com

33 People Present

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

## 4. SCSI Architecture Model Topics

### 4.1 Names, Addresses, Identifiers, Oh my! (01-084) [Penokie]

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

### 4.2 Replacing Task Identifiers in SAM-2 (01-196) [Weber]

Ralph Weber presented a collection of SAM-2 wording changes whose effect would be the removal of the task identifier object from SAM-2. The task identifier object would be replaced with the nexus object. Ralph Weber moved that 01-196r1 be recommended for inclusion in SAM-2. Ed Gardner seconded the motion. The motion passed on a vote of 25:0:0.

### 4.3 It's the I\_T Nexus, Stupid (01-093) [Weber]

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

### 4.4 SCSI MIB (01-163) [Krueger/Penokie]

George Penokie asked that this item be deferred to the next meeting.

### 4.5 Liaison report on SCSI MIB activities [Cummings]

Roger Cummings reviewed the activities of the SCSI MIB group (01-333r0), noting that participants in the activity include leader Yaron Lederman (Siliquent), editor Michele Hallak-Stamler (SANRAD), MIB advisor Keith McCloghrie (Cisco), iSCSI advisors Mark Bakke (Cisco), Marjorie Krueger (HP), SCSI advisor George Penokie, (Tivoli), participants Ron Roberts (Adaptec), Satish Mali (Stonefly Networks), Kha-Sin Teow (Brocade), Sajay Selvaraj (Hcl Technologies), and Roger.

The group discussed the UML (Universal Modeling Language) representation of the SCSI architecture (01-334r0).

Roger agreed to report the content of this discussion to the MIB group and agreed to bring a new presentation to the next meeting. The possibility of holding a MIB-specific meeting during the January T10 week was also discussed.

Chair's note: The MIB study group was scheduled for Monday morning.

#### **4.6 SAM-2 Issues from Editors' Meeting [Weber]**

George Penokie presented a question unearthed during the MIB work, "Why is more than initiator device name allowed?" Jim Hafner noted that a SCSI device might be capable of working in multiple protocols. Since several protocols have different name formats, the SCSI device would end up with one name for each protocol.

It was agreed to add a limitation of one initiator device name per protocol, likewise for target device names.

In a related issue the initiator and target device names in a SCSI target/initiator device will be combined to form a single name, subject to the one per protocol rule as well.

George also asked if the target/initiator device initiator port name and target port name can be combined in a single name. Jim Hafner responded by noting that both iSCSI and SRP have different name definitions for initiator and target ports, resulting in the need for separate, different names in the architecture model.

Since the SAM-2 editors' meetings have completed their work, this item will be removed from future agendas.

#### **4.7 Unit attention issue (00-359 and 01-299) [Gardner/Weber]**

Ralph Weber reported that his comments in 01-299r1 have been addressed in the recent revisions of 01-359.

Ed Gardner presented the latest revision of the interlocked unit attention proposal (00-359r7). The group requested changes in the text. Ed Gardner moved that 00-359r8 (r7 as modified) be recommended for inclusion in SAM-2 and SPC-3. Rob Elliott seconded the motion. In the absence of any objections, the motion was approved unanimously.

#### **4.8 SAM-2 Data Transfer Ordering Requirements (01-309) [Gardner]**

Ed Gardner presented a proposal to clarify data transfer ordering requirements in SAM-2. Several of the changes Ed proposed were viewed as requests that previously agreed wording be properly installed in SAM-2 and the SAM-2 editor agreed to make suitable changes in the next SAM-2 revision. Ed also noted a misuse of 'current task' when 'enabled task' should be used in SPC-3 and the editor agreed to correct those problems too.

Ed stated that a revised proposal will be prepared for the next meeting to address those issues that were not resolved at this meeting.

#### **4.9 SAM-2 SPC-3 Eliminate SCSI-2 references and describe CA (01-318) [Elliott]**

Rob Elliott presented a proposal to eliminate references to SCSI-2 in SAM-2 and SPC-3 (01-318r0). The group requested numerous changes during a page by page review of the proposal and Rob agreed to prepare a new revision.

Rob Elliott moved that 01-318r1 (r0 as revised) be approved for inclusion in SAM-2 and SPC-3. George Penokie seconded the motion. The motion passed on a vote of 18:0:3.

#### **4.10 Progress Indication with REQUEST SENSE (01-316) [Entzel]**

Paul Entzel presented a question about the use of the IMMED (Immediate) bit and REQUEST SENSE progress in tape commands (from 01-316r0). The issue was whether reporting progress would be allowed for other initiators and for other queued tasks while a FORMAT, ERASE or similar command is in progress. The answer was yes.

Later in the meeting Paul requested the addition of a few new ASCQ definitions under ASC 00h as proposed in 01-316r1. Paul Entzel moved that the ASCQ definitions in 01-316r1 be recommended for SPC-3. Dave Peterson seconded the motion. In the absence of any objections, the motion passed unanimously.

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

#### **5.1 SCSI Device Memory Export Protocol (00-312) [Barry]**

In the absence of Andrew Barry, discussion of this topic was deferred to the next meeting.

#### **5.2 SAN Management & Mode Pages (01-046) [Cummings]**

Roger Cummings said that a project proposal has been generated but he felt that further action needs to be deferred until the MIB structure gets better focused.

#### **5.3 REPORT ADDRESSABLE TARGETS well-known LUN Function [Terrell]**

In the absence of Bill Terrell, discussion of this topic was deferred to the next meeting.

#### **5.4 SPC-3 letting persistent reservations ignore target ports (01-099) [Elliott]**

Rob Elliott presented a proposal to allow persistent reservations to be processed across the multiple target ports on a device (01-099r4). Concerns were raised about breaking the I\_T\_L nexus model and a recommendation was made that the proposal be revised to have one Register service action perform multiple registrations. Rob agreed to consider the recommendation and bring a revised proposal to the next meeting.

#### **5.5 SPC-3 letting persistent reservations ignore initiator ports (01-100) [Elliott]**

Rob Elliott presented a proposal to allow multiple initiator ports to register with a single persistent reservation command (01-100r2). It was observed that this proposal still requires one command per initiator port and questions were raised about the relative benefits. Alternatives such as defining an Immediate bit for registrations were suggested.

Rob stated that he would review the recommendations from the group and consider whether or not to return with a revised proposal at the next meeting.

#### **5.6 SPC-3 Request Sense Information field for long LBAs (01-199) [Elliott]**

Rob Elliott presented 01-199r1, a proposal to cleanup several problems in the format of the REQUEST SENSE data. The group expressed a preference for a substantially restructured sense data format, in the vein of "break it one last time now and fix it so that it will never have to break again". The most significant problem was finding a way for the initiator to tell the target that it can accept the new format and resolution of that issue was left open with a slight preference for a Control mode page bit.

Rob agreed to develop a revised proposal for consideration at the next meeting.

### **5.7 Access Controls for SPC-3 (the rewrite) (01-268) [Weber/Hafner]**

Ralph Weber presented the Access Controls rewrite based on recommendations from the September working group (01-268r2). He noted that the rewrite now focuses on defining the access controls coordinator as a well-known logical unit. Several corrections requested by Jim Hafner were reviewed. In the last few pages of the proposal, Ralph showed the additional changes needed to allow the access controls coordinator to be addressed via LUN 0.

Ralph expressed a preference for not including access via LUN 0 in the final proposal but Rob Elliott was concerned for the early implementers that were already using LUN 0. The group reluctantly agreed that LUN 0 access should be allowed.

Ralph Weber moved that 01-268r3 (r2 as modified) be recommended for inclusion in SPC-3. Rob Elliott seconded the motion. The motion passed on a vote of 5:0:6.

### **5.8 Interlocking BUSY, RESERVATION CONFLICT and TASK SET FULL (01-267) [Satran/Hafner]**

Jim Hafner presented 01-267r1, a proposal to interlock BUSY, RESERVATION CONFLICT, and TASK SET FULL status by allowing the initiator to instruct the target to generate a unit attention condition when any such status is returned. The intent is that application of the unit attention interlock (see item 4.7) to such unit attention conditions will produce the desired interlock effect. Concerns were raised about how it is guaranteed that both capabilities are enabled and Jim demonstrated the requirements that produce that effect.

The group discussed an aspect of the proposal that would allow commands that are not blocked by a reservation conflict to escape the unit attention. The complexity introduced by this capability caused substantial confusion. Randy Haggens was asked if iSCSI needed the complex feature and when he answered no it was agreed that the proposal should be simplified to affect all 'in transit' commands, leaving the initiator to sort everything out.

Jim agreed to revise the proposal. Charles Monia moved that 01-267r2 (r1 as modified) be recommended for inclusion in SAM-2 and SPC-3. Dave Peterson seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.9 SBC-2 Long LBA PMI support for READ CAPACITY (01-246) [Elliott]**

Due to the late hour, discussion of this topic was deferred to the next meeting.

### **5.10 Report Supported Operation Codes Command (01-253) [Penokie]**

Due to the late hour, discussion of this topic was deferred to the next meeting.

### **5.11 Proposal for an additional Persistent Reservations Type in SPC-3 (01-204) [Cummings]**

Roger Cummings presented a proposal for new types of persistent reservations with the property that such reservations are 'owned' by all registered initiators (01-204r1). Concerns were raised about the lack of specifics, including details of the information reported by a READ RESERVATION service action. It was suggested that the owner reservation key be set to zero for the proposed new reservation types.

Roger agreed to consider the advice offered by the group and provide a revised proposal for the next meeting.

### **5.12 Proposed change to UA requirement on SET DEVICE IDENTIFIER command (01-305) [Paul Entzel]**

Paul Entzel presented a proposal that would correct a defect in the definition of the SET DEVICE IDENTIFIER command. The problem was that the definition as written required establishing a 'parameters have changed' unit attention even when the command did not change the device identifier. Paul Entzel moved that 01-305r0 be recom-

mended for inclusion in SPC-3. Rob Elliott seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.13 SMC-2 INITIALIZE ELEMENT STATUS WITH RANGE command (01-308) [Elliott]**

Due to the late hour, discussion of this topic was deferred to the next meeting.

## **6. SCSI Protocol Topics**

### **6.1 SRP Initiator Inactivity Timeout (01-038) [Simpson]**

Cris Simpson requested that this item be removed from this and future agendas.

## **7. Old Business**

All old business was handled on the topic scheduled agenda.

## **8. New Business**

No new business was brought before this meeting.

## **9. Review of Documents**

### **9.1 SBC-2 Review [Elliott]**

Noting that no changes have been made in SBC-2 recently, Rob Elliott asked discussion of this topic be deferred to the next meeting.

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

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

- Replacing Task Identifiers in SAM-2 (01-196r1) [Weber] 25:0:0
- Interlocked unit attention in SAM-2 and SPC-3 (00-359r8) [Gardner]
- Eliminate SCSI-2 references and describe CA in SAM-2 and SPC-3 (01-318r1) [Elliott]
- Interlocking BUSY, RESERVATION CONFLICT and TASK SET FULL in SAM-2 and SPC-3 (01-267r2)  
[Satran/Hafner]
- New ASCQ definitions for progress indication (01-316r1) [Entzel]
- Access Controls for SPC-3 (the rewrite) (01-268r3) [Weber/ Hafner]
- Proposed change to UA requirement on SET DEVICE IDENTIFIER command (01-305r0) [Entzel]

## **11. Meeting Schedule**

The next meeting of the SCSI Commands, Architecture, and Protocols Working Group will be Wednesday, January 16, 2002 from 8 a.m. to 7 p.m. (or until all agenda items are completed). The meeting will be at the Houston Marriott North at Greenspoint (281-875-4000) in Houston, TX, hosted by Compaq.

## **12. Adjournment**

The meeting was adjourned at 8:10 p.m. on Wednesday November 7, 2001.