Accredited Standards Committee*
National Committee for Information Technology Standards (NCITS)

Doc. No.: T10/00-307r0

Date: September 20, 2000
Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SCSI Commands, Architecture, & Protocol Working Group Meeting -- September 11&13, 2000
Huntington Beach, CA

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SCSI Architecture Model Topics
    4.1 SAM-2 Review [Weber]
    4.2 ASCQ references in section 5.4 (00-340) [Elliott]
    4.3 Multi-Port Model Discussion (00-268) [Penokie]
    4.4 Task Aborted - SAM changes (00-229) [Binford]
    4.5 SAM-2 Task Identifier Readability Enhancements and Addition of Nexus to SAM-2 (00-140) [Weber]
    4.6 Long SCSI Device IDs (00-279) [Gardner]
    4.7 Bidirectional data transfers in SAM-2 (00-309) [Penokie]
    4.8 Command Reference Number in SAM-2 [Peterson]
5. SCSI Protocol Topics
    5.1 FCP-2 Letter Ballot Comments Resolution (00-150) [Snively]
    5.2 SVP Review [Gardner]
    5.3 Margin Control (99-264) [Lamers]
    5.4 SCSI Device Memory Export Protocol (00-312) [Wayda]
    5.5 PRLI Clearing on mode pages (00-342) [Coomes]
    5.6 MPIO Discovery Procedures (T11/00-232v0) [Peterson]
    5.7 FC-FS Changes required in support of FCP-2 (00-230) [Snively]
    5.8 IETF Liaison [Black]
6. Command Set Topics
    6.1 Asymmetrical SCSI Behavior (00-232) [Moe]
    6.2 SBC-2 issues (00-248) [Elliott]
    6.3 Transport ID for Access Controls (00-287) [Hafner]
    6.4 SBC-2 Review [Milligan]
    6.5 What are rules for "ordinary" reservations? (reflector messages) [Houlder]
    6.6 Version Descriptor for SES AM#1 [Elliott]
    6.7 Bidirectional XDWRITEREAD command for SBC-2 (00-315) [Elliott]
    6.8 Identifying a 3rd Party Copy device/LUN (00-344) [Peterson]
    6.9 New Tape Drive Model [Basham/Peterson]
    6.10 SPC-2 Letter Ballot Comments Resolution (00-267) [Weber]
    6.11 SCSI Device Memory Export Protocol (00-312) [Wayda]
    6.12 Mandating Large LBA in SBC-2 (00-356) [Gardner]
    6.13 Identifying Devices (00-357) [Gardner]
    6.14 Unit attention issue (00-359) [Gardner]
    6.15 SSS status report (00-358) [Parker]

7. New Business
    7.1 Standard Is A Functional Description (00-333) [Milligan]
8. Meeting Schedule
9. Adjournment

Results of Meeting

1. Opening Remarks

George Penokie, the T10 Vice-Chair, called the meeting to order at 9:05 p.m., Monday, September 11, 2000. He thanked Skip Jones of QLogic 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:

    4.8   Command Reference Number in SAM-2 [Peterson]
    5.5   PRLI Clearing on mode pages (00-342) [Coomes]
    5.6   MPIO Discovery Procedures (T11/00-232v0) [Peterson]
    5.7   FC-FS Changes required in support of FCP-2 (00-230) [Snively]
    6.9   New Tape Drive Model [Basham/Peterson]
    6.10   SPC-2 Letter Ballot Comments Resolution (00-267) [Weber]
    6.11   SCSI Device Memory Export Protocol (00-312) [Wayda]

The following agenda items were added during the course of the meeting.

    5.8   IETF Liaison [Black]
    6.12   Mandating Large LBA in SBC-2 (00-356) [Gardner]
    6.13   Identifying Devices (00-357) [Gardner]
    6.14   Unit attention issue (00-359) [Gardner]
    6.15   SSS status report (00-358) [Parker]

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. Lawrence J. Lamers P  Adaptec, Inc.             ljlamers@ieee.org
Mr. Ron Roberts        A  Adaptec, Inc.             Ron_Roberts@adaptec.com
Mr. Vince Bastiani     V  Bass Technology           bass.tech@gte.net
                          Consulting
Mr. Robert Snively     P  Brocade Communications    rsnively@brocade.com
Mr. Robert C. Elliott  P  Compaq Computer Corp.     Rob_Elliott@compuserve.
                                                    com
Mr. Keith W. Parker    V  Diogenes SCSI             diogenes@europa.com
Mr. Jim Wayda          V  Dot Hill Systems Corp.    jim.wayda@dothill.com
```

```
Mr. Gary S. Robinson    P   EMC                        robinson_gary@emc.com
Mr. David Black         A   EMC Corp.                  black_david@emc.com
Mr. Bob Nixon           O   Emulex                     bob.nixon@emulex.com
Mr. Ralph O. Weber      P   ENDL Texas                 roweber@acm.org
Mr. Mike Taylor         P   Exabyte Corp.              miketa@exabyte.com
Mr. Eugene Lew          P   Fujitsu                    elew@fcpa.fujitsu.com
Mr. Robert Basham       O   IBM Corp.                  robbyb@us.ibm.com
Dr. Jim Hafner          V   IBM Corp.                  hafner@almaden.ibm.com
Mr. Pak Seto            V   Interphase Corp.           pseto@iphase.com
Mr. Dennis Moore        P   KnowledgeTek, Inc.         dmoore@ix.netcom.com
Mr. John Lohmeyer       P   LSI Logic Corp.            lohmeyer@t10.org
Mr. Charles Binford     A   LSI Logic Corp.            Charles.Binford@lsil.com
Mr. Charles Monia       P   Nishan Systems             cmonia@nishansystems.com
Mr. Edward A. Gardner   P   Ophidian Designs           eag@ophidian.com
Mr. Mark Evans          P   Quantum Corp.              mark.evans@quantum.com
Mr. Gene Milligan       P   Seagate Technology         Gene_Milligan@notes.
                                                       seagate.com
Mr. Gerald Houlder      A   Seagate Technology         gerry_houlder@notes.
                                                       seagate.com
Mr. Jim Coomes          V   Seagate Technology         jim_coomes@notes.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. Paul D. Aloisi      P   Texas Instruments          Paul_Aloisi@ti.com
Mr. Donald R. Getty     A#  Texas Instruments          donald_getty@ti.com
Ms. Tanya Huynh         O   Thomas & Betts Corp.       tanya_Huynh@
                                                       tycoelectronics.com
Mr. Davin Stockwell     R   Thomas & Betts Corp.       dstockwell@thombetts.com
Mr. George O. Penokie   P   Tivoli Systems             gop@us.ibm.com
Mr. Ron Mathews         O   UNISYS Corporation         ronald.mathews@unisys.com
Mr. Roger Cummings      O   Veritas Software           roger.cummings@veritas.
                                                       com


34 People Present

Status Key:  P    -  Principal
             A,A# -  Alternate
             O    -  Observer
             L    -  Liaison
             V    -  Visitor
```

4. SCSI Architecture Model Topics

4.1 SAM-2 Review [Weber]

Ralph Weber reported that no work has been done on SAM-2 since the last meeting.

4.2 ASCQ references in section 5.4 (00-340) [Elliott]

Rob Elliott presented a list of 3 ASC/ASCQ code descriptions in SAM-2 that are not listed in SPC-2 (00-340r0). The group discussed how best to represent the needed ASC/ASCQs in SAM-2. Rob agreed to bring a revised proposal to the next meeting.

4.3   Multi-Port Model Discussion (00-268) [Penokie]

George Penokie reviewed the current thinking on the SAM-2 multi-port device model (00-268r1) with the group. George accepted several inputs for the next revision of the model. For example, it was agreed that the initiator model should not include a task router.

Noting that the work on 00-268 will replace the current SCSI Multi-port Unit (SMU) text in SAM-2 and that leaving SMU in the SAM-2 draft is causing confusion in the IETF work to define an encapsulation of SCSI on IP, Ralph Weber requested and received unanimous consent to recommend to T10 that the SAM-2 editor be instructed to replace all SAM-2 discussions of SMU with TBD.

4.4   Task Aborted - SAM changes (00-229) [Binford]

Charles Binford reviewed the latest draft of the proposal to add a TASK ABORTED status (00-229r2). Several concerns were raised and Charles noted corrections to the proposal. George Penokie asked if the proposal should include changes for SPI-4 too. Charles Binford moved that 00-229r3 (r2 as modified) be recommended for inclusion in SAM-2, SPC-2, and FCP-2. Gerry Houlder seconded the motion. The motion passed 7:0:3.

4.5   SAM-2 Task Identifier Readability Enhancements and Addition of Nexus to SAM-2 (00-140) [Weber]

Ralph Weber reviewed the latest revision of the proposal. Ralph Weber moved that 00-140r3 be recommended for inclusion in SAM-2. Erich Oetting seconded the motion. In the absence of any objections the motion passed unanimously.

4.6   Long SCSI Device IDs (00-279) [Gardner]

Ed Gardner requested that discussion of this topic be deferred to the next meeting.

4.7   Bidirectional data transfers in SAM-2 (00-309) [Penokie]

George Penokie presented a proposal that SAM-2 be enhanced to allow both DATA IN and DATA OUT transfers during the processing of a single command (00-309r1). Changes were requested and George agreed to produce a new revision. George Penokie moved that 00-309r2 (r1 as modified) be recommended for incorporation in SAM-2. Rob Elliott seconded the motion. The motion passed on a vote of 13:1:0.

4.8   Command Reference Number in SAM-2 [Peterson]

Dave Peterson proposed that the FCP-2 Command Reference Number (CRN) should be defined well enough to inhabit SAM-2 or be removed from FCP-2. The reason for the proposal was that CRN is an end-to-end protocol between the application client and device server. Dave agreed to prepare a written proposal for consideration by the group.

5.   SCSI Protocol Topics

5.1   FCP-2 Letter Ballot Comments Resolution (00-150) [Snively]

Bob Snively reviewed changes that have been "installed" in FCP-2 (00-300r1). Several needed corrections were noted and Bob agreed to take a revised version to the next Joint T10/T11.3 meeting. Bob noted that group completed reviewing all the changes in clauses 4, 12, annex D, and all areas affected by the Dave Baldwin change (see comment 12.12 in 00-300r1).

5.2 SVP Review [Gardner]

Ed Gardner presented SCSI issues related to InfiniBand[(tm)].

The first of these was a request that SVP define a 64-bit tag value (00-354r0). Bob Snively moved that 00-354r0 be recommended for inclusion in SVP. Ed Gardner seconded the motion. The group asked Ed to prepare a proposal to restructure the LUN field location in the SVP IU. In the absence of any objections the motion passed unanimously.

Ed Gardner presented a proposal that would allow SVP initiators and target to limit the type codes being sent and received (00-355r0). Ed Gardner moved that 00-355r0 be recommended for inclusion in SVP. Rob Elliott seconded the motion. In the absence of any objections the motion passed unanimously.

5.3 Margin Control (99-264) [Lamers]

Ron Roberts asked that discussion of this topic be deferred to the next meeting.

5.4 SCSI Device Memory Export Protocol (00-312) [Wayda]

Since this is a command set topic, it was moved to 6.11.

5.5 PRLI Clearing on mode pages (00-342) [Coomes]

Jim Coomes reviewed the issues between FCP-2 process login and proposed that mode pages not change as a result of process login (00-342r0) unless a power on reset or target reset also occurred. Bob Snively stated a preference for making the behavior unspecified. Concerns were raised about readers not knowing what unspecified means and it was agreed that a descriptive note is required.

5.6 MPIO Discovery Procedures (T11/00-232v0) [Peterson]

Dave Peterson presented a proposal adding informative text to FCP-2 describing how an initiator goes about discovering multiple ports to a given logical unit. Questions were raised regarding the usefulness of testing the MultiP (Multi-port) bit in the standard inquiry data. The group agreed that the discovery annex should contain the topology discovery steps (2 and 3 in the proposal) which would be executed regardless of the state of the MultiP bit (step 1 in the proposal).

5.7 FC-FS Changes required in support of FCP-2 (00-230) [Snively]

Bob Snively reviewed the latest changes proposed for the T11 FC-FS (Fibre Channel Framing and Signaling) project (00-230r5). Action on the proposal was deferred to the T11 ad hoc meeting scheduled for Tuesday.

5.8 IETF Liaison [Black]

David Black, co-chair of the IP Storage (IPS) working group at IETF, discussed the projects being under taken by the group, specifically encapsulating SCSI over IP and encapsulating FC-2 over IP. The IPS reflector is ips@ece.cmu.edu, to subscribe send email to ips_request@ece.cmu.edu.

6.   Command Set Topics

6.1 Asymmetrical SCSI Behavior (00-232) [Moe]

Ken Moe asked that discussion of this topic be deferred to the next meeting.

6.2 SBC-2 issues (00-248) [Elliott]

Rob Elliott reviewed the changes in the proposal made in response to issues raised at the last meeting. Rob Elliott moved that item 6 in 00-248r2 be recommended for inclusion in SBC-2. Gene Milligan seconded the motion. In the absence of any objections the motion passed unanimously. Rob noted that the remaining issues in the document are editorial or no longer proposed as changes for SBC-2. Gene Milligan agreed to incorporate the 00-284r2 issues marked as editorial in a future revision of SBC-2.

6.3 Transport ID for Access Controls (00-287) [Hafner]

Jim Hafner reviewed the changes to the Transport ID proposal based on inputs from the last meeting (00-287r1). Jim Hafner moved that 00-287r1 be recommended for inclusion in SPC-3. Rob Elliott seconded the motion. In the absence of any objections the motion passed unanimously.

6.4 SBC-2 Review [Milligan]

Gene Milligan reported that SBC-2 revision 1 has been made available on the web site. He asked the group to discuss the use of large LBA commands in the optical device type. In the absence of any objections the work group unanimously recommended that SBC-2 revision 1 be approved as the committee draft.

6.5 What are rules for "ordinary" reservations? (reflector messages) [Houlder]

Gerry Houlder raised concerns about the behavior of the LOG SENSE command in the presence of a traditional reservation. He noted that the behavior changed from SPC to SPC-2.

6.6 Version Descriptor for SES AM#1 [Elliott]

Ralph Weber agreed to assign a new version descriptor code for the combination of SES and the SES amendment NCITS.305/AM1:2000.

6.7 Bidirectional XDWRITEREAD command for SBC-2 (00-315) [Elliott]

Rob Elliott presented a proposal for a SBC-2 command that is bidirectional (00-315r0). Rob stated the belief that until bidirectional transfers are commonly supported by the protocols, the commands sets need to provide both a bidirectional way and a unidirectional way to perform any given function. There was little opposition to this view.

George Penokie asked that final disposition of the proposal be deferred to the next meeting and Rob agreed.

6.8 Identifying a 3rd Party Copy device/LUN (00-344) [Peterson]

Dave Peterson presented a proposal (00-344r0) to add a standard INQUIRY data bit to indicate that the device contains a copy manager. It was generally accepted at the Monday meeting. Bob Snively moved that 00-344r0 be recommended for inclusion in SPC-2. Erich Oetting seconded the motion. At the request of Gerry Houlder, Ralph Weber stated that the bit he would assign would be byte 5 bit 6. The vote passed 4:1:8.

6.9 New Tape Drive Model [Basham/Peterson]

Rob Basham led a preliminary discussion of a new model for tapes with the property that knowledge of the tape location is more closely coordinated between the application client and device server. The group agreed that development work on the model should be part of the SSC-2 project.

6.10 SPC-2 Letter Ballot Comments Resolution (00-267) [Weber]

Ralph Weber led the group in a review of the comments resolution document for the SPC-2 letter ballot (00-267r1).

On a unanimous vote, the group recommended making the COPY, COMPARE, and COPY AND VERIFY commands obsolete in SPC-2.

On a 7:1 vote the group recommended keeping the Processor Commands in SPC-2.

In the absence of any objections, Ralph was authorized to show specific language in the next 00-267 revision to make VPD pages in general and VPD page 83h (Device Identification) in specific mandatory in SPC-2. It was noted that care must be taken in the language so as to allow reasonable implementations of the VPD page 83h.

Issues concerning the previously agreed change of the SEND DIAGNOSTICS command from mandatory in all command sets to having the requirement defined in each command set were resolved and Ralph was given instructions for the next comments resolution revision.

The ENCRYPTION IDENTIFICATION field in the variable length CDB was changed to reserved because no form of encryption is defined.

Several other issues were discussed and Ralph agreed to prepare a revised 00-267 for the next meeting.

6.11 SCSI Device Memory Export Protocol (00-312) [Wayda]

Jim Wayda presented an overview (00-360r0) of the history and requirements that resulted in the Device Memory Export command set (00-312r0). The group discussed the proposed uses of the Device Memory Export command set and the target resource demands made by the proposal.

6.12 Mandating Large LBA in SBC-2 (00-356) [Gardner]

Ed Gardner presented a proposal that the Large LBA be mandatory in SBC-2 (00-356r0). The group discussed the side effects of the proposal. At the request of the group, Ed agreed to defer consideration of this topic to the next meeting.

6.13 Identifying Devices (00-357) [Gardner]

Ed Gardner presented a proposal that requires support for VPD page 83h and proposed specific techniques for bridges to develop VPD 83h data for bridged devices that don't provide it. It was noted that making VPD page 83h mandatory was already approved as a letter ballot comment response on SPC-2 (see 6.10).

6.14 Unit attention issue (00-359) [Gardner]

Ed Gardner described a loophole in the unit attention situation related to device hot swap.

6.15 SSS status report (00-358) [Parker]

Keith Parker presented the current status of the SSS (SCSI Socket Services) work (00-358r0).

7.   New Business

7.1   Standard Is A Functional Description (00-333) [Milligan]

Gene Milligan moved that 00-333r0 be recommended for incorporation in all future standards produced by T10. Larry Lamers seconded the motion. In the absence of any objections the motion passed unanimously.
.

8.   Meeting Schedule

The next meeting of the SCSI Commands, Architecture, and Protocols Working Group will be Wednesday, November 1, 2000 from 9 a.m. to 7 p.m. (or until all agenda items are completed). The meeting will be at the Embassy Suites on Monterey Bay in Seaside, CA (831) 393-1115, hosted by Adaptec, Inc.

9.   Adjournment

The meeting was adjourned at 8:10 p.m. on Wednesday September 13, 2000.