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Project:

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Reply to: Mr. John Lohmeyer

To: T10 Membership

From: Ralph Weber, T10 Secretary
Larry Lamers, T10 Vice Chair
John Lohmeyer, T10 Chair

Subject: Minutes of SCSI Working Group Meetings
Nashua, NH -- September 9-10, 1997

Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. SPI-2 Working Group Topics
 - 4.1 SPI-2 specifications on interconnect (97-235) [Ham]
 - 4.2 REQ/ACK Glitch Filters (97-215) [Ham]
 - 4.3 Latching and Counting (97-216) [Guss]
 - 4.4 Double ACK [Ham]
 - 4.5 SPI-2 Revision 14 Review [Penokie]
5. EPI {Tuesday Morning}
 - 5.1 EPI Grounding Clauses [Ham/McSorley]
 - 5.2 EPI Review
 - 5.3 SCAM on LUN Bridge secondary bus [Lohmeyer]
6. Joint Meeting with MMC, SBP-2, and SPC-2 groups {Wednesday Morning}
 - 6.1 New Device Type for Devices Attached to SBP-2
 - 6.2 Define Other Commands in Device Type Document
 - 6.3 Help on Isochronous
7. Command Set Topics
 - 7.1 Addressing Model for SAM-2 (97-122r4) [Penokie]
 - 7.2 REPORT LUNs Command Requirement (97-219) [Oetting]
 - 7.3 SAM-2 changes for multi-port devices (97-250) [Monia]
 - 7.4 Persistent Reservations (97-218r2) [Snively]
 - 7.5 Persistent Reservation with Non-Unique Keys (97-246) [Coughlan]
 - 7.6 STS Review [Johansson]
 - 7.7 SCSI Socket/SSL Services (SSS) Review (97-201r0) [Parker]
 - 7.8 QErr Recovery in HAP (97-187) [Monia]
 - 7.9 High-Availability Profile (HAP) [Hagerman]
 - 7.10 Proposal for Contingent Allegiance / ACA (97-225r0) [Milligan] {Tuesday Morning}
 - 7.11 LUN_Z Capabilities Bit in SPC-2 (97-234r0) [Weber]
8. Enclosure Profile Study Group {Wednesday Late Afternoon}

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- 9. SPI-2 Review Revision 14 [Penokie]
- 10. Meeting Schedule
- 11. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 9:00 a.m., Tuesday September 9, 1997. He thanked Paul Aloisi of Unitrode for hosting the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated. Copies of the draft agenda and general information on T10 were made available to those attending.

2. Approval of Agenda

The draft agenda was approved with the following changes:

- 4. SPI-2 Working Group Topics
 - 4.1 SPI-2 specifications on interconnect (97-235) [Ham]
 - 4.2 REQ/ACK Glitch Filters (97-215) [Ham]
 - 4.3 Latching and Counting (97-216) [Guss]
 - 4.4 Double ACK [Ham]
 - 4.5 SPI-2 Revision 14 Review [Penokie]
- 5.3 SCAM on LUN Bridge secondary bus [Lohmeyer]
- 6.1 New Device Type for Devices Attached to SBP-2
- 6.2 Define Other Commands in Device Type Document
- 6.3 Help on Isochronous
- 7. Command Set Topics {new topic heading for 5.1 through 5.10}
- 7.11 LUN_Z Capabilities Bit in SPC-2 (97-234r0) [Weber]

3. Attendance and Membership

John reminded the group that attendance at working group meetings does not count toward minimum attendance requirements for T10 membership. He noted that 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.	ljlammers@ix.netcom.com
Mr. Vincent Bastiani	A#	Adaptec, Inc.	bastiani@corp.adaptec.com
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Mr. Edward Haske	P	CMD Technology	haske@cmd.com
Mr. Bill Galloway	O	Compaq Computer Corp.	Bill.Galloway@compaq.com
Mr. Jeff Wolford	V	Compaq Computer Corp.	jeff.wolford@compaq.com
Mr. Peter Johansson	P	Congruent Software, Inc.	pjohansson@aol.com
Mr. Greg McSorley	P	Data General / Clariion	greg_mcsorley@dgc.ceo.dg.com
Mr. Charles Monia	P	Digital Equipment Corp.	charles.monia@shr.mts.dec.com
Dr. William Ham	A#	Digital Equipment Corp.	ham@subsys.enet.dec.com
Mr. William Dallas	A#	Digital Equipment Corp.	dallas@wasted.enet.dec.com
Mr. Tom Coughlan	V	Digital Equipment Corp.	tom.coughlan@zko.mts.dec.com

Mr. Robert Reisch	P	Eastman Kodak Co.	reisch@kodak.com
Mr. Mark Hammang	A	FCPA Intellistor (Fujitsu)	mhammang@intellistor.com
Mr. Don Vohar	A	Fujitsu (FCPA)	dvohar@fcpa.fujitsu.com
Ms. Martina Kuhlmeier	P	Harting Elektronik Inc.	martinaku@aol.com
Mr. Philip Facendola	O	Helix/Hitemp Cables, Inc.	
Mr. J. R. Sims	P	Hewlett Packard Co.	robsims@hootie.lvld.hp.com
Mr. George Penokie	P	IBM Corp.	gop@us.ibm.com
Mr. Darrell Redford	A	Iomega Corp.	redfordd@iomega.com
Mr. Alan Littlewood	P	LSI Logic Corp.	alanl@lsil.com
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. John Fuller	V	Microsoft Corporation	jfuller@microsoft.com
Mr. Jay Neer	A	Molex Inc.	jneer@molex.com
Mr. Edward A. Gardner	P	Ophidian Designs	eag@ophidian.com
Mr. Randall C. Hines	A	Philips Electronics	hinesr@worldnet.att.net
Mr. William P. McFerrin	P	Philips Key Modules	BMcFerrin@aol.com
Mr. Skip Jones	P	QLogic Corp.	sk_jones@qlc.com
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Mr. Patrick McGarrah	V	Quantum Corp.	pmcgarra@tdh.qntm.com
Mr. Richard Uber	V	Quantum Corp.	duber@tdh.qntm.com
Bruce Leshay	V	Quantum Corp.	bleshay@tdh.qntm.com
Mr. Gene Milligan	P	Seagate Technology	Gene_Milligan@notes. seagate.com
Mr. Gerald Houlder	A	Seagate Technology	Gerry_Houlder@notes. seagate.com
Mr. Michael Bryan	O	Seagate Technology	mike.bryan@notes.seagate. com
Mr. Daniel (Dan) F. Smith	O	Seagate Technology	daniel_f_smith@notes. seagate.com
Mr. Janek Rebaliski	A	Sony Electronics, Inc.	janek_rebaliski@asd.sel. sony.com
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Mr. David Peterson	O	StorageTek Network Sys. Grp	dap@network.com
Mr. John Lohmeyer	P	Symbios Logic Inc.	john.lohmeyer@symbios.com
Mr. Ralph O. Weber	A	Symbios Logic Inc.	roweber@acm.org
Mr. Graeme Weston-Lewis	V	Symbios Logic Inc.	gwl@symbios.com
Mr. Bryce Leach	V	Texas Instruments	b-leach@ti.com
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Mr. Arlan P. Stone	A	UNISYS Corporation	arlan.stone@unisys.com
Mr. Dave Wehrman	O	UNISYS Corporation	dwehrman@unisys.com
Mr. Paul D. Aloisi	P	Unitrode Corporation	alosisi@unitrode.com
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Mr. Jeffrey L. Williams	P	Western Digital	Jeffrey.L.Williams@wdc.com
Mr. Devon Worrell	A	Western Digital Corporation	worrell@dt.wdc.com
Mr. Jonathan L. Hanmann	A#	Western Digital Corporation	jhanmann@dt.wdc.com
Mr. Arnold Limjoco	O	Yamaichi Electronics	arnold.l@yeu.com

55 People Present

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

4. SPI-2 Working Group Topics

4.1 SPI-2 specifications on interconnect (97-235) [Ham]

Bill Ham agreed to draft a proposal for changes in the interconnect clause of SPI-2 for discussion at the November meeting.

4.2 REQ/ACK Glitch Filters (97-215) [Ham]

The group reviewed the wording proposed by Tak Asami and appended to 97-215r0 in 97-215r1. The group agreed to several corrections. George Penokie agreed to insert the corrected text in the next revision of SPI-2.

4.3 Latching and Counting (97-216) [Guss]

The group discussed the status of the Dave Guss and Bill Ham proposal on counting and latching. Concerns were raised that the proposal, as written, is not ready for insertion in a committee standard. Publishing the document as a STA white paper was discussed.

Dan Smith questioned the initiator requirements described in 97-216 and asked how the new capabilities proposed in the document can be tested without host/target cooperation. Bill Ham said that the proposal should not contain new requirements.

Dave Guss agreed to pair down the text in the proposal, issue a new document for review, and come to the November meeting prepared to discuss the revised document.

4.4 Double ACK [Ham]

Bill agreed that this topic should be folded in the previous (latching and counting) topic. The group agreed to drop this item from future agendas.

4.5 SPI-2 Revision 14 Review [Penokie]

The group discussed George's request for an editing meeting for SPI-2 and tentatively agreed to 9 am on 14 October in Colorado Springs.

5. EPI {Tuesday Morning}**5.1 EPI Grounding Clauses [Ham/McSorley]**

Bill Ham stated that the grounding clauses were completely reviewed at the last meeting and this topic should have been deleted from the agenda.

5.2 EPI Review

Bill Ham led the group through the EPI table of contents and then focused on LUN bridges, as the topic for this meeting. The group discussed a list of about twenty requirements that Bill proposed placing on LUN bridges. It was noted that, to some extent, a LUN bridge could be viewed as a degenerate case of a Storage Array (SCC-2) type device.

Bill agreed to provide a revised EPI (revision 11), including the results of this meeting, for the next committee mailing.

5.3 SCAM on LUN Bridge secondary bus [Lohmeyer]

This topic was also included as a sub-topic on Bill Ham's list of requirements for LUN bridges. The key point was that if SCAM protocol is used on a secondary bus of a LUN bridge, then the logical units presented on the primary bus might change following SCAM protocol. It was agreed that in such a case, a UNIT ATTENTION condition should be generated. Several possible ASC/ASCQ codes considered, without complete closure. Candidates were:

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3F 00 TARGET OPERATING CONDITIONS HAVE CHANGED
3F 0E REPORT LUNS DATA HAS CHANGED
6B 00 STATE HAS CHANGED
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6. Joint Meeting with MMC, SBP-2, and SPC-2 groups {Wednesday Morning}

6.1 New Device Type for Devices Attached to SBP-2

Pete McLean presented a unanimous SBP Working Group proposal that a new device type be assigned to devices conforming to SBP-2. The SCSI Working Group expressed favorable disposition to the new device type, except that the type should be named in some manner other than an association with a protocol. Pete agreed to use a name that is not protocol specific. The group attempted to choose a name, but could not reach consensus.

6.2 Define Other Commands in Device Type Document

Peter Johansson described several areas of SPC command definition that SBP-2 participants see as needing changes. The first such topic was the changeable values mode page. After a lengthy discussion, the group agreed that all of the types of mode page (current, changeable, saved, and default) are optional. This answered the second of Peter's questions about mode pages, which was, "can the current and saved values be the same?"

Peter then turned to questions of which SPC mandatory commands can be changed to optional. The group quickly agreed that the Send Diagnostics command be made optional. Making the Request Sense command optional was agreed to, but with some reservations about the exact wording by which the change is to be made. Specifically, the concern was that, in the absence of autosense or some equivalent feature, the Request Sense command is really mandatory. The most contentious issue was making the Inquiry command optional. Representatives of the SBC Working Group agreed to reconsider the position that Inquiry should be made optional.

Pete McLean and George Penokie discussed defining operation codes with different meanings in the command set document being proposed by the SBP Working Group. It was agreed that, as much as possible, identical operation codes should have compatible CDB formats.

6.3 Help on Isochronous

Pete McLean stated that the SBP-2 Working Group believes that work on isochronous support is nearing completion. He asked anyone interested in isochronous support to contact him or other members of the SBP-2 working group. Pete is looking for people to review and comment on the draft isochronous definitions. He noted that, in the absence of any review and comment, the SBP-2 definition of isochronous would ship pretty much as is.

7. Command Set Topics

7.1 Addressing Model for SAM-2 (97-122r4) [Penokie]

George Penokie presented a revised proposal for including key elements of the SCC hierarchical addressing in SAM-2. Very few questions were asked, no issues were presented, and no edits were made to the proposal. The working group recommended 14:1 that 97-122r4 be approved for inclusion in SAM-2 and SPC-2.

7.2 REPORT LUNs Command Requirement (97-219) [Oetting]

Erich Oetting presented a proposal that the Report LUNs command be made mandatory for any device that support more than one LUN. The group agreed that support for the Report LUNs command should be encouraged but not required.

7.3 SAM-2 changes for multi-port devices (97-250) [Monia]

Charles Monia reviewed the history of proposals passed by the committee regarding multi-port devices. He noted several of the proposals are very old. At the end of his presentation, Charles asked several questions about future direction. The group supported switching from two ports to any number of ports. The group agreed that most properties previously agreed as specific to a port should be associated with initiators (as viewed from the

target). The group agreed that specialized port management and status commands should not be defined. The group agreed that persistent reservations are the preferred reservations mechanism for multiple port configurations, and apply to the entire LUN regardless of task set definition.

Charles agreed to prepare a formal proposal based on the discussion of the working group.

7.4 Persistent Reservations (97-218r2) [Snively]

Bob Snively presented a proposal for corrective changes in the persistent reservations (97-218r2). After a brief discussion, the working group unanimously recommended that the plenary approve 97-218r2 for inclusion in SPC-2. Tom Coughlan offered several editorial comments to the SPC-2 technical editor.

Bob Snively presented a proposal for adding a new persistent reservation type, 'exclusive access, registrants only' (97-242r0). Some questions were raised regarding the exact text for the proposed reservation type. But, Bob noted that most of the issues are covered by text already in the standard or in the just approved changes (97-218r2). While the group generally liked the proposal, action was deferred to the November meeting.

7.5 Persistent Reservation with Non-Unique Keys (97-246) [Coughlan]

Tom Coughlan presented a proposal based on his May discussion of non-unique keys in persistent reservations. Bob Snively and others questioned details of the proposal. The working group unanimously recommended that the plenary approve 97-246r1 (97-246r0 as revised by the group) for inclusion in SPC-2.

7.6 STS Review [Johansson]

Peter Johansson reported that STS is now an annex of SBP-2. He requested that the working group members review to the annex. Peter reported that the SBP Working Group will be asking the T10 plenary to revise the 1240-D project proposal (currently STS) to make it SBP-2 Attachment (the definition of the device type discussed in agenda item 6.1 above).

7.7 SCSI Socket/SSL Services (SSS) Review (97-201r0) [Parker]

In the absence of Keith Parker, action on this topic was deferred to the next meeting.

7.8 QErr Recovery in HAP (97-187) [Monia]

Charles Monia requested that discussion of this topic be deferred to the November meeting.

7.9 High-Availability Profile (HAP) [Hagerman]

Doug Hagerman reviewed revision 5 of the High-Availability Profile, received a few comments, and promised a revised draft in time for consideration at the November meeting.

7.10 Proposal for Contingent Allegiance / ACA (97-225r0) [Milligan] {Tuesday Morning}

This topic was covered during the Protocol Study Group meeting (see minutes in 97-239). This topic will be on the SCSI Working Group agenda in the November meeting.

7.11 LUN_Z Capabilities Bit in SPC-2 (97-234r0) [Weber]

Ralph Weber presented a request for an additional Inquiry data bit whose purpose is to indicate that a storage array configuration LUN is embedded in a disk or tape type device. Bill Dallas and Larry Lamers raised concerns that the proposed bit and other similar bits are muddying the device model. However, most of the group agreed that the proposal is valuable. Gerry Houlder asked that the bit be renamed to SCCS. On a vote of 10:1, the group recommended that the plenary approve 97-234r1 (r0 with the SCCS revision) for inclusion in SPC-2.

8. Enclosure Profile Study Group {Wednesday Late Afternoon}

Ralph Weber presented a draft outline for the proposed Enclosure Profile document (97-252r0). The group discussed the outline and suggested several improvements. Ralph agreed to provide a project proposal, revised outline, and perhaps a skeleton document for the next meeting.

9. SPI-2 Review Revision 14 [Penokie]

George Penokie led a review of SPI-2 revision 14 and accepted several comments and corrections from Bill Galloway. George agreed to provide a revised SPI-2 for the next committee mailing.

10. Meeting Schedule

The next meeting of SCSI Working Group will be November 4-5, 1997, in Palm Springs, CA at the Hyatt Regency Suites Hotel (619-322-9000), hosted by Adaptec.

11. Adjournment

The meeting was adjourned at 6:20 p.m. on Wednesday September 10, 1997.