

To: Membership of X3T10

From: Ralph Weber, Secretary X3T10
Larry Lamers, Vice-bair X3T10
John Lohmeyer, Chair X3T10

Subject: Minutes of X3T10 SCSI Working Group Meeting
Dallas, TX -- January 9-10, 1996

Agenda

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 - 6.3 Device Identification Page Proposal (95-240r4) [Lohmeyer]
 - 6.4 Secure Multiple Port Operations (95-322) [Snively]
 - 6.5 Should the Immed bit be qualified by FOV in the FORMAT UNIT command (95-355) [Houlder]
 - 6.6 SPC Clarifications re: WRITE BUFFER Command (reflector message) [Hallam]
 - 6.7 Software Write Protect bit in a Mode page (reflector message) [Houlder]
 - 6.8 SBC Review [Milligan]
 - 6.9 SPC Clean-up Issues [Weber]
 - 6.10 Tape Block Sizes (96-114) [Lappin]
7. Other Topics
 - 7.1 Systems Issues Considerations [Penman]
 - 7.2 High Availability Controller Failover Proposal [Sicola]
 - 7.3 High Availability SCSI Profile (95-314) [Hagerman] {Tuesday ~4:00 pm}

8. Meeting Schedule

9. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer, the X3T10 Chair, called the meeting to order at 1:02 p.m., Tuesday January 9, 1996. He thanked Jim McGrath of Quantum 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 X3T10 were made available to those attending.

2. Approval of Agenda

The draft agenda was approved with the following additions:

- 4.4 Glitch Tolerance [Ham]
- 4.5 More SCAM [Penokie]
- 5.4 Simplified Queuing (96-112r0) [McGrath]
- 6.8 SBC Review [Milligan]
- 6.9 SPC Clean-up Issues [Weber]
- 6.10 Tape Block Sizes (96-114) [Lappin]

3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership. Working group meetings are open to any person or organization directly and materially affected by X3T10's scope of work.

The following people attended the meeting:

Name	S	Organization	Electronic Mail Address
Mr. Norm Harris	P	Adaptec, Inc.	nharris@eng.adaptec.com
Mr. Lawrence J. Lamers	A#	Adaptec, Inc.	ljlammers@aol.com
Mr. Gary Porter	A	Ancot Corp.	garyp@ancot.com
Mr. Jaff Lin	A	BusLogic	jaffl@buslogic.com
Mr. Peter Johansson	P	Congruent Software, Inc.	pjohansson@aol.com
Mr. Charles Monia	P	Digital Equipment Corp.	monia@shr.dec.com
Dr. William Ham	A#	Digital Equipment Corp.	ham@subsys.enet.dec.com
Mr. Ralph O. Weber	P	ENDL Associate	roweber@acm.org
Mr. Edward Lappin	P	Exabyte Corp.	tedl@exabyte.com
Mr. Gary R. Stephens	P	FSI Consulting Services	6363897@mcimail.com
Mr. Robert Liu	P	Fujitsu Computer Products, Am	rliu@fcpa.fujitsu.com
Mr. Stephen Holmstead	P	Hewlett Packard Co.	stephen@mail.boi.hp.com
Ms. Nancy Cheng	A#	Hitachi Computer Products	n_cheng@hitachi.com
Mr. George Penokie	P	IBM Corp.	gop@rchvmp3.vnet.ibm.com
Mr. Dan Colegrove	A#	IBM Corp.	colegrove@vnet.ibm.com
Mr. Giles Frazier	V	IBM Corp.	gfrazier@ausvm6.vnet.ibm.com
Mr. Pat LaVarre	A	Iomega Corp.	p.lavarre@ieee.org
Mr. Dennis Moore	O	KnowledgeTek, Inc.	dmoore@netcom.com
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. Edward A. Gardner	P	Ophidian Designs	gardner@acm.org

Dr. Akira James Miura	A	Panasonic Technologies, Inc	miura@tadw.research.panasonic.com
Mr. Skip Jones	P	QLogic Corp.	sk_jones@qlc.com
Mr. Ting Li Chan	A	QLogic Corp.	t_chan@qlc.com
Mr. James McGrath	P	Quantum Corp.	JMCGRATH@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. Dave Guss	A	Silicon Systems, Inc.	dave.guss@tus.ssi1.com
Mr. Daniel E. Moczarny	V	Silicon Systems, Inc.	dan.moczarny@tus.ssi1.com
Mr. Erich Oetting	P	Storage Technology Corp.	Erich_Oetting@Stortek.com
Mr. Robert N. Snively	P	Sun Microsystems Computer Co	bob.snively@eng.sun.com
Mr. John Lohmeyer	P	Symbios Logic Inc.	john.lohmeyer@symbios.com
Mr. Rod DeKoning	V	Symbios Logic Inc.	rod.dekoning@symbios.com
Mr. Patrick Mercer	P	SyQuest Technology, Inc.	patrick.mercer@syquest.com
Mr. Brad Bullough	V	System Connection	bradb@sconnect.com
Mr. Dave Wehrman	V	UNISYS	
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@uicc.com
Mr. Matthew Thomas	A	Unitrode Integrated Circuits	thomasm@uicc.com
Mr. Tak Asami	A	Western Digital Corporation	asami@dt.wdc.com

38 People Present

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

4. Physical Topics

4.1 SPI-2 Working Group Report

Bill Ham reported on the results of the SPI-2 Working Group meeting, minutes of which can be found ~~1006~~

Bill noted the SPI-2 working group has expressed a preference for calling the work LVD SCSI (Low Voltage Differential SCSI).

Additional work in this area is covered under the Glitch Tolerance item (below).

4.2 EPI Working Group Report

Bill reported on the second meeting of the EPI working group, minutes of which can be found in 96-107. Bill described a list of issues that will need enhancements in standards in coordination with the EPI Technical Report.

4.3 Parity Valid during SCAM Selection? (reflector message) [Williams]

John Lohmeyer described a problem described in a reflector message from Jeff Williams. One of the questions was, "Does a device presenting a SCAM selection have to present proper parity?" John stated his opinion that all the data lines (including parity) should be released during a SCAM selection. This opinion was confirmed by Ed Gardner and Peter Johansson.

In the same message, Jeff Williams asked about SCAM when the drive ID is stored on the media. The group discussed a reflector response from Steve Gaskill noting that SCAM ID information should be stored in non-volatile memory, other than the disk media. If the only non-volatile memory available is the disk media, then the drive must spin-up automatically on power-up to support SCAM.

4.4 Glitch Tolerance [Ham]

Bill Ham and John Lohmeyer described the problem encountered this week with the release of an actively negated signal producing assertion glitches. Bill described an electrically complex method by which the analog signal designers can eliminate the glitches. Then, he posed to the working group the question, "Is all this analog signal work necessary?"

The group discussed glitches after bus free, data in/out bus turnarounds, selection, and several other cases. Some confidence was raised regarding the ability of the protocol requirements to address the analog glitches. Everybody was asked to review the issues with their engineering departments ASAP.

The group recognized five cases where release-glitches can occur: normal disconnect, unexpected disconnect, SCAM, selection and reselection, and data direction turnaround. The consensus of the group was that in all cases the protocol can tolerate or be changed to tolerate the analog glitches.

4.5 More SCAM [Penokie]

John reported that private discussions have identified several minor technical issues in SCAM, mostly pertaining to power-up timing. There are also a number of editorial issues, particularly with using terms consistently with the body of SPI. He said that Peter Johansson is preparing a project proposal for an amendment to the SCAM annex in SPI.

5. Protocol Topics

5.1 Resolution of SCSI-3 Interlocked Protocol (SIP) Forwarding Comments [Penokie]

George Penokie reviewed the letter ballot comments on SIP.

The working group discussed whether initiators and targets must not return MESSAGE REJECT for SDTR and WDTR messages when they support the underlying feature. Ralph explained the comment basis as boot software. Boot-time software often is incapable of supporting SDTR while the run-time software can support SDTR. The boot-time software often does respond with MESSAGE REJECT to SDTR messages. After a lengthy discussion, the working group decided that support for SDTR (and WDTR) is a property of the software running on the initiator (not a property of the initiator itself) and that the property can change as the running software changes. In this way, the current SIP requirement can be viewed as matching current operating system practice.

Gene Milligan (in one of his comments) asked that the mention of soft reset be removed from SIP entirely. George requested that the action be approved by an explicit vote from the X3T10 plenary.

As a result of one of Gene's comments, concerns were raised about WDTR negotiations. Under some interpretations, one side might believe that transfers are 16-bits wide while the other side would be capable of only 32 or 8 bit transfers. After some discussion, the group could find no obvious resolutions for the issue in the current wording and no obvious need for changes in wording. George agreed to study the issue more carefully and report on his results.

5.2 Problem with Non-interlocked Busses (95-352r1) [Monia]

Charles Monia presented a complete discussion of the problem he first described at the previous working group meeting. He described a protocol-layer method for flushing the command/status pipe-line between the initiator and the target. Charles's proposal was criticized as being mostly a reinvention of ACA, but applied to more status codes. Charles agreed to prepare a proposal that uses ACA to address his needs.

5.3 FCP-2 use of Disconnect-Reconnect Mode Page (95-348r1) [Gardner]

Ed Gardner led a discussion of the proposal that defines the use of the Disconnect-Reconnect mode page usage in FCP. Minor editorial corrections were noted. In the absence of any objections, the working group recommended that the plenary adopt 95-348r1 as revised for inclusion in FCP-2.

5.4 Simplified Queuing (96-112r0) [McGrath]

Jim McGrath presented his proposal that Ordered and Head of Queue task attributes be made optional in SCSI-3, most particularly optional in SIP. The group discussed the motivations for the proposal, the benefits for low-end SCSI drive costs, and other reasons for accepting or rejecting the proposal. The group reached a consensus (but not unanimous approval) that simplified queuing would be good for SIP (particularly in terms of competitive advantages).

Process issues were raised about getting the proposed change in SIP. Several options were discussed. Jim volunteered to draft a complete proposal (including mode page or standard INQUIRY data changes to signify what queuing support is available).

Chair's Note: Jim returned Wednesday afternoon with an updated proposal just after the working group had adjourned. He discussed his proposal at length with those people who had not left the meeting room already.

6. Command Set Topics

6.1 Set/Sense Environmental Services Function (95-324r1) and SCSI Accessed Fault-Tolerant Enclosures (SAF-TE) {Conner/Intel Spec.} [Snively]

Bob Snively reported on the results of his discussions with people who had developed the SAF-TE specification. SAF-TE version 1 is done and in use. The X3T10/95-324 (ESI) document is on hold. He proposed a joint X3T10/SAF-TE plan for action to use ESI as a base, add the SAF-TE bit definitions to ESI, and to have that document ready for distribution in late January. Approval for inclusion in SPC-2 would be targeted for March.

Bob described the models and applicable commands and data formats for the combined ESI/ SAF-TE proposals. The group discussed Bob's ideas and offered guidance regarding its preferences.

Bob requested scheduling of an authorized X3T10 study group meeting in the second week of February, in the San Jose area, to review the combined proposal. Norm Harris of Adaptec volunteered to host the meeting.

6.2 Set Capacity (95-260r3) [Houlder]

Gerry Houlder presented the version of set capacity that uses the mode page header (once revision 0 now revision 3). The group revisited the choice between mode page and the READ CAPACITY command. Using a mode page was still preferred. Several other issues were raised regarding the proposal.

In the absence of any objections, the working group recommended that the plenary adopt 95-260r3 as revised.

6.3 Device Identification Page Proposal (95-240r4) [Lohmeyer]

John presented a revision to the device identification page proposal. He noted that revision 1 was discussed and generally accepted at the November working group meeting. Revision 2 was prepared for the mailing based on the working group discussion. Revision 3 was based on comments from Bob Snively regarding revision 2 and posted on the reflector but did not make the mailing. Revision 3 was the subject of further discussion between Bob and Rod DeKoning, resulting in revision 4.

John identified the single open issue and the working group discussed it. Several editorial corrections were noted.

Peter Johansson noted required editorial changes based on IEEE changing the name of their 64-bit identifier. This information was provided to the SPC editor for final preparation of SPC for letter ballot.

In the absence of any objections, the working group recommended that the plenary adopt 95-240r4 as revised.

6.4 Secure Multiple Port Operations (95-322) [Snively]

Bob Snively reported no action on this topic.

6.5 Should the Immed bit be qualified by FOV in the FORMAT UNIT command (95-355) [Houlder]

Gerry reported that he has been convinced that the Immed bit should not be qualified by the FOV bit. He has accepted the interpretation. He believes that the topic is closed.

6.6 SPC Clarifications re: WRITE BUFFER Command (reflector message) [Hallam]

Ken was absent. However, the working group discussed the following proposed addition to the SPC WRITE BUFFER (extracted from a message Ken sent to the SCSI reflector):

Implementor's Note: The preferred method of use of the WRITE BUFFER command when attempting to download microcode with buffer offsets is for Mode 6 and 7 to be specified in command byte 1, bits 0-2. The Buffer Offset field is left undefined in modes 4 and 5 and thus no standard way to implement buffer offset exits in these modes.

The note was described as completely innocuous. The second sentence was deemed unnecessary. The group agreed to drop it. A request was made that Ken's proposal be given a document number. Larry assigned it 96-116r0.

In the absence of any objections, the working group recommended that the plenary adopt the proposal as revised for inclusion in the SPC.

6.7 Software Write Protect bit in a Mode page (reflector message) [Houlder]

Gerry presented a description and review of the needs for a software write protect bit located in a mode page common to all device types. Specifics of the proposal were discussed. Gerry was seeking advice for development of a formal proposal. Gerry agreed to bring a carefully worded proposal to the next working group meeting. Concerns were raised with affects on the SPC document stabilization.

6.8 SBC Review [Milligan]

John introduced Gene Milligan as the new technical editor for SBC. Gene conducted a review of approved documents to identify those that may need integration into SBC.

6.9 SPC Clean-up Issues [Weber]

Ralph asked the working group for approval to change DualP (a bit name in the standard INQUIRY data) to MultitP. The group agreed to Ralph's proposal. Ralph asked for permission to remove the Port bit from the standard INQUIRY data. The group agreed to change the bit to vendor-specific, but not to mark the bit as reserved.

6.10 Tape Block Sizes (96-114) [Lappin]

Ted described concerns with the requirement that tape drives support all block sizes. He would like to allow drives to limit their supported block sizes to defined granularities. He further proposed that the parameter data for the READ BLOCK LIMITS command describe the granularity limits. He noted that his current goal is to communicate the possible change and ask those present to discuss the matter with their colleagues.

Ted will provide a copy of the proposal for the mailing and ask for approval at the next working group meeting.

7. Other Topics

7.1 Systems Issues Considerations [Penman]

The working group took no action on this subject at this meeting. It was agreed that this is a recurring working group agenda item.

7.2 High Availability Controller Failover Proposal [Sicola]

George reported that no action items will be brought to the plenary. Therefore, no report is necessary at the working group. George noted that additional high availability working group meetings (a.k.a., RAB/SCC joint meetings) will be required during future X3T10 meeting weeks.

7.3 High Availability SCSI Profile (95-314) [Hagerman] {Tuesday ~4:00 pm}

Charles Monia reported that Doug Hagerman could not attend due to the blizzard in the Northeast and there will be no report at this meeting. John noted that Doug's proposal has been posted to the SCSI reflector.

8. Meeting Schedule

John reviewed the proposed meeting week schedule for March 1996. The next meeting of X3T10 SCSI Working Group will be March 12-13, 1996, in San Diego, CA at the Hyatt Islandia Hotel (619-224-1234), hosted by QLogic Corp.

9. Adjournment

The meeting was adjourned at 3:32 p.m. on Wednesday January 10, 1996.