Accredited Standards Committee*
NCITS, Information Technology

Doc. No.: T10/97-282r0
Date: November 7, 1997
Project:
Ref. Doc.:
Reply to: Larry Lamers

To: Membership of T10

From: Lawrence J. Lamers (ljlamers@ix.netcom.com)

Subject: Minutes of SCSI Protocol Study Group
November 4, 1997 --- Palm Springs, CA

Agenda

1. Opening Remarks
2. Attendance and Membership, Introductions
3. Approval of Agenda
4. Approval of Minutes
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   7.2 CRC Attach Proposal for LFP SCSI protocol (97-197) [Asami]
   7.3 Performance Estimates for Low Fat Protocol (97-206) [Wilson]
   7.4 Packetizing SPI (97-230) [Penokie/Williams]
   7.5 LFP INQUIRY and MODE SENSE data format (97-241) [Lamers]
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   9.1 Proposal for End to End CRC (97-283) [Rob Basham]
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1. Opening Remarks

Larry Lamers convened the meeting at 1:30 p.m. He thanked Norm Harris of Adaptec, Inc for hosting the meeting.

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

It was stated that the meeting had been authorized by T10 and would be conducted under the NCITS and T10 rules and procedures. Ad-hoc meetings take no final actions, but prepare recommendations for approval by the T10 technical committee. The voting rules for the meeting are those of the parent committee, T10. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company.

The minutes of this meeting will be posted to the T10 Reflector and will be included in the next T10 committee mailing.

2. Attendance and Membership, Introductions

Attendance at working group meetings does not count toward minimum attendance requirements for T10 membership. Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed.

The following people attended the meeting.

Mr. Tak Asami	Adaptec, Inc.
Mr. Vincent Bastiani	Adaptec, Inc.
Mr. Lawrence J. Lamers	Adaptec, Inc.
Mr. Edward Haske	CMD Technology
Dr. William Ham	Digital Equipment Corp.
Mr. Keith W. Parker	Diogenes SCSI
Mr. Don Vohar	Fujitsu (FCPA)
Mr. Rob Basham	IBM Corp.
Mr. George Penokie	IBM Corp.
Mr. Dennis Moore	KnowledgeTek, Inc.
Mr. Edward A. Gardner	Ophidian Designs
Mr. Skip Jones	QLogic Corp.
Mr. Mark Evans	Quantum Corp.
Mr. Patrick McGarrah	Quantum Corp.
Mr. Bruce Leshay	Quantum Corp.
Mr. Gene Milligan	Seagate Technology
Mr. Gerald Houlder	Seagate Technology
Mr. Robert N. Snively	Sun Microsystems Computer Co
Mr. Vit Novak	Sun Microsystems, Inc.
Mr. Graeme Weston-Lewis	Symbios Logic Inc.
Mr. John Lohmeyer	Symbios Logic Inc.
Mr. Ralph O. Weber	Symbios Logic Inc.
Mr. Arlan P. Stone	UNISYS Corporation
Mr. Dave Wehrman	UNISYS Corporation
Mr. Paul D. Aloisi	Unitrode Corporation
Mr. Jeffrey L. Williams	Western Digital Corporation
Mz. Vicki Pipal	

3. Approval of Agenda

The agenda was approved as modified.

4. Approval of Minutes

In the absence of objection the minutes of the previous meeting (see 97-239r1) were approved.

5. Document Distribution

T10/97-225r1 Proposal for Contingent Allegiance / ACA
T10/97-230r3 Packetizing SPI
T10/97-199r2 SCSI LFP – Quick Arbitrate & Select Proposal
T10/97-283r0 End to End CRC proposal
T10/97-241r1 LFP INQUIRY and MODE SENSE data format

6. Review of Old Action Items

3) The authors of proposals to revise. Completed.

7. Old Business

7.1 SCSI LFP – Quick Arbitrate & Select Proposal (97-199) [Kosco]

The QAS protocol as it relates to expanders was discussed. The current question is how an expander can handle the bus direction change that may happen if QAS transfers from a target on one side to a target on the other side. This situation implies that an SPI-3 expander will be needed for use with the new protocol.

There was also a question about the recognition time of the 0x55 message for QAS, given that the REQ/ACK handshake is asynchronous and may occur very fast if the devices are close together. The existing 55 ns setup time should be sufficient to deal with this.

It was pointed out that if a simple recognition circuit for QAS was used, it might falsely change to QAS since 0x55 may legitimately appear in a message phase. The suggested solution was to tie the QAS to the end of Information Unit phase. Adaptec to investigate this and other possible solutions.

7.2 CRC Attach Proposal for LFP SCSI protocol (97-197) [Asami]

Does the desktop environment need a CRC for those vendors not supporting packetized protocol? The answer is yes, maybe, depending on the outcome of the hot-plug investigation and level of data integrity desired by customers.

7.3 Performance Estimates for Low Fat Protocol (97-206) [Wilson]

Larry Lamers reported that Drew Wilson had done a performance analysis with the packetized protocol. The analysis indicates that the packetized protocol has significant protocol reduction when used in combination with QAS. When the protocol options are sorted out, following this meeting, he will provide a presentation on the performance.

Bill Galloway has yet to provide his performance data.

7.4 Packetizing SPI (97-230) [Penokie/Williams]

George Penokie presented revision 3 of the proposal for a packet protocol on parallel SCSI.

After a long discussion the group settled on packet mode being negotiated with IUTR and applying to all I/O following a successful negotiation. This puts packet mode in the same operative process as width and speed negotiation. The SEL w/o ATN will be used to initiate an information transfer phase from the host to the target. A SEL with ATN following a successful IUTR negotiation that does not enter an IUTR re-negotiation will be aborted by the target.

Retries will be added to the information unit out phase.

George stated that he would bring in a separate proposal for streaming packets.

Do we allow data in both directions or allow link commands? Allowing data in both directions requires two sets of data pointers. The sense of the group is to do linked commands instead of bi-directional data.

It was agreed to make data on four-byte boundaries.

There is an issue around when save data pointers should occur. This was not resolved; there was a suggestion to look at the fibre channel approach.

Bruce Leshay brought up the issue of data streaming. George reported that this type of protocol had been explored within IBM, but failed to get general support. He promised to re-visit the issue if the performance metrics warrant it.

7.5 LFP INQUIRY and MODE SENSE data format (97-241) [Lamers]

A proposal revised for packet support was presented (see 97-241r1).

8. Call for Patents

The chair requested that anyone aware of any patents required for the proposals be disclosed in accordance with the ANSI patent policy. See 7.2.

9. New Business

9.1 Proposal for End to End CRC (97-283) [Rob Basham]

Rob Basham presented an end to end CRC proposal to address data integrity issues observed in systems. The CRC can be added at any point, but ends up on the storage medium.

The intention is to provide CRC as data; the anchor points need to be defined.

Rob was invited to return with a more developed proposal for the March meeting. The topic will be transferred to the general SCSI working group.

10. Action Items

4) Larry Lamers to investigate QAS 0x55 message timing issues.
5) George Penokie to revise the packetized proposal.

11. Meeting Schedule

The next study group is scheduled for Thursday, December 4, 1997 starting at 9:00am in the Irvine, CA area. The meeting notice will be posted to the reflector as soon as arrangements have been completed. The group name will be changed to SPI-3 – Protocol Study Group with acceptance of the project proposal by T10.

12. Adjournment

The meeting adjourned at 7:00 p.m.