Accredited Standards Committee*
X3, Information Processing Systems

Doc. No.: X3T9.2/93-0142 R0
Date: August 11, 2000
Project:
Ref. Doc.:
Reply to: J. Lohmeyer

To: Membership of X3T9.2

From: Lamers/Lohmeyer

Subject: Minutes of X3T9.2 General Working Group September 15, 1993

Agenda

1. Opening Remarks
2. Attendance and Membership
3. Approval of Agenda
4. Physical Topics
   4.1 SCSI-3 Physical Interface (Project 855 rev 12b) [Lamers]
5. Protocol Topics
   5.1 SCSI-3 Interlocked Protocol (Project 856D r3) [Lamers]
   5.2 SCSI-3 Fibre Channel Protocol (Project 993D) [Snively]
   5.3 SCSI-3 Generic Packetized Protocol (Project 991D) [Stephens]
6. Command Sets
   6.1 SCSI-3 Primary Commands (Project 995D) [Weber]
      6.1.1 COPY command (X3T9.2/93-145) []
   6.2 SCSI-3 Block Commands (Project 996D) []
   6.3 SCSI-3 Stream Commands (Project 997D) [Stephens]
   6.4 SCSI-3 Graphics Commands (Project 998D) [Stephens]
   6.5 SCSI-3 Medium Changer Commands (Project 999D) [Stephens]
7. SCSI-3 Architecture Model - SAM (X3T9.2/994D) [Monia]
   7.1 SCSI-3 Queuing Model (X3T9.2/92-141r7) [Penokie]
   7.2 Link feature () []
8. General Working Group Items
   8.1 SCSI Configured Automagically (93-109r4) [Gardner]
   8.2 Connector Height <> [McGrath]
   8.3 SCSI-2 errata
9. Meeting Schedule
10. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer the Chair, called the meeting to order at 9:00 a.m., Wednesday, July 21, 1993. He thanked Bob Dugan of IBM 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 X3T9.2 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T9.2 task group. The voting rules for the meeting are those of the parent committee, X3T9.2. These rules

are: one vote per company; and any participating company member may vote.

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

2. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for X3T9.2 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:

X3T9.2 General Working Group Meeting Attenders

Name	S	Organization	Electronic Mail Address
Mr. Norm Harris	P	Adaptec, Inc.	nharris@adaptec.com
Mr. David Skinner	P	Advanced Micro Devices	skinner@brahms.amd.com
Mr. Bob Wheeler	O	Advanced Micro Devices	b.wheeler@.amd.com
Mr. Charles Brill	P	AMP, Inc.	cbrill@cup.portal.com
Mr. Bob Whiteman	A	AMP, Inc.	whiteman@cup.portal.com
Mr. Gary Porter	A	Ancot Corp.	garyp@ancot.com
Mr. Joseph Salamone	O	Burndy Corp.	
Mr. John Geldman	A	Cirrus Logic Inc.	johng@cirrus.com
Mr. Edward Haske	P	CMD Technology	
Mr. William Galloway	O	Compaq Computer Corp.	
Mr. Charles Monia	P	Digital Equipment Corp.	monia@starch.enet.dec.com
Mr. William Dallas	A	Digital Equipment Corp.	dallas@wasted.enet.dec.com
Mr. Edward A. Gardner	A	Digital Equipment Corp.	gardner@ssag.enet.dec.com
Mr. Ralph Weber	A	Digital Equipment Corp.	weber@star.enet.dec.com
Mr. Edward Lappin	P	Exabyte Corp.	tedl@exabyte.com
Mr. Jeffrey L. Williams	P	Hewlett Packard Co.	jlw@hpdmd48.boi.hp.com
Mr. Yoshihiko Yano	S	Hitachi Computer Products	y_yano@ipd.hitachi.com
Mr. George Penokie	P	IBM Corp.	gop@rchvmp3.vnet.ibm.com
Mr. Gary R. Stephens	A	IBM Corp.	gstephen@tucvm2.vnet.ibm.com
Mr. Giles Frazier	S	IBM Corp.	gfrazier@ausvm6.vnet.ibm.com
Mr. Lawrence J. Lamers	P	Maxtor Corp.	larry_lamers@maxtor.com
Mr. Robbie Shergill	P	National Semiconductor	rss@berlioz.nsc.com
Mr. John Lohmeyer	P	NCR Corp.	john.lohmeyer@ftcollinsco.ncr.com
Mr. Charles Binford	S	NCR Corp.	Charles.Binford@WichitaKS.NCR.COM
Mr. Stephen F. Heil	P	Panasonic Technologies, Inc	sfh@research.panasonic.com
Mr. Skip Jones	P	QLogic Corp.	s_jones@qlc.com
Mr. James McGrath	P	Quantum Corp.	JMCGRATH@QNTM.COM
Ms. Wendy Smith	V	Quantum Corp.	
Mr. Gene Milligan	A	Seagate Technology	Gene_Milligan@notes.seagate.com
Mr. Stephen G. Finch	P	Silicon Systems, Inc.	5723283@mcimail.com
Mr. Erich Oetting	P	Storage Technology Corp.	Erich_Oetting@Stortek.com
Mr. Robert N. Snively	P	Sun Microsystems, Inc.	Bob.Snively@eng.sun.com
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@uicc.com
Mr. Jeff Stai	P	Western Digital	stai@dt.wdc.com

34 people present

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

3. Approval of Agenda

The proposed agenda was approved.

4. Physical Topics

4.1 SCSI-3 Physical Interface (Project 855 rev 12b) [Lamers]

Rev 12b should be in public review in the near future.

5. Protocol Topics

5.1 SCSI-3 Interlocked Protocol (Project 856D r3) [Lamers]

5.2 SCSI-3 Fibre Channel Protocol (Project 993D) [Snively]

5.3 SCSI-3 Generic Packetized Protocol (Project 991D) [Stephens]

6. Command Sets

6.1 SCSI-3 Primary Commands (Project 995D) [Weber]

6.1.1 COPY command (X3T9.2/93-145) []

Ralph Weber presented the modified COPY command CDB's and data structures to deal with the extended addressing of SCSI-3. The interaction of the copy function with the ACA condition is not specified. Ralph will prepare a new revision.

6.2 SCSI-3 Block Commands (Project 996D) []

Dennis Mellinger notified the chair that he could no longer continue in the capacity of Technical Editor for SBC. John is looking for a volunteer to perform this valuable and prestigious service.

6.3 SCSI-3 Stream Commands (Project 997D) [Stephens]

6.4 SCSI-3 Graphics Commands (Project 998D) [Stephens]

6.5 SCSI-3 Medium Changer Commands (Project 999D) [Stephens]

7. SCSI-3 Architecture Model - SAM (X3T9.2/994D) [Monia]

7.1 SCSI-3 Queuing Model (X3T9.2/92-141r7) [Penokie]

Charles Monia made a presentation on terminology and model construction for incorporating the SCSI-3 queuing rules into SAM. There were two areas of discussion: one around the nature of head of queue, and the other around the effect of suspended data during write operations. Charles will fix the head of queue behavior in the diagrams in the next revision. Except for George Penokie and Jeff Williams, the working group liked the method used to define queuing behavior with pictures and state diagrams. George and Jeff were concerned that any change from the queuing model wording could cause unintended changes.

7.2 Link feature () []

Bob Snively questioned whether anyone depended on relative addressing. It was pointed out that relative addressing is being used in graphical applications and in many WORM devices.

Bob prefers not to support linked commands, but can do it. John Lohmeyer suggested that SAM could make the FLAG and LINK bits protocol specific or these bits could be removed from SAM, but without such a change, then all protocols need to support them somehow. Bottom line - still no real consensus

on disposing of the link feature.

8. General Working Group Items

8.1 SCSI Configured Automagically (93-109r4) [Gardner]

Ed Gardner presented the latest SCAM proposal. John Lohmeyer stated he has prototyped the SCAM revision 3 protocol plus the field codes that were distributed to the reflector. Ed said results from John's prototype and the reflector field codes are in revision 4 of the SCAM document.

Gary Porter of Ancot made the following proposal. At the time after SCAM Selection, when the SCAM master has asserted C/D, I/O and DB7, and all devices have released SEL, but before any command codes go onto DB0-4, the SCAM master asserts SEL. It holds SEL asserted until the end of the process.

The reason for this proposal is that Ancot would like to support SCAM by tracing the protocol with their analyzer. However, in its present incarnation, it takes an inordinate amount of 'intelligence' to distinguish the period of a SCAM protocol (where events should be captured on transitions of the data bus) from a STATUS phase (where events should be captured on transitions of REQ and ACK). The recognition serves to both preserve trace depth and to clearly identify which protocol is occurring. What is needed is a simple way to distinguish between these two states.

The working group consensus was to accept 93-109 (rev 5) as a proposed normative annex for SPI. (Straw poll: 13 to 1.) Jeff Williams stated that he does not believe SCAM is a needed for SCSI.

Bob Snively raised an issue with separating old and new device ID address space. The SCAM device type code was expanded to two bytes. The dominant master code was expanded to two bytes also. The method of a previously dominant master remaining dominant following a reset was discussed.

8.2 Connector Height <> [McGrath]

Jim McGrath started a discussion on connector height for disk drives. He stated that a 3.3 mm high connector was needed to meet the reduced height drives being developed. It was pointed out that such a connector was likely to be expensive and still not adequately address the mating connector issues. The possibility of changing the form factor definition to put the connector behind the HDA rather than below it was brought up. Jim thought this could be a viable solution if all the drive manufacturers could agree to it (that is, persuade their customers that it is a good idea).

8.3 SCSI-2 errata

John Lohmeyer reported on several errata that have been detected in SCSI-2 rev 10k. The following are the changes from revision 10k to 10l:

1. Page 3, clause 3, move the sentence beginning "For the purposes" after the title to subclause 3.1.
2. Pages 3 to 5, clause 3, definitions should not begin with phrases such as "This term refers to" etc.
3. Page 8, clause 5, remove the full stop after the clause number.
4. Page 8, subclause 5.2.1, line 1, replace "meters" with "m".
5. In the Introduction, item c) under the list of new low-level requirements should read: "The arbitration delay was increased from 2.2 to 2.4 us"
6. In 4.1 Overview, the last line of the fifth paragraph should read: "are contending and can be completed in less than 10 us."
7. In 8.3.3.2 Disconnect-reconnect page, there are three occurrences of 100 ms being substituted for 100 microsecond. These should all be changed to 100 us. The corrected lines should read: "The

bus inactivity limit field indicates the maximum time in 100 us ...". "The disconnect time limit field indicates the minimum time in 100 us ...". "The connect time limit field indicates the maximum time in 100 us ..."

8. In 9.3.3.2 Flexible disk page, the paragraph describing the drive step rate should begin: "The drive step rate field specifies the step rate in units of 100 us." Also, the head settle delay should read: ..."specifies the head settle time in units of 100 us."
9. In 12.2.2, paragraph 7, the reference is to Table 65, not 8.2.14.1.
10. The Foreword and Introduction clauses were modified to correctly reflect the ANSI/ISO style.
11. Updated the Vendor ID list in Annex E.

DEFECT

The following defect was reported in 93-115. Due to the constraints of the standards process this defect cannot be corrected at this time in the body of the draft standard (i.e., it went through public review with the error.). John recommended issuing an amendment to correct this item.

1. An error exists in Table 161. The Head load bit pattern should be P011 not P000.

In a message on the SCSI BBS, Dan Davies pointed out that the terms 'kilobyte' and 'megabyte' could be interpreted to mean 1024 and 1048576. This would result in differences in the reported partition sizes in the Medium Partition Pages (10.3.3.2). The working consensus was that these terms should mean their mathematical values, 1000 and 1000000. It was also noted that the Medium Partition Pages only report approximate partition sizes, so no interoperation problems were expected even if the other values were used.

9. Meeting Schedule

The next working group meetings will be November 8-11, 1993 at the Red Lion Hotel (719-576-8900) in Colorado Springs, CO hosted by NCR Corporation - Microelectronics Products Division. The room rates are $74.00 plus tax. The reservation deadline for these rates is October 8, 1993. The group name is X3T9. The host contact is John Lohmeyer at TEL: 719-573-3362, FAX: 719-597-8225, (john.lohmeyer@ftcollinsco.ncr.com).

10. Adjournment

The meeting was adjourned at 5:00 p.m. on Wednesday September 15, 1993.