Minutes of X3T10 SCSI Working Group in Colorado Springs, CO
X3T10/95-264r2

Accredited Standards Committee*
X3, Information Technology

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                                     Reply to: John Lohmeyer
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To: Membership of X3T10

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

Subject: Minutes of X3T10 SCSI Working Group Meeting
             Colorado Springs, CO -- July 11-12, 1995

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7. Other Topics
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Results of Meeting

1.   Opening Remarks

John Lohmeyer, the X3T10 Chair, called the meeting to order at 9:00 a.m.,
Tuesday July 11, 1995. He thanked Symbios Logic 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:

        4.2 Fast-20 Active Termination Signal definitions
        5.4 SCSI-3 Interlocked Protocol (SIP) [Penokie]
        5.5 FCP-2 Letter ballot resolution [Snively]

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. Alan R. Olson	P	3M Company	arolson@mmm.com
Mr. Norm Harris	P	Adaptec, Inc.	nharris@eng.adaptec.com
Mr. Lawrence J. Lamers	A#	Adaptec, Inc.	ljlamers@aol.com
Mr. Edward Fong	P	Amdahl Corp.	esf10@amail.amdahl.com
Mr. Bob Whiteman	A	AMP, Inc.	whiteman@cup.portal.com
Mr. Bob Atkinson	V	AMP, Inc.	rdatkins@amp.com
Mr. Geoff Zech	V	AMP, Inc.	ghzech@amp.com
Mr. Michael Wingard	P	Amphenol Interconnect	
Mr. Ron Roberts	A	Apple Computer	rkroberts@aol.com
Mr. Clifford E. Strang Jr.	P	BusLogic	skip@buslogic.com
Mr. Al Pease	V	BusLogic	alp@buslogic.com
Mr. Ian Morrell	P	Circuit Assembly Corp.	crctassmbl@aol.com
Mr. Peter Johansson	P	Congruent Software, Inc.	pjohansson@aol.com
Mr. Louis Grantham	P	Dallas Semiconductor	grantham@dalsemi.com
Mr. Charles Monia	P	Digital Equipment Corp.	monia@shr.dec.com
Mr. Tom Coughlan	V	Digital Equipment Corp.	coughlan@star.enet.dec.com
Mr. Kenneth J. Hallam	A	ENDL	70431.1202@compuserve.com
Mr. Ralph O. Weber	A#	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. Andy Chen	A#	Fujitsu Computer Prods Amer	achen@fcpa.fujitsu.com
Mr. Stephen Holmstead	P	Hewlett Packard Co.	stephen@mail.boi.hp.com
Mr. Kurt Chan	A	Hewlett Packard Co.	kc@core.rose.hp.com
Mr. Anthony Yang	A#	Hitachi America Ltd.	yang_a@halsp.hitachi.com
Mr. Zane Daggett	A#	Hitachi Cable Manchester,Inc	74354.2576@compuserve.com
Mr. George Penokie	P	IBM Corp.	gop@rchvmp3.vnet.ibm.com

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Mr. Giles Frazier	O	IBM Corp.	gfrazier@ausvm6.vnet.ibm.com
Dr. Gerald Marazas	A#	IBM PC Company	marazas@bcrvmpc2.vnet.ibm.com
Mr. Duncan Penman	P	IIX Consulting	penman@netcom.com
Mr. Lansing Sloan	V	Lawrence Livermore Nat'l Lab	ljsloan@llnl.gov
Mr. Robert Bellino	P	Madison Cable Corp.	
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. Peter Gossler	O	NSM Jukebox GmbH	73503.3467@compuserve.com
Mr. Param Panesar	O	Pioneer Research	
Mr. Skip Jones	P	QLogic Corp.	sk_jones@qlc.com
Mr. James McGrath	P	Quantum Corp.	JMCGRATH@QNTM.COM
Mr. Edward A. Gardner	A	Quantum Corp.	gardner@acm.org
Mr. Gene Milligan	P	Seagate Technology	Gene_Milligan@notes.seagate.com
Mr. Gerald Houlder	A	Seagate Technology	Gerry_Houlder@notes.seagate.com
Mr. Mike Fitzpatrick	V	Seagate Technology	mike.fitzpatrick@notes.seagate.com
Mr. Wayne M. Douglas	V	SignMax America	SignMax@aol.com
Mr. Greg Alvey	V	Solution Technology	
Mr. Dick Scheel	A#	Sony	dicks@lsi.sel.sony.com
Mr. Scott Smyers	P	Sony Corp. of America	scotts@lsi.sel.sony.com
Mr. Erich Oetting	P	Storage Technology Corp.	Erich_Oetting@Stortek.com
Mr. Roger Cummings	A	Storage Technology Corp.	Roger_Cummings@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. Greg Kapraun	A	Symbios Logic Inc.	Greg.Kapraun@symbios.com
Mr. Charles Binford	V	Symbios Logic Inc.	Charles.Binford@Symbios.com
Mr. Patrick Mercer	P	SyQuest Technology, Inc.	patrick.mercer@syquest.com
Mr. Kevin Gingerick	V	Texas Instruments	4307725@mcimail.com
Mr. Arlan P. Stone	A	UNISYS Corporation	arlan.stone@mv.unisys.com
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@uicc.com
Mr. Dennis P. Moore	P	Zadian Technologies	dmoore@netcom.com

55 People Present

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

4.   Physical Topics

     4.1   SPI-2 and ESPC Study Group Report

The name was changed from ESPC to EPI, as part of the comment resolution. See
95-263 for details. There is a study group meeting scheduled for 8/14 in
Denver to address low-power differential driver, receiver, and terminator
issues.

     4.2   Fast-20 Active Negation Signal Definitions

Which signals are active negated? When is negation required. REQ, ACK,
data,
and parity was the intention. This may need clarification. Bill Ham

volunteered to add a table to SPI-2 to clarify this situation.
Implementations that support SCAM must have switchable drivers (that is, SCAM
requires that several signals be operated in wired-OR mode that may normally
be used in active negation mode).

Bill Ham presented a chart showing active negation handling in SCSI-2,
SCSI-3,
and FAST-20. The chart listed the requirements for each signal in each bus
phase. The chart is too complex to describe here, but can be found in
document 95-195r0. Most of the discussion was editorial in nature.

5.   Protocol Topics

     5.1   Addressability of TARGET RESET task management function
     (95-236r1)
            [Snively]

Bob Snively requested that work on this item be deferred to the September
meetings.

     5.2   Public Review Comment Resolution on SBP (95-277) [Roberts]

Ron Roberts led a review of all comments received from the SBP public review.
The presentation resulted in very few discussions. Most of the discussion
came from persons closely associated with SBP activities.

Ron Roberts and Scott Smyers recommended against forwarding SBP to second
public review at this meeting. They requested that a working group meeting
be
held to review the latest changes, especially the isochronous changes between
now and the September Plenary and that forwarding occur at the September
Plenary meeting.

Scott Smyers presented an impromptu discussion of isochronous transfers
methodology as currently viewed by the group working on SBP. He noted that
substantial changes to SBP are required to bring its isochronous definitions
up to the currently understood needs.

Ron presented a request for two working group meetings. The first to be held
August 15 and 16 and hosted by Sony. The second half-day meeting to be held
Tuesday afternoon during the September X3T10 meeting week (12 September, 1-5
pm).

     5.3   FCP use of Disconnect-Reconnect Mode Page (95-208r1) [Gardner]

Ed Gardner presented the second revision of his proposed changes to the
disconnect-reconnect mode page. Ed note that he removed all usage of
specific
time units and specific protocol constructions. Ed received several comments
and agreed to build another revision of his proposal. At George Penokie's
request, Ed agreed to read the latest revision of SIP before working on his
next revision.

Giles Frazier presented his views about how some of the disconnect-reconnect
mode page parameters might be applied to FCP. In particular, Giles described
an interest in defining a control for how much data can be sent at the same
time that the command is sent. The group debated the usefulness of the
proposed parameter at length. A straw poll was taken. It favored adding the
initial maximum burst size parameter by a vote of 8:4.

     5.4   SCSI-3 Interlocked Protocol (SIP) [Penokie]

George Penokie presented an overview SIP (1047D) revision 5. He noted that
the r5 is a complete rewrite of the document. He highlighted a terms

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translation map included in Annex A. He noted that the translation is
necessary because SAM terminology is different from SCSI-2 terminology in
many
instances. He reviewed several important examples of these changes.

George detailed important areas where the new draft SIP differs from the
rules
laid out in the SAM. He discussed these issues with Charles Monia. George
acknowledged that the document has not been available for review long enough
to permit truly informed discussions. He expressed a desire to inform the
working group of possible issues that they might encounter during their
review. George received lots of input about the relationships between phases
(now called services).

    5.5   FCP-2 Letter ballot resolution [Snively]

John Lohmeyer read the 7 Seagate comments regarding the FCP-2 project
proposal. The comments can be found in 95-034r2. The working group
recommended that all 7 comments be accepted. Slight changes in wording were
made with respect to comments 6 and 7. The proposed comment resolution
resulted in document 95-278 for consideration at the plenary meeting.

6.   Command Set Topics

    6.1   Public Review Comment Resolution on SCC (95-220) [Penokie]

George Penokie reviewed the technical changes that resulted from the SCC
comments resolutions. George reported that Tom Wicklund is satisfied with
the
proposed resolutions to his comments. With that, George was confident that
all persons making comments are satisfied with the proposed resolutions.

George detailed the differences between SCC revision 5 and 5a. George stated
that the majority of the changes in 5a are editorial, with the other changes
being additions that should have been made in 5. In the absence of any
objections, the working group recommended that SCC 5a be forwarded to second
public review. (Note: George later decided to name the new revision 6,
instead of 5a.)

    6.2   Multiple Port Operations (94-233r1) [Snively]

Bob Snively led a discussion of persistent reservations, which he described
as
the solution to all known problems in multiple port operations. The
conversation quickly digressed to the question of whether an initiator can
have multiple service delivery ports. Resolution of the question was
deferred
until Charles Monia could be found.

Questions were raised about the simplicity with which initiator keys can be
changed. Changing keys were felt to be easy. This led to a digression about
security features. Some members of the working group felt that security was
not within the scope of this work.

The relationship between RESERVE(6) and PROUT was discussed at length. Bob
agreed to revise the proposal based on the working group agreement that
targets be required to prohibit mixed use of RESERVE(6) and PROUT.

Erich Oetting noted that a new "scope" should be added for element
reservations. The new "scope" would allow PROUT to function as a replacement
for RESERVE ELEMENT.

Bob received many comments and suggestions about the proposal. Not all of
the

issues and comments discussed are described in these minutes. Bob agreed to bring a revised proposal to the next working group meeting.

The persistent reserve discussion was followed by a lengthy discussion of security issues.

> 6.3   Distributed SCSI (95-262r0) [Sloan]

Lansing Sloan presented an update on the Lawrence Livermore National Laboratory Distributed I/O project. Lansing's slides are available in document 95-262r0. A key point in Lansing's presentation was a de-emphasis of
SCSI in the LLNL project in favor of TCP/IP. LLNL potentially remains interested in Distributed SCSI if security issues are solved well enough.

> 6.4   Set/Sense Environmental Services Function [Snively]

At the request of Bob Snively, this item was carried over until the September meetings.

> 6.5   Proposed REPORT LUNS command (95-253) [Weber]

Ralph presented the initial draft of the proposal, which allows hosts to obtain information about available logical units in the presence of 64-bit sparse logical unit numbers. He accepted several revisions to the proposal. He agreed to bring a revised proposal to the September meetings.

> 6.6   Vendor-specific mode page codes for tapes (95-221r1) [Weber]

After a brief description of the proposal, the working group unanimously recommended its adoption by the Plenary.

> 6.7   Power Condition mode page (95-222r1) [Weber]

After a brief description of the proposal, the working group unanimously recommended its adoption by the Plenary.

> 6.8   Report supported density codes {for SSC} (95-224r3) [Lappin]

Ted Lappin presented a proposal for a REPORT DENSITY SUPPORT command. He described the problems with the current density code method involving mode pages.

> 6.9   Inadequacy of Number of Blocks in Mode Select/Sense (95-260r0)
>   [Houlder]

Gerry Houlder stated that there is a market need to be able to specify the capacity of very large drive. This is useful for RAID applications and customers wanting to use newer drives as replacements in existing systems. The problem is that the current field is only three bytes long and not sufficient for today's drives. Gary Stephens pointed out that subclause 9.1.2
of SCSI-2 allows this.

The working group discussed the need for a mechanism to know what format of the block descriptor is being used. Several other concerns were expressed about modifying mode page format definitions.

Many of those present preferred enhancing the READ CAPACITY command. After substantial discussion, Gerry took the working group recommendation to propose
the needed changes as enhancements to the READ CAPACITY command.

> 6.10 Device Identification Page Proposal (95-240) [Lohmeyer]

There is a strong interest from OS folks to get a unique identifier for
devices to enable deterministic configurations. In particular they would
like
to get the SCAM string. Gene pointed out that manufacturer, model, and
serial
number would be globally unique, but not if an IEEE identifier is also
permitted to occupy the same fields. He proposed using IEEE identifiers
(which are globally unique and are used by serial devices) in a separate
field.

Based on discussions in the working group and elsewhere, John was convinced
that this function should be a part of INQUIRY (possibly a VPD page), not as
a
new mode page.

Some proposed that the serial number string can be the IEEE global
identifier.
Ed Gardner strongly disagreed with replacing the manufacturer's serial number
with the IEEE global identifier, based on existing, uncontrollable
manufacturing constraints on serial number contents. The global identifier
will be a new VPD page and will not replace the existing Unit Serial Number
VPD page.

The working group decided that a new VPD page should return the global
identifier. It would be a binary field; at least 64-bits in length; in IEEE
extended format. Gene Milligan will follow-up with IEEE on the addressing
extension to determine whether any progress has been made. John volunteered
to draft a revised proposal to include a global identifier VPD page.

A note describing the preferred way to construct a SCAM string needs to be
added to SPI-2 or SIP, wherever appropriate.

        6.11   Reporting Version Information [Milligan]

Gene Milligan described his current working proposal for version reporting.
Gene's description was entirely verbal. No paper or overhead information was
presented. Gene was looking for discussion of overall ideas to guide his
writing. He got some, of course.

7.   Other Topics

        7.1   What is in a name? [Milligan]

Gene Milligan proposed that all uses of SCSI-3 be changed to SCSI. He noted
that the change left the question of what to report in the standard INQUIRY
data. There was a lengthy discussion of various aspects of document naming.
The need to reference several documents as part of a single implementation
greatly complicated the problem. Attempts were made to find worked examples
how this is done in other fields, such as networking.

This item is related to item 6.11. Expect further proposals from Gene.

        7.2   QIC request for Density Codes & Medium Type Codes
        [Lohmeyer/Lappin]

Alan Olson stated a belief that the 95-224 proposal will be satisfactory to
QIC.

8.   Meeting Schedule

The next meeting of X3T10 SCSI Working Group will be September 12-13, 1995,
in
Bedford, NH at the Sheraton Tara Wayfarer Inn (603-622-3766), hosted by

Digital Equipment Corp.

9.   Adjournment

The meeting was adjourned at 4:55 p.m. on Wednesday July 12, 1995.