

Accredited Standards Committee*
InterNational Committee for Information Technology Standards (INCITS)

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Date: November 10, 2003

Reply to: John Lohmeyer

To: T10 Membership
From: Ralph Weber and John Lohmeyer
Subject: SAS Protocol WG -- November 3, 2003
Austin, TX

Agenda

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Results of Meeting

1. Opening Remarks

John Lohmeyer called the meeting to order at 9:05 a.m. Monday, November 3, 2003. He thanked Bob Griswold of Crossroads Systems for hosting the meeting. As usual, the people present introduced themselves.

2. Approval of Agenda

The draft agenda was approved with no changes.

No items were added or revised during the course of the meeting.

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INCITS Secretariat, Information Technology Industry Council (ITI)
1250 Eye Street NW, Suite 200, Washington, DC 20005-3922
Email: incits@itic.org Telephone: 202-737-8888 FAX: 202-638-4922

3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for T10 membership. 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. Tim Symons	P	Adaptec, Inc.	Timothy_Symons@adaptec.com
Ms. Pat Thaler	P	Agilent Technologies	pat_thaler@agilent.com
Mr. Robert Griswold	P	Crossroads Systems, Inc.	rgriswold@crossroads.com
Mr. Kevin Marks	P	Dell, Inc.	kevin_marks@dell.com
Mr. Ralph O. Weber	P	ENDL Texas	roweber@ieee.org
Mr. Mike Fitzpatrick	P	Fujitsu	mfitzpatrick@fcpa.fujitsu.com
Mr. Rob Elliott	P	Hewlett Packard Co.	Elliott@hp.com
Mr. Steven Fairchild	V	Hewlett Packard Co.	Steve.Fairchild@hp.com
Mr. George O. Penokie	P	IBM / Tivoli Systems	gop@us.ibm.com
Mr. Robert Sheffield	A	Intel Corp.	robert.l.sheffield@intel.com
Mr. Brad Besmer	V	LSI Logic Corp.	brad.besmer@lsil.com
Mr. Brian Day	V	LSI Logic Corp.	brian.day@lsil.com
Mr. Tim Hoglelund	V	LSI Logic Corp.	tim.hoglelund@lsil.com
Mr. Steve Johnson	V	LSI Logic Corp.	sjohnson@lsil.com
Mr. John Lohmeyer	P	LSI Logic Corp.	lohmeier@t10.org
Mr. Sam Chou	V	Marvell Semiconductor	schou@marvell.com
Mr. Martin Czekalski	A	Maxtor Corp.	marty_czekalski@maxtor.com
Mr. Mark Evans	P	Maxtor Corp.	mark_evans@maxtor.com
Mr. Edward A. Gardner	AV	Ophidian Designs	eag@ophidian.com
Mr. Greg Elkins	V	QLogic	greg.elkins@qlogic.com
Mr. Craig W. Carlson	A#	QLogic Corp.	craig.carlson@qlogic.com
Mr. Don Carothers	V	QLogic Corp.	don.carothers@qlogic.com
Mr. Jim Jones	A	Quantum Corp.	jim.jones@quantum.com
Mr. Jim Coomes	A	Seagate Technology	jim.coomes@seagate.com
Mr. Gerald Houlder	P	Seagate Technology	gerry.houlder@seagate.com
Mr. Ronald Roberts	V	Sierra-Pac Technology	rkroberts@aol.com
Mr. Vit Novak	P	Sun Microsystems, Inc.	vit.novak@sun.com
Mr. Sam Barnett	V	Vitesse Semiconductor	samb@vitesse.com
Mr. Kenneth Hirata	P	Vixel Corp.	Ken.Hirata@Vixel.com

29 People Present

Status Key: P - Principal
 A,A# - Alternate
 AV - Advisory Member
 L - Liaison
 V - Visitor

4. Old Business

4.1 SAS-1.1: Transport Layer Retries (03-186) [Elliott/Jones]

Rob Elliott presented a review of the proposed transport layer retry rules and state machines (03-186r3).

Mark Evans complained about inconsistencies between the SAS-1.1 overview sections and the state machines. Rob responded that those problems need to be dealt with in a separate proposal.

As the page-by-page review progressed, the group requested several changes and Rob agreed to prepare a new revision.

At the request of George Penokie, Rob agreed to bring the revised proposal to the January meeting for final consideration and approval.

4.2 SAS 1.1, adding the Terminate Data Transfer protocol service (03-245) [Evans]

Mark Evans presented a proposal for canceling outstanding protocol service transactions in both the initiator and target (03-245r2).

The group requested changes in the proposal and Mark agreed to prepare a new revision for consideration at the January meeting.

4.3 SAS-1.1 Support for SATA Port Selector (03-273) [Sheffield]

Bob Sheffield presented a proposal to integrate the SATA II port selector in SAS 1.1 (03-273r1).

The group requested changes in the proposal and Bob agreed to prepare a new revision.

Bob Scheffield moved that 03-273r2 (r1 as revised) be recommended for inclusion in SAS-1.1. Tim Hoglund seconded the motion. The motion passed on a vote of 9:1:2.

4.4 SAS-1.1, protocol for changing driver amplitude (03-285) [Evans]

Mark Evans presented proposed protocol changes that would allow changing driver signal amplitude (03-285r1).

The group discussed an unordered list in the proposal and suggested that a flowchart or state diagram would be a better way to represent the complex logic tree.

Mark agreed to prepare a new revision of the proposal for consideration at the next meeting.

4.5 SAS-1.1 Discover Algorithm Modification (03-298) [Fairchild]

Steve Fairchild led the group in a discussion of a proposal to make the expander discovery algorithm more efficient (03-298r1). He noted how the issues raised during the September meeting had been addressed in the revised proposal.

The group requested changes and Steve agreed to prepare a new revision.

Steve Fairchild moved that 03-298r2 (r1 as revised) be recommended for inclusion in SAS-1.1. Tim Hoglund seconded the motion. In the absence of any objections the motion passed unanimously.

5. New Business

5.1 SAS-1.1 ALIGN insertion clarifications (03-334) [Elliott]

Rob Elliott presented a proposal to address issues with ALIGN and NOTIFY insertion for clock skew management and rate matching (03-334r1). The group requested minor changes and Rob agreed to prepare a new revision.

The group worked diligently to ensure that enough ALIGNs are inserted. Because a review of the exact wording is important, the group agreed that the revised proposal would be reviewed at the next meeting.

5.2 SAS-1.1 Wide STP port livelock prevention (03-345) [Elliott]

Rob Elliott presented a proposal to address a problem with a wide STP initiator talking to a wide STP target (03-345r0). He noted that livelock conditions could arise in this case, because SATA does not support two concurrent connections between one initiator/target pair.

Rob explained that the solution must require rejection of the concurrent connect requests and offered specific options to meet that need.

The group requested minor changes and Rob agreed to prepare a new revision of the proposal.

Rob Elliott moved that 03-345r1 (r0 as revised) be recommended for inclusion in SAS-1.1. Bob Scheffield seconded the motion. In the absence of any objections, the motion passed unanimously.

5.3 SAS-1.1 Inverting the Disable First Burst bit (03-357) [Elliott]

Rob Elliott presented a proposal to invert the sense of the Disable First Burst bit, a change that makes the Command frame backwards incompatible between SAS and SAS-1.1. The group discussed the incompatibility at length, but concluded that the lack of known SAS First Burst implementations made the incompatibility less critical than would otherwise be the case.

Minor changes were requested in the proposed new SAS-1.1 wording and Rob agreed to prepare a new revision.

Rob Elliott moved that 03-357r1 (r0 as revised) be recommended for inclusion in SAS-1.1. Jim Jones seconded the motion. The motion passed on a vote of 7:0:6.

5.4 SAS-1.1 SATA_TransmitALIGN state transition correction (03-363) [Hoglund]

Tim Hoglund presented a proposal to correct the SATA_TransmitAlign state transitions (03-363r0) in order to make SAS match the SATA specification.

Gerry Houlder moved that 03-363r0 be recommended for inclusion in SAS-1.1. Tim Hoglund seconded the motion. In the absence of any objections, the motion passed unanimously.

5.5 SAS-1.1 Pathway recovery priority corrections (03-346) [Elliott]

Rob Elliott presented a proposal to address what he described as the 'first bug in SAS-1' (03-346r1), a few possible deadlock scenarios and a few unclear rules regarding pathway recovery.

The group asked that a note be changed to normative text and for changes in two signal names and Rob agreed to prepare a revised version of the proposal.

Rob Elliott moved that 03-346r2 (r1 as revised) be recommended for inclusion in SAS-1.1. Tim Hoglund seconded the motion. In the absence of any objections, the motion passed unanimously.

5.6 SAS-1.1, additional LED behavior (03-384) [Evans]

Mark Evans presented a proposal to add a second activity LED operating mode definition in SAS-1.1 (03-384r0).

The group asked for several minor changes. Then the group asked that the body text be folded into the table and that only the table be included in the proposal. Mark agreed to revise the proposal.

Mark Evans moved that 03-384r1 (r0 as revised) be recommended for inclusion in SAS-1.1. Ron Roberts seconded the motion. The motion passed on vote of 7:0:4.

6. Review of Recommendations

The following documents were recommended for inclusion in SAS-1.1 during this meeting:

- Support for SATA Port Selector (03-273r2) [Sheffield] {r1 as revised}
- Discover Algorithm Modification (03-298r2) [Fairchild] {r1 as revised}
- SATA_TransmitALIGN state transition correction (03-363r0) [Hoglund]
- Wide STP port livelock prevention (03-345r1) [Elliott] {r0 as revised}
- Inverting the Disable First Burst bit (03-357r1) [Elliott] {r0 as revised}
- Pathway recovery priority corrections (03-346r2) [Elliott] {r1 as revised}
- Additional LED behavior (03-384r1) [Evans] {r0 as revised}

7. Meeting Schedule

A SAS Protocol Working Group meeting is scheduled for:

Monday, January 12, 2004 commencing at 9:00 a.m. in Chandler, AZ at the Wyndham Garden Hotel (480-961-4444), hosted by Intel Corp.

Teleconference calls may be announced on the T10 reflector as needed.

8. Adjournment

The meeting was adjourned at 6:30 p.m. on Monday November 3, 2003.