

Accredited Standards Committee\*

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

Doc. No.: T10/05-417r0
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Date: November 7, 2005

Reply to: John Lohmeyer

To: T10 Membership  
From: Ralph Weber and John Lohmeyer  
Subject: SAS Protocol WG -- November 7, 2005  
Austin, TX

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Old Business
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  - 4.2 SAS-2 More counters (04-172) [Elliott]
  - 4.3 SAS-2 Zoning (05-144) [Symons, Laio and Grieff]
  - 4.4 SAS-2 Add device name to IDENTIFY address frame (05-309) [Elliott]
  - 4.5 SAS-2 STP connection time limits (05-306) [Elliott]
  - 4.6 SAS-2 More Phy Test Patterns (04-222) [Elliott]
5. New Business
  - 5.1 SAS-2, SAM-4, SPC-4, NOTIFY (POWER FAILURE EXPECTED) Fixes (05-370) [Penokie]
  - 5.2 SAS 1.1 Expander Issues-092805 (05-373) [Stoops]
  - 5.3 SAS-2 revision 0 minor corrections (05-412) [Elliott]
  - 5.4 SAS-2 Multiplexing (05-381) [Elliott]
  - 5.5 SAS-2 Wide SSP target port simultaneous connection rules (05-322) [Elliott]
  - 5.6 SAS-2 Zone Check and Route Table Clarification (05-416) [D'Avignon]
  - 5.7 Analysis of DFE Error Bursts on Primitive Sequences (05-422) [Gorshe]
6. Review of Recommendations
7. Meeting Schedule
8. Adjournment

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer called the meeting to order at 9:00 a.m. Monday, November 7, 2005. He thanked Kevin Marks of Dell for hosting the meeting. As usual, the people present introduced themselves.

### 2. Approval of Agenda

The draft agenda was approved with no changes.

No agenda changes were made during the course of the meeting.

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### 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
Ms. Pat Thaler	P	Agilent Technologies
Mr. Ron Roberts	A	Broadcom Corp.
Mr. Kevin Marks	P	Dell, Inc.
Mr. Kenneth Hirata	A	Emulex
Mr. Robert H. Nixon	P	Emulex
Mr. Ralph O. Weber	P	ENDL Texas
Mr. Neil Wanamaker	V	Finisar
Mr. Rob Elliott	P	Hewlett Packard Co.
Mr. Steven Fairchild	V	Hewlett Packard Co.
Mr. Chris Martin	V	Hewlett Packard Co.
Mr. Dan Colegrove	P	Hitachi Global Storage Tech.
Mr. George O. Penokie	P	IBM / Tivoli Systems
Mrs. Vicky Duerk	V	Intel
Mr. Martin Massucci	V	Intel
Mr. Pak Seto	V	Intel Corp.
Mr. Robert Sheffield	P	Intel Corp.
Mr. Dennis Moore	AV	KnowledgeTek, Inc.
Mr. Brad Besmer	V	LSI Logic Corp.
Mr. Brian Day	V	LSI Logic Corp.
Mr. Steve Johnson	V	LSI Logic Corp.
Mr. John Lohmeyer	P	LSI Logic Corp.
Mr. Avraham Shimor	P	M-Systems
Mr. Greg Elkins	V	Marvell Semiconductor
Mr. David Geddes	AV	Marvell Semiconductor, Inc.
Mr. Martin Czekalski	A	Maxtor Corp.
Mr. Mark Evans	P	Maxtor Corp.
Mr. Tim Symons	P	PMC-Sierra
Dr. Steve Gorshe	V	PMC-Sierra, Inc.
Mr. Don Carothers	V	QLogic Corp.
Mr. Gerald Houlder	P	Seagate Technology
Mr. Doug Loree	V	Toshiba America
Mr. David Allen	A	Vitesse Semiconductor
Mr. Ed D'Avignon	V	Vitesse Semiconductor
Mr. Gregory Tabor	P	Vitesse Semiconductor
Mr. Jeff Williams	P	Xiotech Corp.
Mr. Bob Hansen	V	Xyratex

36 People Present

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

## **4. Old Business**

### **4.1 SAS-2 protocol for changing driver amplitude (03-285) [Evans]**

Mark Evans requested that discussion of this topic be deferred to the next meeting.

### **4.2 SAS-2 More counters (04-172) [Elliott]**

Rob Elliott presented a proposal to add counters to the SAS Protocol-Specific Log Page (04-172r2). The latest revision included an SMP management interface and Brian Day identified areas where the interface needed enhancements or clarifications. The newly added Broadcast based on counters reaching their maximum values contained unclear definitions and the group requested that it be clarified.

Rob agreed to prepare a new revision for consideration at the next meeting.

### **4.3 SAS-2 Zoning (05-144) [Symons, Laio and Griefff]**

Tim Symons presented the revised SAS-2 Zoning proposal (05-144r9). The group discussed several enhancements to the proposal. Several clarity issues were raised regarding the Configure Zone Permission Request description. Additional concerns revolved around the length of the Zone Broadcast Address frame and the group agreed to make the frame smaller, perhaps as small as two Dwords.

Tim agreed to prepare a new revision for consideration at the next meeting.

### **4.4 SAS-2 Add device name to IDENTIFY address frame (05-309) [Elliott]**

Rob Elliott presented a proposal to add device name information to the SAS-2 IDENTIFY address frame (05-309r1). The group discussed IEEE format names and updating the usage tutorials on the IEEE web site. Concerns were raised regarding the UML representation of SAS Addresses and SAS Device Names.

Rob agreed to revise the proposal based on the discussion and present the revision at the next meeting.

### **4.5 SAS-2 STP connection time limits (05-306) [Elliott]**

Rob Elliott presented a proposal to add time limits for SAS-to-SATA connections (05-306r1). Coordinating the proposal with ATA-8 required some changes that Rob noted with the help of Mark Evans. Concerns were raised about the automatic clearing of Affiliations. Rob agreed to prepare a modified revision of the proposal.

Rob Elliott moved that 05-306r2 (r1 as modified) be recommended for inclusion in SAS-2. Steve Johnson seconded the motion. The motion was approved 14:0:4.

### **4.6 SAS-2 More Phy Test Patterns (04-222) [Elliott]**

Rob Elliott presented a proposal to add more Phy test patterns (04-222r5). George Penokie complained that illegal K characters were still allowed in the proposal. Rob led efforts to revise the text to eliminate such concerns which were ultimately successful.

Rob Elliott moved that 04-222r6 (r5 as modified) be recommended for inclusion in SAS-2. Kevin Marks seconded the motion. The motion passed 9:3:6.

## **5. New Business**

### **5.1 SAS-2, SAM-4, SPC-4, NOTIFY (POWER FAILURE EXPECTED) Fixes (05-370) [Penokie]**

George Penokie presented a proposal to address issues raised during the incorporation of 05-167r5 (05-370r0). Concerns were raised about the effects of the changes on the lifetimes of task management functions and George agreed to revise the proposal.

George Penokie moved that 05-370r1 (r1 as revised) be recommended for inclusion in SAS-2, SAM-4, and SPC-4. Mark Evans seconded the motion. The motion passed 12:1:2.

### **5.2 SAS 1.1 Expander Issues-092805 (05-373) [Stoops]**

Because Tim Hogleund was unable to attend, the group felt that this topic could not be resolved, so closing the identified issues was deferred to the next meeting.

### **5.3 SAS-2 revision 0 minor corrections (05-412) [Elliott]**

Rob Elliott presented three typographical problems in substantive SAS-2 text (05-412r0). Rob Elliott moved that 05-412r0 be recommended for incorporation in SAS-2. Bob Sheffield seconded the motion. In the absence of any objections, the motion passed unanimously.

### **5.4 SAS-2 Multiplexing (05-381) [Elliott]**

Due to the late hour, Rob Elliott agreed to defer discussion of this topic to the next meeting.

### **5.5 SAS-2 Wide SSP target port simultaneous connection rules (05-322) [Elliott]**

Rob Elliott presented a proposal to add a mode page to manage target usage of simultaneous connections (05-322r0). The target memory requirements needed to support the mode page raised substantial concerns. The only way to address the concerns was to remove the mode page from the proposal and Rob agreed to revise it accordingly for consideration at the next meeting.

### **5.6 SAS-2 Zone Check and Route Table Clarification (05-416) [D'Avignon]**

Ed D'Avignon presented a discussion of where checks are performed in a Zoning Service Delivery Subsystem (05-416r0).

The group agreed to remove this item from future agendas.

### **5.7 Analysis of DFE Error Bursts on Primitive Sequences (05-422) [Gorshe]**

Noting that 6 Gbs support may require receivers to implement Decision Feedback Equalization in Phys, Steve Gorshe presented an analysis of DFE usage on key SAS Primitive Sequences (05-422r0).

The group suggested a 'majority voting' solution to issues regarding the detection of the key SAS Primitive Sequences raised by Steve's presentation.

Steve agreed to prepare a new, detailed proposal based on the suggestion.

The group agreed to remove this item from future agendas.

## **6. Review of Recommendations**

The following document was recommended for inclusion in SAS-2 during this meeting:

For inclusion in SAS-2:

04-222r6 (More Phy Test Patterns) [Elliott]

05-306r2 (STP connection time limits) [Elliott]

05-412r0 (Revision 0 minor corrections) [Elliott]

For inclusion in SAS-2, SAM-4, and SPC-4:

05-370r1 (NOTIFY (POWER FAILURE EXPECTED) Fixes) [Penokie]

## **7. Meeting Schedule**

A SAS Protocol Working Group meeting is scheduled for:

Monday, January 9, 2006 commencing at 9:00 a.m. in Scottsdale, AZ at the Embassy Suites Hotel Phoenix - Scottsdale (Reservations: <http://www.b-there.com/arm/t10phx2006>) hosted by Intel.

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

## **8. Adjournment**

The meeting was adjourned at 6:55 p.m. on Monday November 7, 2005.