Accredited Standards Committee*
X3, Information Technology

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Project:
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Reply to: Ken Hallam

To: Membership of X3T10.1

From: Lawrence J. Lamers, Secretary X3T10.1
Ken Hallam, Chair X3T10.1

Subject: Minutes of X3T10.1 Working Group
December 11-13, 1995 -- Milpitas, CA

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Agenda

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## Opening Remarks

Ken Hallam convened the meeting at 9:00 am. He thanked Runbir Singh of VLSI 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 X3T10.1 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T10.1 task group. The voting rules for the meeting are those of the parent committee, X3T10. 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 X3T10 BBS and the SSA Reflector and will be included in the next X3T10.1 committee mailing.

Ken stated that the X3T10.1 mailings are now part of the X3T10 mailings. Persons that want to receive documents should subscribe to the X3T10 mailings by sending their request to the secretariat. An electronic option should be available during 1996.

## Attendance and Membership, Introductions

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10.1 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.

| name | company | telephone | email |
|---|---|---|---|
| Lawrence Lamers | Adaptec | 408-957-7817 | ljlamers@aol.com |
| Charles Brill | Amp, Inc | 717-592-6198 | cebrill@amp.com |
| Lisa A. Huff | Amp, Inc | 717-986-3143 | lisa.huff@amp.com |
| Michael Wingard | Amphenol Interconnect Products | 607-786-4241 | |
| Ed Carmona | Conner Peripherals, Inc | 408-456-4082 | ed.carmona@conner.com |
| Paul Petersen | Conner Peripherals, Inc | 408-456-4311 | paul.petersen@conner.com |
| Bill Gintz | Conner Peripherals, Inc. | 408-456-3648 | bill.gintz@conner.com |
| Horatio Lo | Conner Peripherals, Inc. | 408-456-4216 | Horatio.Lo@conner.com |
| Bill Anderson | DDK Electronics | 408-980-8344 | 102501.451@compuserve.com |
| Bill Ham | Digital Equipment Corp. | 508-841-2629 | ham@subsys.enet.dec.com |
| Charles Monia | Digital Equipment Corp. | 508-841-6757 | monia@shr.dec.com |
| Nancy Cheng | Hitachi Computer Products | 408-986-9770 | n_cheng@hitachi.com |
| Ian Judd | IBM Corporation | 011-44-1705-486363 | ianjudd@vnet.ibm.com |
| Chris Parker | IBM Corporation | 912-892-2719 | |
| Richard Rolls | IBM Corporation | 408-256-3531 | rrolls@vnet.ibm.com |
| John Scheible | IBM Corporation | 512-823-8208 | scheible@vnet.ibm.com |
| William F. Washburn | IBM Corporation | 914-892-6300 | wfwashburn@vnet.tbm.com |
| Wolfgang Drichelt | ITT Cannon | 49-7151 699 233 | |
| Gary Manchester | Molex | 708-527-4043 | |
| Mark DeWilde | Pathlight Technology | 607-266-4000 | mark@ironics.com |
| Greg Kapraun | Symbios Logic Inc. | 970-225-4843 | greg.kapraun@symbios.com |
| Ken Hallam | Unisys | 714-380-5115 | Ken.Hallam@mv.unisys.com |
| Brad Kitson | VLSI Technology, Inc. | 408-434-7553 | brad.kitson@ustc.vlsi.com |
| Sam Sanyal | VLSI Technology, Inc. | 408-922-5371 | sanyal_s@sanjose.vlsi.com |
| Neil Edmunds | Xyratex | 011-44-1705-486363 | nedmunds@vnet.ibm.com |

## Approval of Agenda

The agenda was approved unanimously as shown on page 1.

## Approval of Minutes

The minutes of the last Working Group meeting (see 95a162r0) were approved with corrections to the meeting schedule and to the description of S2P proposals as suggested by Charles Monia.

## Document Distribution

Larry Lamers stated that the next mailing deadline is January 17, 1995 at noon PST.
Documents are available on the SCSI BBS (714) 574-0424 and at ftp.symbios.com.

## Review of Old Action Items

None.

# Protocol Topics

## 61 Review of SSA-S2P working draft [Monia]

Charles Monia reviewed the rev 5 document. A number of editorial cleanups on the task management functions were done.

95a201r3 - S2P Exception condition Interlock - Not recommended because of compatibility issues with existing implementations. There remain some issues with handling Queue Full and Reservation Conflict status. This will remain an open work item for the protocol working group.

95a204r1 - S2P Strategies for using multiple paths - Agreement to include as modified into S2P.

The services used and defined in S2P need their definitions aligned with those provided in TL1.

Clause 9 & 10 will be moved to informative annexes.

Recommendation to plenary to forward the working drafts as modified.

# Transport Layer Topics

## 71 Review of SSA-TL1 working draft [Scheible]

John Scheible reviewed the changes incorporated into revision 8. He then reviewed rev 8a that contained resolution of several comments received on rev 8.

95a222r0 - Nodes that are not master capable but want to participate in the Healthy Web process should set a master priority of one.

Depth of Queued Asynchronous Alerts needs further discussion regarding what happens if some are discarded.

Reserved bits in the control field shall not be ignored by the receiving node.

Ian pointed out that the maximum number ports that can be addressed is 126 and the first node is 86. The draft will be corrected to show these numbers.

The number of ports that can be properly initialized is 65,535. Remove reference to 1/4 billion nodes addressed.

## 72 SAT Algorithm Extensions for Switches

Mark deWilde presented a proposal to modify the use of the SAT quotas to a per pair in a switch to allow a cyclic path to operate as a loop. See 95a226r0. Remanded to TL2. Performance considerations should be included in next revisions, as well as impact on other parts of the working draft.

## 73 Interlocked Election of Master Process

See 95-210r2. This proposal is a revised version of the one presented in Havant. The proposal addresses some conditions where a web may have two configators that believe they each have authority as master.

Ian offered an alternative that would add the master priority field to QUERY NODE and interlock QUERY NODE REPLY with pending Async Alerts when a QUERY NODE is received with a higher master priority.

A way to recover initiator table space is also needed.

Ian and Mark will revise the proposal and it will be revisited in February '96.

### 74 Support for SAT regions

See 95a227r0. This proposal creates two additional SMSs for managing SAT regions. Mark took the input from the group and will incorporate into a revision. This will be added to the TL2 list.

The SAT regions, quotas, and enable user defined character bit are not available to configators that are not masters.

### 75 Horatio Lo issues

In 9.4.1, item 7, ..last NODES should be NODE

In 9.1.10 item b) should be “receiving port is saved to table.”

Is the tag used in Privileged SMS unique to an SMS, a node or a port? A discussion led to the following:

> Synchronize the definition of tag value in Privileged SMSs. The tag is allowed to be reused as soon as the response is received except for CONFIGURE PORT SMSs which clear when a web reset or another CP SMS is received. The QUERY NODE response may be an exception. Larry Lamers volunteered to write a proposal for the resolution of this.

95a229r0 was recommended for acceptance in TL1.

In 11.2.5, par 9, the QUERY NODE REPLY SMS should be returned if possible, a RESPONSE SMS is not used.

## Physical Topics

### 81 Review of PH1 [Ham]

Bill Ham reviewed the changes to rev 7c. All the TBD items have been completed. A number of new tables with testing specifications have been added.

### 81.1 Placement of Connector Performance Requirements

The group consensus was to move the connector performance requirements into two normative annexes.

### 81.2 Incorporating termination into line receiver

A new term, port connection, was developed assuming that the termination is part of the line receiver. A cable assembly used to be called a line, now it is called a cable + two connectors. A cable assembly is part of a line.

A segment is from the line driver to the segment termination. This makes the documentation of electrical requirements more easily understood. The new terminology is in the glossary of rev 7c.

A complex port connection can be made of multiple cable assemblies that connect two ports.

Ian Judd wanted a term to define the re-driver. What is needed is a definition of the separable component that meets the all of the driver requirements, (as at a node point of origin) and one that does not meet those requirements, but some subset of them, (as at an LRC device). Another illustration is needed to clarify these definitions. Action to Bill Ham.

Need a tolerance added for balanced transmission lines on page 17 (see 7.5.2, par 3).

The consensus was to recommend adoption of the terminology as further refined by Bill Ham..

### 81.3 Restatement of termination

The termination characteristics need to be specified in more detail to be meaningful. If the tolerance is opened up too much, different cable lengths will have a significant effect on the measured eye diagram. This discussion will be continued at the next PH working group.

Developing a tolerance budget for all combined components to get an enclosure specification is grist for PH2.

Chris Parker noted that we need a 750 picosecond rise time instead of a slew rate in Table 10. The standard test is 10 - 90.

### 82 Update on 40 (Judd)

Ian Judd reported on interim test results prepared by Phil Murfet. SSA-40 is now running with an error rate of 1:10e14 @20 meters using 26 AWG cable. Achieving those results with 28 AWG is likely with some silicon changes.

Existing connectors appear to be adequate.

There is a recommended change in the termination scheme. Lines should now be terminated at both ends, (now at the Driver as well as the receiver). There may be a need to go to AC coupling to control ground shift. The driver current will double with the added termination.

Cable skew and propagation delay is a concern with the increased current. Stress testing also needs to be done.

More information should be available next month.

### 83 Update on FC

Bill Ham reported on fibre channel physical issues. Jitter is a the main topic of concern in the development of a specification to achieve interoperability. Low frequency jitter can be tracked by the receiver, however the eye diagram measurement appears more closed. Discussion has focused on what the jitter filter needs to be.

They have decided on three measurement points: at the enclosure; at the device; at the pins of active elements. How to divide up the jitter budget remains open. Getting access to the source clock is also an issue.

### 84 January PH Working Group

Proposed Agenda for January PH working group:

- -segment termination values
- -strategy of PH1
- PH2 architecture
  - specs
  - termination
  - jitter
  - measurement points
  - optical
  - speed negotiation
  - test results - progress update
  - alternate connectors

physical id assignments for devices
option block

## SSA 40 Topics []

Greg Kapraun reviewed 95a225r0, modified speed negotiation based on Ian Judd's document. Proposal has problems with AC coupling and optical transceivers. Ian objected to the fact that it is unbalanced when the zero state is entered. Transformers may saturate, recovering DC balance may take some time. One situation was identified that needs to be addressed: Loss of sync should not go back to inactive state. These topics will be revisited at the February meeting.

## Call for Patents

Ken Hallam requested that anyone aware of any patents required for the proposals be disclosed in accordance with the ANSI patent policy. Refer to the minutes of prior meetings for items already identified.

## Action Items

10) none.

## Meeting Schedule

The next working group meeting of X3T10.1 is scheduled for February 26-28, 1996, in Stateline, NV at Harrah's hosted by Samsung. The meeting will begin at 9:00 AM.

The long-term SSA week of meetings are scheduled as follows:

Week of April 29, 1996 in Burlington, VT hosted by IBM.
Week of June 24, 1996 in St. Petersburg Beach, FL hosted by AMP.
Week of August 26, 1996 in Ft. Collins, CO hosted by Symbios Logic, Inc.
Week of October 28, 1996 in San Jose hosted by Adaptec *
Week of December 9, 1996 in Hawaii hosted by IBM. *
Week of February 24, 1996 in Austin, TX hosted by _____*.

* = Tentative locations

Please note that changes to this schedule may occur. All changes to meeting dates, locations, and agendas will be posted to the SSA reflector.

## Adjournment

The meeting adjourned at 3:00 p.m. on Wednesday.