

To: X3T9.2 Membership

X3T9.2/93-099r0

From: Edward A. Gardner

Date: 27-May-1993

Subject: Legible Minutes of May 20, 1993 P1394 Meeting

Minutes of P1394 meeting, 20-May-1993

Jerry Marazas called the meeting to order at 9:15 AM. As is customary, the members introduced themselves and their corporate affiliation. Subscriptions to P1394 committee mailings may be obtained by calling the IEEE Computer Society at (202) 371-0101.

The following agenda was accepted:

Attendance

Call for Patents

Apple's patent license policy (Jonathan Zar)

Backplane report (Tom Potyraaj)

Draft status and reading guide (Mike Teener)

Connector report (Dave Hatch)

Adjunct editors

Cable PHY configuration (Mike Teener)

SBP report (Jerry Marazas)

Future meetings

1. Attendance

Max Bassler	Molex, Inc.
Charles Brill	AMP, Inc.
Stephen Finch	Silicon Systems, Inc.
Giles Frazier	IBM Corporation
Edward A. Gardner	Digital Equipment Corporation
Bill Ham	Digital Equipment Corporation
Norm Harris	Adaptec
David Hatch	Stewart Connector Systems
Lawrence J. Lamars	Maxtor Corporation
John Lohmeyer	NCR Corporation
Gene Milligan	Seagate Technology

Charles Monia	Digital Equipment Corporation
George Penokie	IBM Corporation
Thomas J. Potyraaj	JHU/APL
Jeff Stai	Western Digital Corporation
Michael Teener	Apple Computer
Alan Wetzel	Texas Instruments, Inc.
Bob Whiteman	AMP, Inc.
Ray Muggli	IBM Corporation
Colm Tracey	Fujikura America
Jonathan Zar	Apple Computer
Michael Nguyen	Hitachi Computer Product

2. Call for patents

The chair requested than anyone possessing or knowing of patents that might bear on 1394 please disclose their existence. Patents presently known to bear on 1394 are the SGS-Thompson patent on DS-encoding and a suite of Apple patents. A filing by Digital Equipment may bear if a patent is issued. Dave Hatch stated that Stewart is conducting a patent search on positive latching mechanisms, and may file for a patent on a latch mechanism they have developed for the 1394 connector. Bob Whiteman of AMP asked if any progress had been made to fulfilling a request (from earlier meetings) for a list of patents relating to the 1394 connector. No action has yet been taken on this request.

3. Apple's patent license policy (Jonathan Zar)

Jonathan Zar of Apple distributed Apple's proposed patent license for its patents required to comply with 1394. This has been modified, at least partly due to comments received on an earlier version presented previously. Mr. Zar stated that it was Apple's intent to license only those patents necessary to comply with 1394. Patents related to 1394 implementation but unnecessary for compliance would be licensed commercially (e.g., royalties).

Gene Milligan (Seagate) asked whether Apple might have other patents that would be necessary to build a practical or marketable 1394 implementation, although not listed in Apple's license. Mr. Zar indicated that he did not believe this to be the case. Bob Whiteman (AMP) asked about published statements that Apple and Hosiden held patents on the mating shape of the 1394 connector. Mr. Zar indicated that he was aware of patents licensed by Apple from other companies, and expected those companies to disclose their patents themselves and indicate their intent to comply with IEEE's patent policy.

There was discussion of clause 2, specifically the words "provided that such products are fully compliant with the Standard". Concern focussed on the meaning of "fully compliant" and the risks of making a good faith effort for compliance, only to run afoul of an ambiguity.

Ed Gardner (Digital) asked if Apple intended to disclose the contents of patent filings that have not issued. Mr. Zar stated Apple's intent to keep these confidential.

4. Backplane report (Tom Potyraaj)

Tom Potyraaj distributed a progress report on the backplane task group. They have submitted a revised backplane PHY/PMD for draft 6.1, but still need to update C code and services. Monarch selection in the backplane environment is proposed to be dependent on the specific backplane or profile, rather than defined in 1394. No change in status regarding Phil Bolton's CSR proposal. Mr. Potyraaj expressed concern that Mr. Bolton was missing the window of opportunity for his proposal.

5. Draft 6.1v0 status and reading guide (Mike Teener)

This draft will not be distributed except to attendees at this meeting; it will not be mailed or made available via FTP. It has some inconsistencies and incorporates some experimental style changes (see below). The next generally distributed version will be draft 6.2 and should be available shortly after Memorial Day. It will be included in a mailing from the Computer Society and available from Apple's FTP server.

Editorial changes:

1. Jeff Stai's service model. Both PHY clauses and the Link clause. Need feedback.
2. Minor fixes to overview. Bit fields for cycle counter and services model.
3. Detailed arbitration examples have been moved from overview to an annex.
4. Labels for protocol stack and state machines have been modified to match new services.
5. Bus reset and tree-ID state machines are annotated. Need feedback whether this is the right path.
6. Names of acks have had "ack_" prepended, names of responses have had "resp_" prepended, to avoid confusion.

Technical changes:

7. Jeff Stai's "link operation in words" has been added, despite some technical errors (concatenated subactions). Intent is that this replace the C code, so that operation would be specified solely by these words and the state machine diagrams. Need feedback, is this the right approach? Mike Teener suggested that people review the link specification (pages 105 to 121) and provide feedback on the approach.
8. Tom Potyraaj's backplane PHY updates.
9. Mark Hassel's power-fail-imminent CSRs added.

Questions:

10. How do you like Jeff's changes?
11. Need clearer naming for PHY signals, not currently consistent. Suggestions appreciated.

12. Are the English explanations adequate or are the C-code examples still needed?

A poll of those present yielded no objections (and a presumption of concurrence) with English as the primary means of documentation, with C-code being primarily used as an informative reference.

6. Connector report (Dave Hatch)

Dave Hatch (Stewart) presented drawings of a shuttle based latching mechanism. The latch would hold up to 15-20 pounds of force, at which point a bevel would cause the latch to release to prevent damage. The device bulkhead connector needs a sound mounting to withstand this much force. Concern was expressed whether the shuttle latch was compatible with overmolded connectors. Also regarding the physical layout of the isolated (AC coupled) shield and RC filter circuits to maintain proper shielding effectiveness. Mike Teener was asked to have Florin Opreescu clarify this.

Max Bassler (Molex) discussed the internal device connector survey. Mr. Bassler presented a strategy developed by the connector working group for a family of internal connectors. The strategy considers disk devices, array and non-array controllers, and other devices. See the slides in the mailing and in the updated connector survey. Mike Teener (Apple) observed that the most common Apple array would use a connector comprising one power and one bus module, which was not part of the proposed family. Bob Whiteman (AMP) observed that the corresponding female unitized connector was missing, plus other rack mounting considerations such as guide pins. Mr. Bassler appealed for more responses to the updated connector survey.

Mr. Bassler showed a drawing of a flange mounted bulkhead connector (perhaps pigtailed), as an addition to the currently proposed PCB mounted bulkhead connector. The connector working group believes this may be necessary and has been overlooked. This may be particularly necessary in latched configurations, to ensure that the physical strain is carried to the bulkhead and not to the PCB.

Tom Potyraj expressed concern that P1394 would turn into a connector specification with a few serial bus notes. He asked that the connector issues be kept separate and multiple connectors not be part of the standard.

7. Adjunct editors

Jerry Marazas (chair) requested that certain individuals be formally recognized as adjunct editors, in consideration of the amount of work and text they have been contributing. Specifically Jeff Stai as adjunct editor of the link and transaction layers and Alan Wetzel as adjunct editor of the cable PHY layer.

8. Cable PHY configuration (Mike Teener)

The 1394 "feature" of selectively powering on link and transaction layers creates a problem, in that certain necessary bus management operations require use of the transaction layer. Specifically, selecting the next root node requires setting the root holdoff bit, which is done by the Monarch with transactions that access CSRs. Similarly, a newly powered on node needs to know the correct arbitration timer setting, which at present it can only determine by forcing a bus reset.

Mike Teener (Apple) presented a solution developed by James Baldwin (Apple). The proposed solution is to define a new PHY configuration packet.

This transmits the root hold off bit and arbitration timer. As a PHY packet it will be received regardless of whether the link and transaction layers are powered on. The Monarch programs every node's root hold off bit and arbitration timers, resets the bus, then monitors the self-ID packets to ensure every node received the PHY configuration packets correctly. If any node fails to report the correct values, the Monarch repeats the process. Mr. Teener stated that Mr. Baldwin had already designed and implemented the solution, and wished it to be adopted without alteration.

Mike Teener moved and Jerry Marazas seconded that this solution be adopted for draft 6.2. The motion was approved by a vote of 8 in favor, none opposed, with 13 present in the room.

9. SBP report (Jerry Marazas)

Jerry Marazas (IBM) presented a summary of recent changes to SBP, the SCSI-3 Serial Bus Protocol. Interested parties were requested to attend the SBP working session immediately following this P1394 committee meeting or to contact Scott Smyers (Apple) (SMYERS.S@applelink.apple.com) for minutes of the previous SBP working session.

10. Future meetings

June 23 in Minneapolis, MN.

July 19 in Manchester, NH.

August 18 in Colorado Springs, CO.

Contact Jerry Marazas (chair) at marazas@bcrvmpc2.ibm.com or (407) 982-4423 for more information.

11. Action Items:

1. Letter to Hosiden requesting information on any patents bearing on 1394 connector. (Jerry Marazas)
2. Clarification of AC coupled shielding circuitry. (Mike Teener, Florin Oprescu)