

1394A Meeting Minutes
San Jose, CA
March 17-18, 1997

P1394A March meeting was held at S3 Inc. in Santa Clara, California. The working group would like to thank Peter Teng from S3 for hosting this meeting and arranging for lunch and refreshments.

Chair, Peter Johansson started the meeting at 9:00am with introductions and procedures. Peter asked for volunteer(s) to sponsor the May meeting. Intel folks tentatively agreed to sponsor it in Phoenix on May 20-21.

MULTI SPEED PACKET CONCATENATION:

Peter Johansson asked for any comments on the proposed new rule that was voted in the last meeting. Dave Wooten said that this may pose a problem for the token style arbitration. Action Item: Bill Duckwall / Johansson to investigate.

SPEED SIGNAL SAMPLING AND TRANSMISSION: JIM SKIDMORE

Jim presented his findings on speed signal timings for current silicon implementations. He discussed the speed signal sampling as well as transmission for the various arbitration states. After a detailed discussion, the group agreed on Jim's proposal for P1394A compliant PHYs. He will work with Peter Johansson in adding it to the next draft.

TAKA FUJIMORI BROUGHT UP THE ISSUE OF CROSS TALK WHEN TWO PHYs transmit the speed signals at the same time (during self id). He proposed that we change the timing so only one node transmits at a time. He presented his data on available margin and the possibility of erroneous speed-signal detection due to near end cross talk. After some discussion there were some questions as to whether this is a real problem since the speed signaling occurs at 5Mhz (10Mhz max) and the data presented was measured at 400Mhz. Taka took the action to come up with a more detailed problem statement and a proposal that addresses the problem.

CABOOSE PROPOSAL: JOHN FULLER

John presented his "caboose" proposal for the self id packets. Among other things, the caboose packet will indicate two main things: 1. Indicate that this PHY is 1394A compliant and 2. PHY's speed capabilities.

Peter called for a straw poll on the caboose packet as defined in John's proposal:

1. Should we use the caboose packet to indicate 1394a PHY? Yes 2
2. Should we use self id packet 0 to indicate 1394a PHY? Yes 2

A lot of people were undecided so Peter proposed that we table this discussion until we can clearly identify what information needs to be conveyed by the caboose packet.

POWER MANAGEMENT: CLAUDE CRUZ FROM INTEL

Claude presented his proposal on power management. He briefly described the his proposal and solicited feedback from the group. He proposed that this subject be discussed in a smaller group of interested parties. Peter suggested that we discuss the proposal on the reflector a little bit more

FAIRNESS OPTIMIZATION PROPOSAL: (DAVE LAFOLLETTE)

Dave presented his proposal for Fairness Optimization and its effect on performance in conjunction with the other proposed PHY enhancements including the fly-by arbitration. "Fairness optimization" means a standardized method for a node to "cheat" on it's fairness budget and transmit two, three, four or more request packets during a fairness interval. There was some discussion on whether this should be implemented in the PHY or the link and the general consensus was that the link is the logical place for this enhancement.

Dave had proposed that an infinite "fairness budget" be allowable (under which a node could perpetually use priority arbitration) but the working group believed this could unbalance the 1394-1995 fairness mechanism in a fundamental way.

LOOP DETECTION AND HEALING:

There didn't seem to be a lot of interest in this topic, so Peter suggested that this issue be dropped. There were no objections.

LINK VS PHY SPEED MISMATCH: (MAKATO SATO/PETER JOHANSSON)

Proposal to add link speed capability field in the bus info block.

Speed_map(m,n)entry will be the slowest of:

- a) node m's max_link speed
- b) node n's max link speed
- c) The slowest max_phy speed of any node on the path between m and n.

Straw poll was taken on this proposal:

1. Use strapping option for PHYs to report slower speed: Yes 4
2. Apps discover slower link speed by trial and error: Yes 12
3. Add new info to bus info block to indicate link speed: Yes 19

ELECTRICAL ISOLATION: ERIC HANNAH

Eric discussed the proposal to remove the electrical isolation requirement. He recommended that sections describing electrical isolation be completely removed from the spec in order to avoid the confusion on whether isolation is required or optional.

SPEC. REVIEW: SECTION 9 OF SPEC REV 0.6:

Dave Wooten suggested that if the cycle time has a discontinuity due to a change in the cycle master (e.g. two networks being connected together) then all iso talkers should turn off and go through the bandwidth allocation process. After some discussion, the consensus was that there is no need to shut down the talkers in this situation.

4 PIN CONNECTOR: MAX BASSLER

Max Bassler presented new drawings for the 4-pin connector and socket that tightened tolerances from the earlier drawings. Max indicated that no statistically reliable evidence of connector failure had been observed to date but that an analysis of the

anecdotal reports of failure lead to the proposal to change the tolerances.

When the discussion turned to the speed capabilities of the 4-conductor cable, the Chair reminded Max of an earlier vote by the working group to endorse a single 4-conductor capable of operation at S100, S200 and S400. Max took an action item, along with Taka Fujimori, to produce updated drawings for the 4-conductor cable with enhanced shielding.

Action Items: Eric Hannah will supply to the connector working group an outline of his test procedure for FCC experimentation.

Action Items: Eric Hannah said that he is doing experiments to test FCC data for various combinations of PCs, connectors and cables and he will share the data in the May meeting.

PHY-LINK INTERRUPTED STATUS TRANSFER: PRASHANT KANHERE

Prashant presented the information he had gathered by polling various phi and link vendors on this issue. He then presented a proposal for how the 1394A PHYs should handle the interruption in status/read register transfer. After much discussion, a new set of rules/clarifications were formulated that Prashant will summarize and send to Peter for inclusion in the spec.

PHY REGISTER MAP REVIEW: PETER JOHANSSON

Peter reviewed the various new bits in the register map. There were some clarifications/additions that were discussed. He will include these in the spec.

PER PORT DISCONNECT: BILL DUCKWALL

Bill explained the per port disconnect enhancement and its implementation details.

NEW ACK-CODE PROPOSALS: JOHN FULLER AND ERIC ANDERSON

Eric and John briefly presented their proposals for this new ack code that can be used by a device that is in a low power state to indicate that it is waking up and the requester should try the transaction again. There was some discussion and the general consensus was to continue this discussion on the reflector. Peter will add the new ack_code to the documentation.

ASYNCHRONOUS STREAMS: PETER JOHANSSON

Use tcode 0xA for asynchronous fair packets used for IP on 1394. This issue has been the subject of a lot of discussions on the reflector and it was decided that this discussion be continued on the reflector

ERROR HANDLING PROPOSAL FROM PHILLIPS: PETER JOHANSSON

Peter did not have enough time to review the proposal so he was not able to adequately present it to the group.

TCODE 0X0C: PETER JOHANSSON

Jack Hollins moved and John Fuller seconded that the Chair of IEEE P1394a Working Group write to the CPTWG to indicate that the concept of a new transaction code for copyrighted material could be one part of a workable solution to provide copy protection to owners of copyrighted material.

Action item: John Fuller took the action item to spell out the requirements for no-snooping/no-spoofing rules.

SCHEDULE: PETER JOHANSSON.

Peter proposed that we freeze the scope of the topics in the document in another months time. Colin suggested that after the April 16th meeting no new topic will be accepted. The group accepted the April 16th date.

Colin made the motion to make the cutoff date April 16th.

John fuller seconded

No additional motions

Motion passed unanimously.

Peter will schedule "page-turning" technical and editorial sessions for the draft spec. Anyone interested in these should contact him.

MEETING SCHEDULE:

April 16 (Eindhoven, NL)

May 20 - 21 (Phoenix, AZ)

June 24 - 25 (location TBD)

July 28 - 29 (San Jose, CA)

August 11 - 15 (two days during this week, Honolulu, HI)

PHY-LINK INTERFACE IN INTEGRATED IMPLEMENTATIONS:

Peter will add the requirement that in an integrated PHY-link implementation, even though the PHY-link interface may not be physically present, the software should be "see" a PHY link interface and associated register maps.

Meeting adjourned at 3:45 meeting.

ACTION ITEMS:

1. Jim Skidmore: Draft the speed signal timings and send to Peter Johansson.
2. Max Bassler/Taka Fujimori: Produce updated drawings for the 4-conductor cable with enhanced shielding.
3. Prashant Kanhere: Summarize the new PHY-link interface status transfer rules and send to Peter Johansson.
4. Lou Fasano: Add clarifications to the PHY-link status transfer description.
5. Bill Duckwall/ Johansson to investigate impact of multi-speed concatenation rule on token style arbitration.
6. Taka Fujimori: Define the speed signaling cross-talk problem and propose possible solutions.
7. Eric Hannah will supply to the connector working group an outline of his test procedure for FCC experimentation.
8. Eric Hannah said that he is doing experiments to test FCC data for various combinations of PCs, connectors and cables and he will share the data in the May meeting.
9. Peter Johansson: Draft a letter regarding copy protection and post it to the reflector for comments and then send it to the chair of the copy-protection group.
10. John Fuller: Draft the no-snooping/no-spoofing rules.

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