Minutes of IEEE P1394c Working Group Meeting (10/20/2003)

The IEEE P1394c Working Group met in South San Francisco, CA on Monday, Oct. 20, 2003. The attendees were:

Colin Whitby-Strevens	Apple	colinws@apple.com
Michael Johas Teener	Apple	teener@apple.com
Les Baxter	Avaya	les@baxter-enterprises.com
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Agenda:

1) Welcome and introductions

2) IEEE Patent Policy – Chairman Michael Johas Teener reviewed the IEEE's patent policy. He indicated that Apple has patents in process and will comply with the IEEE policies. There is a letter to that effect from Apple's patent attorney posted on the 1394c web site. Kevin Brown indicated that Broadcom had made a similar statement at the last meeting Two slides summarizing the IEEE's patent policy will be posted on the 1394c web site.

3) Approval of Minutes from September meeting – approved by acclamation

4) Review of old action items -- items 2-7 were closed, items 1 and 8 remain open. 4 new action items were added. See the lists below for details.

5) Power management

6) IEEE 802 liaison letters

7) Simulation results

8) Register map

9) C code

10) Next Meeting

11) Any other business – none.

Power Management

There was a fairly lengthy discussion about whether 1394c power management features should be optional or mandatory. Les Baxter summarized the 'optional' view – that, while power management is an important feature, fully implementing it would require changes to the GbE PHY and possibly result in significant delays in implementation. Colin Whitby-Strevens summarized the 'mandatory' view – that power management is an important feature (especially for ports that are not connected to anything) and will not significantly delay implementation. Burke Henehan pointed out that power management is becoming more popular – the Automotive WG has added a "sleep" mode, and PCI Express has a power-down mode. Michael Johas Teener added that the most important thing is that the protocols are implemented so that ports don't get confused by the power management messages – how much power you save is secondary for early implementations. Ultimately, we agreed on three items:

1) Implementation of the power management protocol is mandatory. The protocol will be identical to 1394b with the exception of some constants defined in clause 14.3

2) The actual amount of power saved is implementation-specific and may be zero in some implementations which use current GbE PHY chips.

3) The 1394c specification will minimize changes to the GbE PHY.

IEEE 802 Liaison Letter

Kevin Brown had received some feedback from the IEEE 802.3 community that they would prefer 1394c to use a new selector field for autonegotiation rather than to use Message Code 9 as we had previously planned.   This is not a problem for single-protocol ports, but it may complicate dual-protocol (Ethernet and FireWire) ports. An action item has been added to look into this issue.

Kevin drafted 2 liaison letters – a general letter and a more specific letter requesting that a new selector field be assigned to 1394c. After some discussion, the committee unanimously recommended the general letter. An action item was added for Michael Johas Teener to fine-tune the letter and send it to the 802 committee.

Error Simulation Results

Colin has updated the error model in his simulation. The network consists of two T-mode links, one Data-Strobe link, and one Beta link. The topology of the simulated network is shown in the diagram at right.
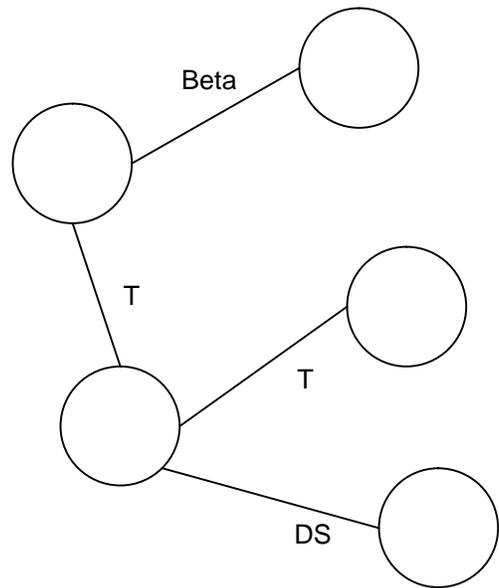
The simulation generates heavy random traffic, with a 1% probability of a byte error. With the robust encoding in place, a 5 ms run resulted in 1 bus reset. During a 5 ms simulation without the robust encoding, no packets got through but no bus resets were logged. While these preliminary results look good, more simulation runs and analysis of the data are needed.

Register Map

Colin outlined the proposed changes to the Port Status page of the PHY register (1394b, Clause 15, register address 1011_2.) The changes result in defining functions for previously spare bits 5-7 and adding some additional specification for bit 4. The changes are:

Bit	Name	Description
7	Tmode_port	This bit is set to 1 if the port supports T-mode
6	Tport_802_mode	This bit is set if autonegotiation results in selecting IEEE 802 operation. In this case, bits 5 and 4 are cleared and the port appears to be disconnected as far as the 1394 PHY is concerned.
5	T-mode	This bit is set if autonegotiation results in selecting S800-T operation.
4	Beta_mode	In addition to its operation as defined in 1394b, this bit is cleared if Tport_802_mode is set, and set to 1 whenever T-mode is set.

It was noted that the registers have sufficient capacity to support S1600 and S3200 in the future.

C Code

Colin distributed and discussed a document describing the changes to the 1394b C code which have been made to create the 1394c C code. Colin will post this document and the actual C code to the 1394c web site. There are some issues involved with supporting a combined S800-T and S100-T port which are not addressed by this C code. An unassigned action item has been added to investigate this issue.

Previous Action Items:

1) Michael Johas Teener and Colin Whitby-Strevens – First draft of the 1394c specification. (still open)

2) Colin -- C-code for draft document. — CLOSED. Colin distributed a document describing the changes to the 1394b C code which have been made to create the 1394c C code.

3) All -- should power management features be mandatory or optional? CLOSED – see summary of discussion below.

4) Colin -- Define register map encoding for PHY delay (there aren't enough bits in the current register.) – CLOSED. See details below.

5) Bob Davis – provide a URL for the set of slides describing the IEEE Patent Policy -- CLOSED

6) Michael Johas Teener – change the name of the web site to P1394c (from S800BASE-T) -- CLOSED

7) Kevin Brown – draft a letter to Paul Nikolich (chair of IEEE 802) requesting a technical liaison who can work with us on the technical details of autonegotiation, insuring interoperability (or at least coexistence) with current equipment, etc. – to be assisted by Michal Johas Teener, Colin Whitby-Strevens and Bob Davis, the final version of the letter to circulated to P1394c concurrently with being sent to Paul. – CLOSED, see discussion below.

8) Colin – run the error simulation without the robust encoding and compare to the current results. – Simulation was run but the data is not fully analyzed yet. (still open)

New Action Items:

1) Walter Hurwitz – evaluate the impact of using a new Selector Field instead of MC9 in the autonegotiation process.

2) Michael Johas Teener – review liaison letter with Bob Davis and send to IEEE 802.

3) Colin Whitby-Strevens – post C code on the 1394c web site.

4) ??? – investigate issues involved with supporting combined S800-T/S100-T ports.

Next Meetings

The next 3 meetings were scheduled. A conference bridge will be available for the Nov. and Dec. meetings.
- Tuesday, Nov. 18, 2003, 10:30 – 3:00, hosted by Apple (Cupertino, CA)
- Tuesday, Dec. 16, 2003, 10:30 – 3:00, hosted by Broadcom (location TBD, probably either San Jose, or Irvine, CA)
- Monday, Jan. 19, 2004, 8:30 – 12:30, in conjunction with the 1394 TA Meeting (Kona, Hawaii)

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