IEEE 802.3 TSSG (Time Sync Study Group)
Meeting Minutes for Wednesday July 15, 2009

IEEE Plenary Meeting, San Francisco, July 13 – 17, 2009

Minutes taken by: Michel Ouellette, Huawei Technologies

Meeting minutes 9am – 12pm

- Meeting was opened at 9am by Steve Carlson, Chair 802.3 TSSG
- About 15 participants were in attendance
- Discussion on the necessity of having a table that would specify performance parameters (eg, PHY delay, uncertainties). This informative table would be written down in 802.3
- Differences in opinion between the generation of timestamp versus the generation and transport of timestamp
- There is a need to agree on requirement interpretation between 802.3 and 802.1as
- Discussion about constant and variable delay in PHYs. It was mentioned that PHY delay can change, but once a link is up the latency is usually fixed. It was mentioned as an example that a GE Master PHY can have fixed latency whereas a GE Slave PHY can have variable latency
- A question was raised about latency variability at startup and if it matters. Need to be investigated.
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- A working document highlighting a series of questions (by 802.3 TSSG) will be prepared for the joint meeting with 802.1as scheduled in the afternoon. Refer to the document for all questions. Some of the questions and items discussed were:
- The table should capture units of measure, stability, etc.
- An example using EPON having different wavelengths could introduce latency. The increase in latency could be in the order of a few tens of nanoseconds
- The table should contain the quantitative parameters for each profile that 802.1as intends to develop. A question on what specific information is required was raised?
- Discussion on whether 802.3 should generate an event or a timestamp.
- It was noted that the working document would be the start of an on-going, mutually-agreed upon requirements document.
- It was noted that 802.1as is asking for change at the top of MII, and that this might change 802.3 system
- A question was raised around the LLDP frames. The term LLDP has not been discussed yet in 802.3 TSSG. A question was raised on "hidden switch", but was mentioned that such hidden switch is outside the scope of TSSG
- A question was raised on how errors should be handled (eg., CRC errors) and the impact to timestamps

- A question was raised on whether 802.1as are requesting an event or a real timestamp (e.g. local counter + some form of association) under the constraint of the service interface
- Questions about definition of timestamp local counter, initialization and PHY speed clock were raised.
- It was noted that a list of PHYs that .1as expects to work on is required.
- A comment about the clocks and clock domains was provided (ie., system clock versus the clock to drive the local timestamp).
- Meeting was stopped for lunch

Meeting minutes 1pm - 3pm (joint meeting between 802.3 TSSG & 802.1as)

- Meeting was opened at 1pm by Steve Carlson, Chair 802.3 TSSG
- About 37 participants were in attendance at 1:30pm
- Intent of joint meeting is to go through initial 802.3 set of questions (working document created in the morning)
- The first few questions in the working document were discussed which led to several other discussion points and more questions
- A member of the 802.3 TSSG tried to summarize the discussion in three items, and what 802.1as is asking for
- Item #1 recorded: PHY delay. For each PHY 802.1as would like to have the time from MII-to-MDI (constant + variable latency).
- Item #2 recorded: There is a requirement to have logic that detects when the SFP passes the MII in each of the two directions (the event). There needs to be a way to communicate the recording of that event to the MAC client, hoping to avoid any real-time signals and no new service interface
- Item#3 recorded: Require crisp definition if all packets versus selected packets need to be timestamped. If selected packets, how can we tell each one and what is the association of timestamps to packets
- It was noted that there can be a contention period due to MAC control frame
- A member of 802.1as explained that their requirement is to have a reference point to explicitly identify the event with the passing of a packet, and that these events are correlated to a packet. Two ways were discussed: either through new service interface (not necessarily agreed) or either through association.

- It was discussed that an 802.1as tutorial might be beneficial for the next plenary meeting.

- A comment was raised about the use of SFP plugged into a switch and that it might be difficult to know the latency characteristics of the PHY inside the SFP. It was mentioned that the Vendor ID could be used to know what PHY is being used.

- It was mentioned that 100BASE-T and MII was selected as starting point by 802.1as because it was a "cheap" way of doing timestamping. It was mentioned that doing

timestamping at the MDI would have given much accuracy but would have required to touch all PHYs (therefore going against the goal of being cheap)

- There was a discussion about the possibly of meeting 802.1as requirement through a maintenance request

- It was discussed that in the case of the receive path, the latency might be different due to clock compensation, FEC, but that these numbers might be negligible compared to the +/- 40 nsec of the MII level.

- There were concerns about the use of multiple PHYs, FEC, XAUI interfaces that might be close to or above the 40nsec requirement of 802.1as. It was suggested that 802.3 prepares a presentation to 802.1as to show if this violates the 40 nsec requirement or not.

- It was agreed that all frames are to be timestamped.

- It was noted that AVB over Ethernet does not support jumbo frames, half-duplex and 10Mbps

- It was finally mentioned that the information required from 802.3 is a latency number and the uncertainty.

- Meeting was stopped for break

Meeting minutes 3:15 – 4pm

- Meeting was opened at 3:15 by Steve Carlson, Chair 802.3 TSSG
- A quick summary of the joint meeting was given by the Chair
- It was noted that a diagram might help to clarify what is required
- A quick discussion point on applications that might require more precision should be taken into account.
- It was noted that mobile backhaul requirements (w.r.t timestamp) might already be within or similar to some AVB requirements
- Meeting will continue tomorrow July 16.
- Meeting was closed around 4pm by Steve Carlson, Chair 802.3 TSSG