IEEE 802.3cx Improved PTP Timestamping Accuracy (ITSA) Task Force Meeting Minutes

January 19, 2021, Virtual Meeting

- Minutes prepared by Andras de Koos and Steve Gorshe

Agenda and General Information Presentation by Steve Gorshe, ITSA Task Force Chair

- Steve Gorshe, meeting and task force chair, begins presenting the Agenda and General Information slides
- Since this was a virtual meeting, the attendees were not asked to introduce themselves with their affiliations. Instead, the Chair asked them to identify their affiliation in their WebEx user names.
- **Agenda** – Chair presents the agenda for the meeting and asked if anyone had comments, additions or objections for the meeting agenda.
- The agenda was approved by acclamation per slide 2 of the following presentation: https://www.ieee802.org/3/cx/public/jan21/agenda_a_3cx_0121.pdf
- **Task Force Decorum** - Chair reviewed slide and noted that there should be no recording or photography without permission. Chair asked if anyone was attending from the press including those who would run a public blog on this meeting – none responded.
- **Goals for Meeting** – Chair presented the goals with no comment from attendees
- **Big Ticket Items** – Chair presented the Big-Ticket items aligned to goals with no comments from attendees
- **Reflector and Web** – Chair presented the Task Force reflector and web information.   All in attendance were invited to subscribe for Task Force communications and updates.
- **Task Force Private Area** – Chair reminded members of the Task Force Private Area, presented the URL to that private area and presented both the Username and Password to gain access to the URL. Chair also noted that the general IEEE 802.3 Username and Password can be used to access the URL.
- **Ground Rules** – Chair review the meeting ground rules based on IEEE 802.3 Rules.
- **Attendance** – Attendees were reminded of the IEEE 802.3 attendance procedures and asked to follow the link to those procedure for further information. IMAT tool was used for this meeting, and password was given by the chair.
- **IEEE Structure and Important Bylaws & Rules** – Chair review the IEEE SA structure including a review of how 802.3 WG and the Task Force is located within the structure. The important bylaws and rules were pointed out for all to refer is needed or of interest.
- **IEEE 's Patent Policy and IEEE WG Meeting Guidelines (Slides 12-16 or IEEE SA Slides 0-4)** – All 5 IEEE SA slides were presented with the chair highlighting that

1. IEEE's patent policy is described in Clause 6 of the IEEE SA Standards Board Bylaws where they can be referred to and that the IEEE SA Standards Board Patent Committee Administrator may be contacted with further questions
2. Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged

3. There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.

4. Participants have a duty to inform the IEEE of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents

- The chair provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of this standard.
  - No such claims were bought to the chair's attention.
- **Participation in IEEE 802 Meetings** – Chair review the slide
- **Overview of IEEE802.3 Standard Process (5 slides)** – Chair reviewed the standards process slides. Chair highlighted that the ITSA group had completed the Study Group Phase and moved into the Task Force Proposal Selection Phase on slide 2of5 of the Process slides.
- **Liaisons and Communications** – There were none to review for this meeting, although Chair noted that a liaison to ITU-T Q13/15 should be considered at the next Task Force meeting.
- **Action Items** – There were none to review for this meeting.
- **Task Force Approved Project Documents** – Task Force project documents remain unchanged and links to the documents were provided.
- **Task Force Objectives** – Chair restated the adopted Task Force objectives.
- **Task Force Timelines** – Chair presented the timeline.

- Chair put forward motions for the Task Force to approve the agenda:

Motion #1: Approve the agenda of the current meeting:

- *Requires >50% (Procedural)*
- *Moved by :* Marek Hajduczenia   *Seconded by:* Mark Bordogna
- *PASSES with no objections received*

Meeting agenda posted here:

- **Previous Meeting Minutes** - The chair mentioned that no comments had been received regarding the meeting minutes from previous meetings.
     Meeting minutes held on November 17th, 2020 (virtual call) are here:
     https://www.ieee802.org/3/cx/public/nov20/Unconfirmed_Meeting_Minutes_ITSA_802d3cx_1120.pdf
- Chair asked if any attendee had comments regarding the November 17, 2020 Meeting Minutes. None were received
- Chair put forward motions for the Task Force to approve the previous meeting minutes:

Motion #2: Approve the meeting minutes of November 17, 2020:

- *Requires >50% (Procedural)*

- *Moved by :* Marek Hajduczenia   *Seconded by:* Mark Bordogna
- *PASSES with no objections received*

Approved meeting minutes from November 17, 2020 are officially here
https://www.ieee802.org/3/cx/public/nov20/Approved_Meeting_Minutes_ITSA_802d3cx_1120.pdf

Presentations – 2 presentations are on the agenda to be reviewed. Chair introduced the presentations for the day and started the presentation agenda item.

Presentation #1 – Marek Hajduczenia, Charter
https://www.ieee802.org/3/cx/public/jan21/P8023cx_2101_comments_proposed.pdf

- Goal is to go over the comments on the D0.3 draft
  - No desire to go over every proposed modification one-by-one, but more a method to focus the discussion
  - Participants can reach out to Marek via email if there are any questions
  - Comment database shown to all, for many it is the first time.
  - Steve Trowbridge remarked that he had not seen the presentation until the last minute, nor an announcement of the D0.3 draft availability.

Overview of changes:

1.   Clause 45 adds sub-nanosecond fraction registers for TimeSyncDelay[Min,Max][RX,TX] to the PCS layer section.
   - Marek proposes to duplicate those changes to the PMA/PMD, WIS, XS, DTE, TC sections.
   - Richard Tse questioned whether this duplication to other sections was strictly necessary.
   - Marek likes symmetry! Argued that even if the path delay fractional nanosecond fields are not always applicable, better safe than sorry. The register space is available. Symmetry is better than justifying each exception.
   - accepted
2.   Marek: update register ranges in table 90-1 to point to the new register ranges (from comment 1)
   - accepted
3.   Marek: Update ranges and attributes in Clause 30 to account for the changes from comment
   - accepted
4.   Marek: add capability registers for .3cx relative to .3bf
   - Message timestamp point, timestamp calculation rules and sub-nanosecond support are all different between .3bf and .3cx – they all need capability regs.
   - Capability regs should be mirrored to PMA/PMD, WIS, XS, DTE, TC sections just like for comment #1
   - accepted
5.   Marek: Add line numbers to individual clauses: 30, 45, 90
   - accepted
6.   Richard Tse: Add registers for message timestamp point capability (.3bf vs .3cx)
   - Marek : add bits to existing reg 3.1800 in the PCS space – use bits 13, 12

- Richard: not necessarily associated with PCS? Why not a new register elsewhere
- Marek: registers must belong to a sub-layer, PCS is the best fit.
- Jinfeng Lv : for the text, use "first symbol after SFD" rather than "symbol after SFD" to be consistent with text elsewhere.
- accepted

7. Richard: Add writable bits for message timestamp mode
   - Distinct from capability registers
   - Marek: use 3.1813 (first available). PCS TimeSyncConfiguration register mirrors the capability register at 3.1800
   - Default value is implementation-dependent.
   - accepted

8. Richard: Same as 6, but for 802.3cx AM/CWM mechanism support (Tx_num_blk_change, Rx_num_blk_change)
   - Use bit 10 of the capability register above
   - accepted

9. Richard: Same as 6, but for 802.3cx TimeSync multi-PCS lane distribution path data delay mechanism support
   - Use bit 11 of the capability register above
   - accepted

10. Richard: Add informative annex for .3cx changes
    - See Richard's presentation
    - Rejected for now. Marek: no specific annex material yet exists. Will be revisited in the future when contributions are submitted and specific content is accepted.

Presentation #2 - Richard Tse, Microchip

https://www.ieee802.org/3/cx/public/jan21/tse_3cx_01_0121.pdf

Presents an outline and general content for an informative annex that gives an overview of the time error present in legacy implementations, and the steps taken to remedy them in 802.3cx.

5 sections:

1. AM/CWM error and how it is remedied in .3cx
   a. ~~Jinfeng~~ Jingfei Lv : add details and examples for Rx, too (add vs subtract). Richard to update.
   ~~a.~~b. Jingfei Lv: low-frequency noise that would result from incompatible implementations for AM/CWM/Idle insertion/deletion events cannot be filtered out. Only high frequency noise can be filtered out by a ToD recovery mechanism's low-pass filters. Richard to discuss offline with Jingfei before the next meeting.
2. Multi-PCS-lanes and how the error is remedied in .3cx
3. Message timestamp point and the mechanism for correcting it in .3cx

a. Ulf Parkholm: explaining he error when SFD occurs right before an AM, "single lane" is a misnomer because CWM can affect the SFD-DA distance just like AMs can. Richard to update.

b. Ulf Parkholm: FEC parity can affect the error for the message timestamp point, too.
   i. Andras de Koos: but this is covered in .3cx for the multi-PCS lanes (#2). Timestamp
   ii. Ulf Parkholm : but the annex attempts to capture what happens in non-cx implementations. #3 thus intersects with #2 – difficult to discuss the effects in isolation.

4. Tx skew – details added for 802.3cx.
5. General Usage – how to account for variable delay introduced by PCS functions.
   a. Should be applicable to any future PCS/PHY functions as well.
   b. Useful, but is it too much information?

GENERAL COMMENTS:

- Andras de Koos : Such an annex would have been useful when implementing devices with accurate PTP timestamping. There is often confusion about the true meanings and motivations in the standards.
- Marek: Especially for an informative Annex, be very judicious about what to include.
  - Otherwise it will be subject to endless comments and revisions. The goal should not be to write a Wikipedia article!
- General Agreement: Keep important info, but remove parts comparing .3cx with legacy implementations
  - Otherwise, the scope is too broad
  - The listed legacy implementations are likely not exhaustive, nor necessarily representative.

Motion

- The chair noted that drafts are available in the private folder

   ### *Motion #3: Editor to create draft D0.4 incorporating approved changes*

- Requires >75% (Technical)
- Moved by: Marek Hajduczenia   Seconded by: Bordogna
- PASSES with no objections received

FUTURE MEETINGS

- There is not a firm date for next IEEE 802.3 meeting, most likely it will be a virtual meeting, possibly scheduled for the week of March XX, 2020 (to be confirmed).

New Business

- There was no new business

Adjourn

- TF Chair proposed adjourning the meeting with the agenda having been completed.
- The Chair put forward the following motion:

Motion #4: Adjourn the meeting

- Moved by: Marek Hajduczenia   Seconded by: Mark Bordogna
- Requires >50% approval
- PASSES with no objections received

Attendance

IEEE 802.3cx Improving PTP Timestamping Accuracy TF IEEE 802.3cx Virtual Interim meeting, January 2021				Day 1 Jan. 19				
By choosing to attend and sign in to this meeting, you acknowledge and agree that your personal data will be documented for IEEE standards development purposes to comply with policies and procedures, legal and accreditation requirements, and evaluation of patent claims by patent offices. See Front Page for additional information.								
Last Name	First Name	Employer	Affiliations	Tues.				
Agarwal	Shubham	Cadence		x				
Baggett	Tim	Microchip	Microchip	x				
Bordogna	Mark	Intel	Intel	x				
Boyer	Rich	Aptiv		x				
Chacon	Geoffrey	MorethanIP	MorethanIP	x				
Chang	Ayla	Huawei	Huawei	x				
de Koos	Andras	Microchip	Microchip	x				
Hajduczenia	Marek	Charter	Charter	x				
He	Xiang	Huawei	Huawei	x				
Huber	Tom	Nokia	Nokia	x				
Isono	Hideki	Fujitsu	Fujitsu	x				
Jiang	Tong	Huawei		x				
Kochuparambil	Beth	Cisco		x				
Lv	Jingfei	Huawei	Huawei	x				
Maniloff	Eric	Ciena	Ciena	x				
McKeown	Shane	Calnex		x				
Nicholl	Shawn	Xilinx	Xilinx	x				
Ofelt	David	Juniper Networks	Juniper	x				
Parkholm	Ulf	Ericsson	Ericsson	x				
Powell	Bill	Independent	Independent	x				
Ren	Hao	Huawei	Huawei	x				
Rodrigues	Silvana	Huawei	Huawei	x				
Sprague	Ted	Infinera	Infinera	x				
Trowbridge	Steve	Nokia	Nokia	x				

Tse	Richard	Microchip	Microchip	x	
Wang	Haifei	Huawei		x	
Withey	James	Fluke	Fluke	x	
Wong	Denny	Xilinx	Xilinx	x	