

2 802.1 Officers and Management

Glenn Parsons	Working Group Chair
John Messenger	Working Group Vice-Chair and acting Chair
Jessy Rouyer	Working Group Secretary and acting Vice-Chair
Paul Congdon	Maintenance Task Group Chair
Mick Seaman	Security Task Group Chair
János Farkas	Time-Sensitive Networking Task Group Chair
Craig Gunther	Time-Sensitive Networking Task Group Vice-Chair
Marina Gutiérrez	Time-Sensitive Networking Task Group Secretary
Ludwig Winkel	IEC/IEEE 60802 Joint Project Chair
Josef Dorr	IEC/IEEE 60802 Joint Project Secretary
Roger Marks	Nendica Chair
Scott Mansfield	YANGsters Chair
Stephan Kehrer	YANGsters Secretary and acting Chair
Mark Hantel	Email Maintenance and IEC/IEEE 60802 Joint Project Website Maintenance
Paul Unbehagen	Website Maintenance
Hal Keen	Email Maintenance

3 Maintenance Task Group

Minutes of TG conference calls are available at <https://1.ieee802.org/maintenance/>.

Tuesday 17 September 2019

8:05 AM call to order by the TG Chair

The Maintenance Task Group Chair, Paul Congdon, presided and wrote the minutes.

At the beginning of the meeting the TG Chair presented the IEEE-SA PatCom Patent Slides for Standards Development Meetings

<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>, the IEEE 802 Participation slide <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-0PNP-ieee-802-participation-slide-ppt.ppt>, and made the Call for Potentially Essential Patents. There were no responses to the call prior to the end of the meeting.

The TG Chair:

- Introduced the agenda per *Maintenance Task Group Meeting September 17, 2019 Agenda* in <http://www.ieee802.org/1/files/public/docs2019/maint-congdon-session-0919-v01.pdf> that was approved.
- Presented *Document Vehicles -Status Update* in <http://www.ieee802.org/1/files/public/docs2019/maint-congdon-session-0919-v01.pdf>.
- Led the discussion of open and new maintenance items.
 - 0236 - 802.1CB-2017 10.4.1.6 frerSeqRcvyHistoryLength min value s/b 1, not 2
 - 0237 - 802.1 Maintenance request: IEEE Std 802

- 0232 - Maintenance requires: PICS inconsistent in 802.1Q-2018
- 0238 - 802.1Qcp-2018: ieee802-dot1q-vlan-bridge is empty and should be removed
- 0239 - 802.1Qcp-2018: Missing counters in ieee802-dot1q-tpmr
- 0240 - 802.1Qcp-2018: Managed Object <-> YANG mapping tables
- 0241 - 802.1CB-2017 SequenceGenerationAlgorithm does not discard packets as stated in 10.4.1.10
- 0242 - IEEE Std 802.1Qcp-2018: Collected issues on data consistency and others.
 - Johannes Specht presented details of item 0242 in <http://www.ieee802.org/1/files/public/docs2019/maint-specht-yang-comments-0919-v01.pdf>.
- **Disposition:** Details for discussion on all new items were logged in the IEEE 802.1 Maintenance database at <https://www.802-1.org/home> where items progressed at the meeting can be reviewed by selecting 'Meetings'.

Karen Randall led a review of the JTC1/SC6 status and pre-ballot responses for IEEE Std 802.1AE and IEEE Std 802.1Xck in <http://www.ieee802.org/1/files/public/docs2019/maint-congdon-session-0919-v01.pdf>.

Disposition: The 802.1 WG Chair was reminded to send the responses. The meeting agreed (none dissenting) to hold off sending IEEE Std 802.1X-Rev to SC6 until IEEE Std 802.1Xck is complete.

Norman Finn presented *Why the EPD/LPD information in IEEE 802, IEEE 802.1AC, and 802.1Q must be fixed* <http://www.ieee802.org/1/files/public/docs2019/maint-finn-epd-lpd-errors-0919-v02.pdf> and led a discussion about inconsistencies in 802 standards with EtherType Protocol Discrimination (EPD) and LLC Protocol Discrimination (LPD).

Disposition: The meeting agreed (none dissenting) to continue the discussion and propose maintenance items against IEEE Std 802.1AC and possibly IEEE Std 802.1Q. It was suggested that IEEE Std 802 is consistent, and no changes are needed. Future contributions are expected.

Future meetings/teleconferences

The TG intends to hold a teleconference (as approved in July 2019) on Tuesday November 05, 2019 at 8:00 AM Pacific, unless cancelled prior to the call.

The TG meets face-to-face next at the November 2019 plenary session.

Any Other Business

No further business was discussed in this meeting.

10:15 AM adjournment

Post-meeting, the TG Chair provided meeting slides updated based on discussion in <http://www.ieee802.org/1/files/public/docs2019/maint-congdon-session-0919-v02.pdf>. The TG website at <http://www.ieee802.org/1/maint.html> provides further details and discussion.

4 Security Task Group

The Security Task Group Chair, Mick Seaman, presided and wrote the minutes.

Minutes of TG conference calls are available at <https://1.ieee802.org/security/security-task-group-minutes/>.

At the beginning of the TG meeting on Monday, the TG Chair presented the IEEE-SA PatCom Patent Slides for Standards Development Meetings <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>, the IEEE 802 Participation slide <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-0PNP-ieee-802-participation-slide-ppt.ppt>, and made the "Call for Potentially Essential Patents". At the beginning of the TG meetings on Tuesday and Wednesday, the TG chair announced that the meetings were subject to the Patent Policy as read and displayed at the opening of Monday's TG meeting. There were no responses to the calls prior to the end of the week's meetings.

Attendance is in section 1 and also included the following participation:

- Eric Gray, Ericsson [Monday AM (part), PM, Tuesday PM, Wednesday AM]
- Marc Holness, Ciena [Tuesday PM (part)]
- Glenn Parsons, Ericsson [Monday AM (part)]
- Mick Seaman, Individual [Monday PM, Tuesday AM, PM, Wednesday AM]
- Timothy Yachera, US Department of Defense [Monday AM, PM]

The draft agenda posted on the 802.1 website prior to the meeting was reviewed by the TG Chair at the beginning of the TG meeting on Monday morning.

1. P802.1X-Rev Port-Based Network Access Control - Revision
Draft 1.4, Initial Standards Association (Sponsor) Ballot Resolution
2. MAC Privacy protection
PAR and CSD development, supporting material
3. A.O.B
4. Future meetings/teleconferences

Monday 16 September 2019

9:30 AM call to order by the TG Chair

P802.1X-Rev D1.4 Initial Standards Association Ballot Resolution

Mick Seaman, P802.1X-Rev editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/x-rev-drafts/d1/802-1X-rev-d1-4.pdf>.

- The ballot passed with 97% approval and 84% response rate.
- Comment resolution started.
- **10:15 – 10:45 AM recess**
- Comment resolution continued.
- **12:15 – 1:45 PM recess**
- Minor strictly non-technical editorials (duplicate period, missing 's' on obvious plural, missing bracket, out of date hyperlink) provided to the editor off-line were discussed. These could be covered by the normal copy-editing process.

Disposition: The results of the discussion, as updated during the course of the meeting, are captured in *Proposed Disposition of initial Sponsor Ballot comments* <http://www.ieee802.org/1/files/private/x-rev-drafts/d1/802-1X-Rev-d1-4-sponsor-pdis1.pdf>. The response to comment i-2 required provision of detailed references. This was completed by the

editor in *Disposition of initial Sponsor Ballot comments* <http://www.ieee802.org/1/files/private/x-rev-drafts/d1/802-1X-Rev-d1-4-sponsor-dis.pdf> for final approval in a future teleconference.

MAC Privacy protection

Mick Seaman presented possible protocol formats from *Individual contribution-MAC Privacy protection* <http://www.ieee802.org/1/files/public/docs2019/dk-seaman-mac-privacy-0909-v01.pdf>.

- Presentation discussion started.
- **3:05 – 3:30 PM recess**
- Presentation discussion continued.

Disposition: The document could be used to check our mutual understanding of project goals in PAR and CSD preparation.

4:50 PM recess

Tuesday 17 September 2019

1:40 PM call to order by the TG Chair

MAC Privacy protection

The TG Chair led the review of the draft PAR <http://www.ieee802.org/1/files/public/docs2019/dk-seaman-mac-privacy-protection-draft-par-0519-v00.pdf> for proposed P8021AEdk *Standard for Local and metropolitan area networks-Media Access Control (MAC) Security Amendment 4: Media Access Control (MAC) Privacy protection* as initially developed in the May 2019 interim session.

Disposition:

- Updated PAR: <http://www.ieee802.org/1/files/public/docs2019/dk-security-mac-privacy-PAR-0919-v01.pdf> reflecting:
 - The possibility of fragmenting a user data frame to allow it to fill the space remaining in a fixed sized MAC Privacy-protection PDU (MPPDU), or to be carried in a number of successive smaller MPPDUs, in both cases with the goal of increasing the efficiency of packing user data frames in MPPDUs; and
 - The desire to provide an SNMP MIB for the privacy protection functionality.
- Subsequently updated PAR as suggested by IEEE staff to remove the use of the MACsec acronym, to explain the acronyms for YANG, SNMP, and MIB in the explanatory notes, and to clarify the references to the PSDO agreement in those notes: <http://www.ieee802.org/1/files/public/docs2019/dk-security-mac-privacy-PAR-0919-v02.pdf>

2:55 – 3:30 PM recess

Don Fedyk presented *IEEE 802.1AE Yang Statistics* <http://www.ieee802.org/1/files/public/docs2019/dk-fedyk-dot1ae-statistics-discussion-0917-v01.pdf>.

- This was part of an effort to understand how the existing 802.1AE functionality should be modeled in YANG, as a prelude to modeling MAC Privacy protection.
- A concern was a multiplication of the number of counters required, as a consequence of using the IETF YANG interface as a base type.

Disposition: The existence of many counters in if:interface cannot be allowed to dictate the fine substructuring (through use of the ISS and EISS for shims, for example) in 802.1 standards. A simpler base type may need to be used where counters would otherwise be

duplicated (on the internal port of the S-component of and EDE-CS, for example). Use of augment to construct an entire interface stack from a single base if:interface would also reduce the number of inherited counters in many cases, though clarification as to where in the stack the if:interface counts matched the model would be required. In many cases a SecY model would augment a Bridge Port.

5:25 PM recess

Wednesday 18 September 2019

9:15 AM call to order by the TG Chair

Any Other Business

The TG Chair led short discussions of:

- The degree to which YANG should follow the detailed internal structure of 802.1 standards, as the general rule that the model need only be followed to the extent that a valid implementation exhibited the same external behavior could be compromised by management observation and control over internal detail.
- Potential modification of the 802.1X MKA CP state machine to minimize the period for which connectivity was interrupted when the Key Server changed. The change might not be acted upon until the new Key Server distributed SAKs.
- The effect of cut-through on MACSec. In particular it was considered important not to forward any part of a protected frame until the ICV had been validated. Doing so could allow an attacker to recover the SAK (data key).

Disposition: Further discussion and input would be welcomed on these topics.

Future meetings/teleconferences

Agreed (informally, none dissenting) to hold teleconferences for progression of work as identified during this session and to address TG matters arising, subject to the usual required notice. P802E WG recirculation ballot processing will be addressed by teleconference prior to the November 2019 plenary session, to allow for a further WG recirculation ballot if necessary. The single comment received so far on P802.1AE-2018-Cor1 was an editorial comment on a hyperlink in the boilerplate material. If there are no further comments a teleconference call on this subject will not be necessary.

The TG will meet during the November 2019 plenary session.

9:45 AM adjournment

5 Time-Sensitive Networking Task Group

The Time-Sensitive Networking (TSN) Task Group Chair, János Farkas, presided. The TG Secretary, Marina Gutiérrez, wrote the minutes.

Minutes of TG conference calls are available at <https://1.ieee802.org/tsn-calls/>.

At the beginning of the meetings on Monday, Tuesday, Wednesday, Thursday, and Friday the TG Chair or TG Vice-Chair presented the IEEE-SA PatCom Patent Slides for Standards Development Meetings

<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>, the IEEE 802 Participation slide <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-0PNP-ieee-802->

[participation-slide-ppt.ppt](#), and made the Call for Potentially Essential Patents. There were no responses to the calls prior to the end of the week's session.

Monday 16 September 2019

8:34 AM call to order by the TG Chair

The TG Chair presented the agenda in <https://1.ieee802.org/september-2019-interim-session-in-edinburgh-uk-tsn-tg-agenda/>.

Disposition: The agenda was reviewed, discussed and approved.

Geoff Garner, P802.1AS-Rev editor, presented *P802.1AS-Rev/D8.1 Editor's Report* <http://www.ieee802.org/1/files/public/docs2019/as-garner-802-1AS-Rev-d8-1-sponsor-recirc-ballot-editors-report-0919-v00.pdf> and led the resolution of comments received on <http://www.ieee802.org/1/files/private/as-rev-drafts/d8/802-1AS-rev-d8-1.pdf>.

- Comment resolution started.
- **10:10 – 10:30 AM recess**
- Comment resolution continued.
- **12:30 – 1:30 PM recess**
- Comment resolution continued.
- **3:01 – 3:33 PM recess**
- Comment resolution continued.

Disposition: Continued later.

5:53 PM recess

Tuesday 17 September 2019

10:31 AM call to order by the TG Chair

Johannes Specht, P802.1Qcr editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cr-drafts/d1/802-1Qcr-d1-2.pdf>.

- Comment resolution started.
- **12:33 – 1:38 PM recess**
- Comment resolution continued.

Disposition: Continued later.

Norman Finn, P802.1CS editor, presented the draft PAR modification in <http://www.ieee802.org/1/files/public/docs2019/cs-finn-revised-PAR-0919-v01.pdf>.

Disposition: PAR modification targeted for pre-circulation for consideration for approval at the November 2019 plenary session.

Norman Finn, P802.1CS editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cs-drafts/d2/802-1CS-d2-2.pdf>.

- Comment resolution started.
- **2:58 – 3:44 PM recess**
- Comment resolution continued.

Disposition: Continued later.

Christophe Mangin, P802.1CBdb editor, presented *802.1CBdb/D0.2 Editor's report for 2nd TG ballot comment resolution* <http://www.ieee802.org/1/files/public/docs2019/db-mangin-d0-2-editors-report-0919-v01.pdf> and led the resolution of comments received on <http://www.ieee802.org/1/files/private/db-drafts/d0/802-1CBdb-d0-2.pdf>.

Disposition: Continued later.

Marc Holness, P802.1Qcx editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cx-drafts/d1/802-1Qcx-d1-4.pdf>.

Disposition: Continued later.

6:12 PM recess

Wednesday 18 September 2019

8:00 AM call to order by the TG Chair and the IEC/IEEE 60802 Joint Project Chair

Minutes of this meeting, a joint meeting of the TSN TG and IEC/IEEE 60802 Joint Project, are provided in section 5.1.

12:30 PM recess

Following recess, the TSN TG split into two tracks A and B throughout Thursday: minutes of track A are provided in section 5.1 and minutes of track B follow.

1:31 PM call to order by the TG Vice-Chair

Norman Finn, P802.1CS editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cs-drafts/d2/802-1CS-d2-2.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/cs-drafts/d2/802-1CS-d2-2-dis.pdf>.

Marc Holness, P802.1Qcx editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cx-drafts/d1/802-1Qcx-d1-4.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/cx-drafts/d1/802-1Qcx-d1-4-dis-v02.pdf>.

Stephan Kehrer led the review of the draft PAR <http://www.ieee802.org/1/files/public/docs2019/802F-draft-PAR-0919-v00.pdf> and CSD <http://www.ieee802.org/1/files/public/docs2019/802F-draft-CSD-0919-v00.pdf> for a proposed P802F *Standard for Local and metropolitan area networks - Overview and Architecture Amendment: YANG Data Model for Ethernets Friendly Names*.

Disposition: New PAR targeted for pre-circulation for consideration for approval at the November 2019 plenary session.

3:07 – 3:33 PM recess

János Farkas, P802.1CMde editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/de-drafts/d1/802-1CMde-d1-0.pdf>.

Disposition: Continued later.

Norm Finn, P802.1DC editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/dc-drafts/d1/802-1DC-d1-0.pdf>.

Disposition: Continued later.

6:01 PM recess

Thursday 19 September 2019

8:02 AM call to order by the TG Vice Chair

The TG Chair presented the updated agenda in <https://1.ieee802.org/september-2019-interim-session-in-edinburgh-uk-tsn-tg-agenda/>.

Disposition: The updated agenda was reviewed, discussed and approved.

Craig Gunther, P802.1DG editor, presented *P802.1DG Status Update September 19, 2019* <http://www.ieee802.org/1/files/public/docs2019/dg-cgunther-status-update-2019Sep19-0919-v01.pdf> and <http://www.ieee802.org/1/files/private/dg-drafts/d1/802-1DG-d1-0.pdf>.

Disposition: Presentation was discussed.

9:57 – 10:34 AM recess

Manfred Kunz presented *802.1DG Use Case & Requirements status* <http://www.ieee802.org/1/files/public/docs2019/dg-pannell-automotive-use-cases-0919-v04.pdf>.

Disposition: Presentation was discussed.

János Farkas, P802.1CMde editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/de-drafts/d1/802-1CMde-d1-0.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/de-drafts/d1/802-1CMde-d1-0-dis-v01.pdf>.

12:30 – 1:38 PM recess

Geoff Garner, P802.1AS-Rev editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/as-rev-drafts/d8/802-1AS-rev-d8-1.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/as-rev-drafts/d8/802-1AS-Rev-d8-1-dis-v00.pdf>.

Johannes Specht, P802.1Qcr editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cr-drafts/d1/802-1Qcr-d1-2.pdf> and showed Christian Boiger's related contribution in <http://www.ieee802.org/1/files/public/docs2019/cr-boiger-comment-12-D2-2-0919-v01.pdf>.

- Comment resolution started.
- **3:03 – 3:37 PM recess**
- Comment resolution continued.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/cr-drafts/d1/802-1Qcr-d1-2-dis-v01.pdf>.

The acting WG Chair announced that Scott Fincher volunteered to take over the editorship of P802.1Qcj from Paul Unbehagen, which would be submitted for WG approval at the November 2019 plenary session. Paul Unbehagen, P802.1Qcj editor, and Scott Fincher then presented *802.1Qcj D1.1 Status* <http://www.ieee802.org/1/files/public/docs2019/cj-unbehagen-editors-report-d1-1-0916-v01.pdf>. Paul Unbehagen, assisted by Scott Fincher, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cj-drafts/d1/802-1Qcj-d1-1.pdf>.

Disposition: Continued later.

6:01 PM recess

Friday 20 September 2019

8:00 AM call to order by the TG Chair and the IEC/IEEE 60802 Joint Project Chair

Minutes of this meeting, a joint meeting of the TSN TG and IEC/IEEE 60802 Joint Project, are provided in section 5.1.

12:30 PM recess

Following recess, the TSN TG split into two tracks A and B throughout session adjournment: minutes of track A until Friday 2:03 PM are provided in section 5.1. Minutes of track A from Friday 2:10 PM are provided after the minutes of track B that follow.

Track B

1:30 PM call to order by the TG Chair

The TG Chair presented the updated agenda in <https://1.ieee802.org/september-2019-interim-session-in-edinburgh-uk-tsn-tg-agenda/>.

Disposition: The updated agenda was reviewed, discussed and approved.

The TG Vice-Chair then presided.

Paul Congdon, P802.1Qcz editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cz-drafts/d0/802-1Qcz-d0-3.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/cz-drafts/d0/802-1Qcz-d0-3-pdis-v04.pdf>.

Paul Unbehagen, P802.1Qcj editor, assisted by Scott Fincher, led the resolution of comments received on <http://ieee802.org/1/files/private/cj-drafts/d1/802-1Qcj-d1-1.pdf>.

- Comment resolution started.
- **3:00 – 3:33 PM recess**
- Comment resolution continued.

Disposition: Ballot comments discussed. Disposition recorded in <http://ieee802.org/1/files/private/cj-drafts/d1/802-1Qcj-d1-1-dis-v01.pdf>.

Any Other Business

No further business was discussed in this session.

5:53 PM adjournment

Track A

2:10 PM call to order by the TG Chair

Hiroki Nakano presented *Scheduling of Time-Sensitive and Bursty Traffic in Reduced Available Bandwidth (STSBT)* <http://www.ieee802.org/1/files/public/docs2019/new-NakanoZein-Scheduling-of-Time-sensitive-and-Bursty-Traffic-in-Reduced-Available-Bandwidth-0919-v02.pdf> to slide 20, Nader Zein presenting slide 21 onwards.

- The TSN TG Chair noted the meeting is not authorized to draft a PAR/CSD based on the content of slide 21 onwards.

Disposition: Presentation discussed. Related to a proposed project.

Yolanda Yu presented *PFC Deadlock Free in Data Center Network* <http://www.ieee802.org/1/files/public/docs2019/new-yu-pdf-0919-v00.pdf>.

Disposition: Further discussion needed.

Feng Chen presented slides 1-4 of *IEEE P802.1Qdd Resource Allocation Protocol (RAP) Domain Detection and Stream Protection* <http://www.ieee802.org/1/files/public/docs2019/dd-chen-RAP-domain-0919-v01.pdf>.

Disposition: Presentation discussed. Continued later.

3:00 – 3:30 PM recess

Feng Chen presented slides 5 onwards of *IEEE P802.1Qdd Resource Allocation Protocol (RAP) Domain Detection and Stream Protection*

<http://www.ieee802.org/1/files/public/docs2019/dd-chen-RAP-domain-0919-v01.pdf>.

Disposition: Presentation discussed. Related to an ongoing project.

Roger Marks presented *Update on P802.1CQStatus*

<http://www.ieee802.org/1/files/public/docs2019/cq-Marks-status-0919.pdf>.

Disposition: Related to an ongoing project.

Paul Bottorff presented *Protocol for Extending LLDP*

<http://www.ieee802.org/1/files/public/docs2019/dh-bottorff-alt-0919-v4.pdf>.

Disposition: Presentation discussed. Related to an ongoing project.

Tongtong Wang presented *TSN Techniques in Service Provider Networks*

<http://www.ieee802.org/1/files/public/docs2019/df-wangtt-tsn-techniques-in-serviceprovidernetworks-0919-v0.pdf>.

Disposition: Presentation discussed. Related to an ongoing project.

Tongtong Wang presented *P802.1DF™/D0.01Draft Standard for local and metropolitan area networks — Time Sensitive Networking Profile for Service Provider Networks Individual contribution* <http://www.ieee802.org/1/files/public/docs2019/df-wangtt-draft-text-contribution-0919.pdf>.

Disposition: Presentation discussed. Related to an ongoing project.

Norman Finn presented *Multiple Cyclic Queuing and Forwarding (slides to accompany df-finn-multiple-CQF-0919-v01)* <http://www.ieee802.org/1/files/public/docs2019/df-finn-multiple-CQF-slides-0919-v01.pdf>

accompanying *Multiple Cyclic Queuing and Forwarding*

<http://www.ieee802.org/1/files/public/docs2019/df-finn-multiple-CQF-0919-v01.pdf>.

Disposition: Presentation discussed. Related to an ongoing project.

6:00 PM adjournment

5.1 IEC/IEEE 60802 Joint Project

Ludwig Winkel, IEC WG9/PT60802 Convenor and IEC/IEEE 60802 Joint Project Chair (60802 Chair), and János Farkas, IEEE 802.1 TSN Task Group Chair (TG Chair), presided. Josef Dorr, IEC/IEEE 60802 Joint Project Secretary (60802 Secretary) wrote the minutes.

At the beginning of the meetings on each day:

- The IEEE-SA PatCom Patent Slides for Standards Development Meetings and the IEEE 802 Participation slide were presented (<http://standards.ieee.org/about/sasb/patcom/materials.html>).
- The Call for Potentially Essential Patents was made. There were no responses to the calls prior to the end of the week's session.
- The IEC WG9/PT60802 Convenor reminded the IEC participants that patent rules similar to those of IEEE-SA apply in IEC, reminded all that patents required for use of the IEC/IEEE 60802 profile must be announced to IEC and IEEE and made available using the IEC licensing form, and reminded that presentations shall not have copyright marks or confidentiality information.

- The agenda and the expected results of the day were reviewed and approved. The final agenda is available at <https://1.ieee802.org/september-2019-interim-session-in-edinburgh-uk-tsn-tg-agenda/>.

Draft minutes were reviewed at the end of the week's meetings under the lead of the 60802 Secretary.

Wednesday 18 September 2019

8:00 AM call to order by the TG Chair and the 60802 Chair, 10:00 – 10:30 AM recess

The TSN TG and IEC/IEEE 60802 Joint Project had a joint meeting.

The TG Chair and the 60802 Chair:

- Welcomed the participants of the IEC/IEEE 60802 Joint Project, a joint effort of the:
 - IEC 65C WG9/PT 60802 (TSN) Project Team, led by Ludwig Winkel; and
 - IEEE 802.1 Time-Sensitive Networking Task Group, led by the TG Chair.
- Provided information about internet access, lunch, attendance log to the IEC/IEEE 60802 Joint Project.

The 60802 Chair proposed to continue aligning IEC/IEEE 60802 Joint Project meetings with IEEE 802.1 meetings, starting Wednesday and ending Friday during IEEE 802.1 sessions. The meeting agreed (none dissenting) to the proposal.

The 60802 Chair reported on the 60802 Conformity Assessment (CA) status and activities. The CA decisions on the business model are expected at the SPS fair to be held 26-28 November 2019 in Nuremberg, Germany.

Jordon Woods, 60802 editor, presented *Editor's Report 60802 Draft 1.1* <http://www.ieee802.org/1/files/public/docs2019/60802-woods-D1-1-update-0919-v02.pdf> on 60802 draft 1.1 <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

Disposition: Presentation discussed. Related to ongoing project.

The 60802 Chair stated that the IEC voting period for the 60802 draft 1.1 <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf> will start the weekend after Friday, November 20, 2019 and end after an eight-week period.

Rodney Cummings presented his proposal for the hot standby redundancy for time synchronization in subclause 5.1.11 of <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

Disposition: To be reviewed via TG balloting and IEC CD.

Günter Steindl provided an overview of the results of an IEC/IEEE 60802 ad hoc group that met 6:00 PM to 7:00 PM on September 16, 2019 to further develop *Conformance Class* <http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf> as a contribution to the 60802 profile.

Astrit Ademaj presented *PTCC [PubSub TSN Centralized Configuration] -TSN Endstation Centralized Configuration Interface for OPC UA PubSub Systems* <http://www.ieee802.org/1/files/public/docs2019/60802-ademaj-PTCC-0918-v05.pdf>.

Disposition: Presentation discussed. Further discussion needed. Continued Friday.

12:30 PM recess

1:30 PM call to order by the 60802 Chair, 3:10 – 3:40 PM recess

The IEC/IEEE 60802 Joint Project met separately from the TSN TG until Friday.

Günter Steindl led the review of *Conformance Class*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf>.

Disposition: Continued Thursday.

Günter Steindl and Geoffrey Garner presented *Constraints about Sync*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ConstraintsAboutSync-0919-v10.pdf> that is already integrated <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

Disposition: Continued on Friday.

6:00 PM recess

Thursday 19 September 2019

8:00 AM call to order by the TG Chair and the 60802 Chair, 10:00 – 10:30 AM recess

Günter Steindl and Geoffrey Garner continued to present *Constraints about Sync*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ConstraintsAboutSync-0919-v10.pdf> that is already integrated <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

Disposition: To be reviewed via TG balloting and IEC CD.

Günter Steindl led the review of *Conformance Class*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf>.

Disposition: Continued in the afternoon.

12:30 PM recess

1:30 PM call to order by the 60802 Chair

Ludwig Winkel presented *Compatibility levels of communication network devices*

<http://www.ieee802.org/1/files/public/docs2019/60802-Winkel-CompLevels-0919-v0.pdf>.

Disposition: Further discussion needed.

Günter Steindl led the review of *Conformance Class*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf>.

Disposition: Continued Friday.

3:00 PM recess

Friday 20 September 2019

8:00 AM call to order by the TG Chair and the 60802 Chair, 10:00 – 10:30 AM recess

The TSN TG and IEC/IEEE 60802 Joint Project had a joint meeting.

The TG Chair and the 60802 Chair summarized the work performed so far in this session.

Josef Dorr and Karl Weber presented an LNI4.0 liaison: *LNI4.0 Testbed MSRP Enhancement Introduction* <http://www.ieee802.org/1/files/public/docs2019/new-Dorr-LNI40-MSRP-enhancement-0919-v01.pdf>.

Disposition: Further discussion needed. Further contributions are expected.

Craig Gunther provided an overview of <http://www.ieee802.org/1/files/private/dg-drafts/d1/802-1DG-d1-0.pdf>.

Disposition: For information.

Mick Seaman provided an introduction to *Running with Scissors: Cut-through in bridged networks* <http://www.ieee802.org/1/files/public/docs2019/new-seaman-cut-through-scissors-0119-v01.pdf>. Astrit Ademaj and Günter Steindl then presented *Cut-Through* <http://www.ieee802.org/1/files/public/docs2019/60802-Ademaj-et-al-CutThrough-0919-v10.pdf>.

Disposition: Paper and presentation discussed. Further discussion needed. Further contributions are expected.

Stephan Kehrer presented <http://www.ieee802.org/1/files/public/docs2019/admin-kehrer-sep2020-interim-proposal-0919-v01.pdf> as an update to a proposed September 21-25, 2020 IEEE 802.1 interim session in Stuttgart, Germany.

Disposition: Presentation discussed. A straw poll was held for various options regarding the organization of the Stuttgart meeting:

- Would a room rate of 204 EUR (including tax) prevent you from staying at the meeting hotel?

Yes	_16_
No	_13_
Abstain	_8_
Room count	_47_

- Would you prefer a higher meeting fee with no room-block available at the hotel over a lower fee with a room-block available at the hotel?

Yes	_14_
No	_15_
Abstain	_11_
Room count	_47_

The 60802 Chair presented the updated IEC/IEEE 60802 timeline in <http://www.ieee802.org/1/files/public/docs2019/60802-Winkel-timeline-0919-v03.pdf>.

Disposition: For information.

Astrit Ademaj presented *PTCC - TSN Endstation Centralized Configuration Interface for OPC UA PubSub Systems* <http://www.ieee802.org/1/files/public/docs2019/60802-ademaj-PTCC-0918-v05.pdf>.

Disposition: Presentation discussed. Further discussion needed.

12:30 PM recess

1:30 PM call to order by the 60802 Chair

Günter Steindl led the review of *Conformance Class* <http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf>.

Disposition: Further discussion needed.

Future meetings/teleconferences

The next teleconference will be held October 28, 2019.

Any Other Business

No further business was discussed in this session.

2:03 PM adjournment

6 Nendica

The IEEE 802 Network Enhancements for the Next Decade Industry Connections Activity (Nendica) Chair, Roger Marks, presided. Nader Zein wrote the minutes.

Minutes of Nendica conference calls are available at <https://1.ieee802.org/802-nendica/>.

Attendance is in section 1 and also included the following participation (affiliation as understood by the Nendica Chair):

- Antonio de la Oliva Delgado, Universidad Carlos III de Madrid; InterDigital, Inc. [remotely, second meeting].

Monday 16 September 2019

18:08 PM call to order by the Nendica Chair

The Nendica Chair presented the IEEE-SA Guidelines for IEEE-SA Meetings <https://development.standards.ieee.org/myproject/Public/mytools/mob/preparslides.pdf>, the IEEE-SA Participation Slides <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/Participant-Behavior-Individual-Method.pdf>, the IEEE 802 Participation slide <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180.pdf>, and IEEE ICCOM requirements <https://1.ieee802.org/802-nendica/ieee-iccom-requirements/>.

The Nendica Chair presented *IEEE 802 Nendica Procedures* <https://1.ieee802.org/802-nendica/ieee-802-nendica-procedures/>. This was relevant to an agenda item for this meeting where a new work item proposal is expected to be discussed. It was confirmed that new work item proposals will be circulated to the EC for comments.

Agenda Approval

The Nendica Chair presented the draft agenda made previously available.

Disposition: The agenda was reviewed, discussed and approved, as recorded in *Approved Nendica Agenda: 2019-09-16/19* <https://mentor.ieee.org/802.1/dcn/19/1-19-0072-00-ICne.pdf>.

Update

The Nendica Chair:

- Showed the Nendica webpage <https://1.ieee802.org/802-nendica/> (where Managed LAN as a Service [MLaaS] was added under Study Items), the Nendica Mentor server https://mentor.ieee.org/802.1/documents?is_group=ICne hosting documents to be discussed, and how to record attendance on IMAT <https://imat.ieee.org/>.
- Presented *IEEE 802 "Network Enhancements for the Next Decade" Industry Connections Activity (Nendica): Status Report* <https://mentor.ieee.org/802.1/dcn/19/1->

[19-0063-00-ICne-nendica-meeting-overview-2019-09.pptx](#).

Review of Minutes

The Nendica Chair reviewed the minutes of the teleconferences held:

- August 21, 2019 <https://mentor.ieee.org/802.1/dcn/19/1-19-0066-00-ICne.docx>; and
- August 28, 2019 <https://mentor.ieee.org/802.1/dcn/19/1-19-0068-00-ICne.docx>.

Disposition: The minutes were reviewed and approved by unanimous consent.

Flexible Factory IoT: Use Cases and Communication Requirements for Wired and Wireless Bridged Networks (FFIoT)

Nader Zein presented *FFIoT Status Report – IEEE 802 Nendica* <https://mentor.ieee.org/802.1/dcn/19/1-19-0069-00> reporting that *Flexible Factory IoT: Use Cases and Communication Requirements for Wired and Wireless Bridged Networks* <https://mentor.ieee.org/802.1/dcn/19/1-19-0026-03-ICne-flexible-factory-iot-use-cases-and-communication-requirements-for-wired-and-wireless-bridged-networks.pdf> was approved as the final draft FFIoT report and submitted to IEEE-SA for review and publication.

Disposition:

- The staff editor responsible for IC activity was contacted and asked for an editor to review the FFIoT report. Catherine Berger was appointed as the staff editor for the FFIoT report and started reviewing it.
- The process is expected to be the same as for the Lossless Data Center Networks Nendica report in that Catherine Berger's comments will have to be reviewed.
- The Chair made a call for interested volunteers to help with the editorial review. Zein volunteered.

Lossless Data Center Networks

Paul Congdon presented:

- *IETF Sidemeeting: Large Scale Data Center HPC/RDMA* <https://mentor.ieee.org/802.1/dcn/19/1-19-0061-01-ICne-ietf-sidemeeting.pdf>
 - The Nendica LLDCN report was publicized at a flash talk on Sunday night at the prior IETF session on large scale Data Centre HPC/RDMA.
 - It was clarified that DCCP is short for Datagram Congestion Control and Protocols, which is end-to-end control over internet and that the target proposal in IETF is DCUDP.
- *IETF-105 Side Meeting: Large Scale Data Center HPC/RDMA Monday, July 22, 2019 8:30AM – 9:45AM* <https://mentor.ieee.org/802.1/dcn/19/1-19-0062-01-ICne-ietf0105-sidemeeting-minutes.pdf>.

Disposition:

- Next step at IETF is for those who wrote these two drafts to further update and present more supporting material and try to get time slots on the relevant groups in IETF such as ICIG.
- From a Nendica perspective, we can take some of these ideas and consider revising our LLDCN report.

The meeting then discussed procedures to revise the draft.

7:28 PM recess

Thursday 19 September 2019

10:04 AM call to order by the Nendica Chair

The Nendica Chair reminded the group of the IEEE-SA Guidelines for IEEE-SA Meetings, the IEEE 802 Participation slide, and the IEEE ICCOM requirements.

A WebEx teleconference call was opened, connected in particular to the IEEE 802 Wireless interim session in Hanoi, Vietnam. Remote and local participants were encouraged to log their attendance.

The Nendica Chair gave an overview of the Monday meeting, noting the administrative announcements and reviewed the agenda for today's meeting and available contributions for discussion.

Disposition:..As no amendments were proposed to the agenda, it was approved.

Future Directions

Study Item: Managed LAN as a Service [MLaaS]

Wei Qiu presented *LAN Trends and Managed LAN Services*

<https://mentor.ieee.org/802.1/dcn/19/1-19-0070-03-ICne-lan-trends-and-managed-lan-services.pptx> updating the plan and schedule for a proposed new Nendica Work Item.

Disposition:

- The Nendica Chair clarified the process for a new PAR, and explained that for a Nendica Work Item it is similar but less formal. The proposal should nevertheless be precirculated to the IEEE 802 Executive Committee, preferably (in the view of the Chair) at least 30 days in advance of an 802 plenary session, as a PAR would be. 802.1 approval needed to be clarified.
- In contrast to the proposed schedule indicating “report approval in July 2021”, the chartered existence of Nendica is currently until March 2021 and it would be better to plan to complete the report within the existing charter.
- The Nendica Chair requested indication of any proposed teleconferences needed for the period until the November 2019 plenary meeting.

Paul Congdon presented *LAN Technology Directions and Opportunities for Managed Services*

<https://mentor.ieee.org/802.1/dcn/19/1-19-0070-03-ICne-lan-trends-and-managed-lan-services.pptx> including trends in LAN management architecture as it evolves from traditional IT to a fully SDN- and cloud-based centralized forwarding architecture managed via cloud-based service enabling simplifying scaling and leading towards virtualization in the LAN.

- It was clarified that the 320 MHz bands in the slide are actually channels.
- It was suggested that MLaaS may introduce additional risk in security for the service provider and to a large extent more severe requirements to protect the infrastructure itself.
- There were discussions about the edge of “End to End” SLAs.
- Comparisons were made to factory networks which may require more complex stream management capabilities. There is a need to consider how to maintain services in critical operation instances within factories.
- It was suggested that tools needed for managed LAN require new types of knowledge and that requirements for new types of tools are not known.
- It was indicated that different vendors may implement standardized solutions but these would lack interoperability, hence the need to develop a profile for managed LAN.
- Question arose on the time synchronization requirements for IEEE 802.11 WLA and

- whether there is a need to extend the scope of synchronization.
- At this stage what P802.11be requires in terms of synchronization is unknown. Nevertheless, it is certain that something is needed there.
- It was further indicated service providers may not be alone in needing to manage the LAN.

Disposition: Further discussion needed.

Future Meetings

Nendica will meet during the November 2019 plenary session. Two hours on Tuesday evening have been proposed, along with two hours later in the week.

The meeting agreed (none dissenting) to schedule a teleconference October 31, 9:00 AM to 11:00 AM US Eastern (Focus: “Managed LAN as a Service” Study Item).

Any Other Business

No further business was discussed in this session.

11:46 AM adjournment

7 YANGsters

The acting YANGsters Chair, and YANGsters Secretary, Stephan Kehrer, presided and wrote the minutes.

Tuesday 17 September 2019

6:05 PM call to order by the acting YANGsters Chair

The acting YANGsters Chair presented the IEEE-SA PatCom Patent Slides for Standards Development Meetings <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>, the IEEE 802 Participation slide <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-0PNP-ieee-802-participation-slide-ppt.ppt>, and made the “Call for Potentially Essential Patents”. There were no responses to the call prior to the end of the week’s meeting.

The acting YANGsters Chair presented the agenda in <http://www.ieee802.org/1/files/public/docs2019/yangsters-smansfield-meeting-26-agenda-0919-v01.pdf>.

- An additional topic was raised on the question how much logic should go into IEEE 802.1 YANG modules and whether all mechanisms YANG provides need to be used. This was highlighted especially since implementations behind the models have to take the complexity into account.
- It was suggested that there should be some style recommendations/manual to make the YANG mechanisms used consistent between the different modules.

Disposition: The agenda was reviewed, discussed and approved.

The acting YANGsters Chair presented an overview of the *Latest Ballots* containing YANG modules. IEEE P802.1Qcx was presented during the TSN session on Tuesday September 17, 2019. Comment resolution should be finished soon. There is just one outstanding rogue comment.

Disposition: None.

The acting YANGsters Chair gave a *Meta Data Update*. YANGsters discussed how to apply the metadata using git to get this information into the YANG catalog. Currently there are no open issues regarding this topic.

Disposition: The proper metadata will be added once the document has been published. This will be done in coordination with Mark Ellison and Scott Mansfield.

The acting YANGsters Chair gave an introduction on *IEEE EtherTypes*. The meeting then discussed the PAR and CSD in preparation for their discussion within the IEEE 802.1 TSN TG later during the week.

The meeting discussed whether creating a standard with EtherTypes would be a secondary registry to the actual registry. There is the option of a tool that has been written by one of the YANGsters participants to automatically create this module from the information in the registry. However, it does not fulfill all requirements from IETF:

- The EtherTypes should have “friendly names”: this could be discussed to some degree.
- The IETF would like a short list of their “favorites” and this needs to be discussed. It was suggested that it be made clear that the short list is from IETF and that IEEE just takes it over: this means the responsibility for the list itself would be on IETF.

IETF has already published their RFC; however, it still makes sense to continue the activity to reestablish that IEEE owns the list.

It was observed that:

- There should be no duplicate registry within 802.1.
- There should be no sub-setting.

Disposition: The TSN TG intends to draft a PAR and CSD this week for pre-circulation and forwarding to NesCom at the November 2019 plenary session. Generating the full EtherTypes list in a YANG module was preferred over a short list as the former ensures all the information is included. Implementers can then decide which one to use. It would also be best if the standard just consists of code to auto-generate the module along with an example snapshot (example YANG module). Alignment with RAC is required on the topic.

The acting YANGsters Chair gave a brief overview of *YANGsters Next Meetings*.

Disposition: The next YANGsters teleconference will be on Tuesday, September 24, 2019.

Any Other Business

The meeting discussed whether it makes sense to use of all the mechanisms that YANG provides and to create YANG modules that contain a lot of logic. YANGsters should provide guidance to editors on how much logic should be put into YANG modules provided by IEEE 802.1.

The upside of providing this kind of logic is that it is often easier to prevent the user from entering an incorrect configuration than it is to explain to an operator to not configure a device in a certain way.

Disposition: Further discussion needed. The topic will be discussed in more detail in one of the next meetings.

7:45 PM adjournment

8 Next Session

November 11-15, 2019, Waikoloa, HI, USA