

IEEE 802.1 Working Group

14-17 January 2019 Interim Session

Hiroshima, Japan

Session Minutes

The Working Group (WG) Chair, Glenn Parsons, presided and thanked the Flexible Factory Partner Alliance, on behalf of IEEE 802.1, for hosting this interim session.

The Recording Secretary, Jessy Rouyer, wrote the minutes in part based on input from the Chairs and their Secretaries.

1 Attendance and affiliation

			TSN TG: Thu 13:30 - 18:00										
			TSN TG: Thu 09:20 - 12:30										
			TSN TG and IEC/IEEE 60802 Joint Project: Thu 08:00 - 09:20										
			TSN TG: Wed 13:30 - 18:00										
			IEC/IEEE 60802 Joint Project: Wed 13:30 - 18:00										
			OmniRAN TG: Wed 13:30 - 15:30										
			Nendica: Wed 10:30 - 12:30										
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Last name	First name	Affiliation											
ADEMAJ	Astrit	TTTech Computertechnik AG	•	•	•	•	•	•	•	•	•	•	•
amagai	akihiro	Sanritz Automation	•	•	•	•	•	•	•	•	•	•	•
Andersdotter	Amelia	Article19	•	•	•	•	•	•	•	•	•	•	•
Belliardi	Rudy	Schneider Electric; IEC TC 65	•	•	•	•	•	•	•	•	•	•	•
Bierschenk	Jens	Robert Bosch GmbH	•	•	•	•	•	•	•	•	•	•	•
Boiger	Christian	b-plus GmbH	•	•	•	•	•	•	•	•	•	•	•
Canchi	Radhakrishna	Kyocera International Inc.	•	•	•	•	•	•	•	•	•	•	•
Chang	Xin	Huawei Technologies Co. Ltd	•	•	•	•	•	•	•	•	•	•	•
Chen	David	Nokia	•	•	•	•	•	•	•	•	•	•	•
Chen	Feng	Siemens AG	•	•	•	•	•	•	•	•	•	•	•
Chen	Leo	Kyland Corporation	•	•	•	•	•	•	•	•	•	•	•
Chen	Lihao	Huawei Technologies Co. Ltd	•	•	•	•	•	•	•	•	•	•	•
Congdon	Paul	Tallac Networks; Huawei	•	•	•	•	•	•	•	•	•	•	•
DeLaOlivaDelgado	Antonio	Universidad Carlos III Madrid	•	•	•	•	•	•	•	•	•	•	•
Dorr	Josef	Siemens AG	•	•	•	•	•	•	•	•	•	•	•

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Last name	First name	Affiliation																				
Elbakoury	Hesham	Huawei Technologies Co. Ltd																				
Ellegaard	Lars	Microchip Technology, Inc.																				
Farkas	Janos	Ericsson																				
Finn	Norman	Huawei Technologies Co. Ltd																				
Fontaine	Mickael	TransPacket																				
Garner	Geoffrey	Huawei Technologies Co. Ltd																				
Gunther	Craig	Craig Gunther Consulting, LLC																				
Gutierrez	Marina	TTTech Computertechnik AG																				
Haddock	Stephen	Stephen Haddock Consulting, LLC																				
Hamaminato	Makoto	FUJITSU LABORATORIES LIMITED																				
Hantel	Mark	Rockwell Automation																				
Hiertz	Guido	Ericsson AB																				
Horiata	Kenshi	Panasonic Corporation																				
Hotta	Yoshifumi	Mitsubishi Electric Corporation																				
Huang	Yi	kyland																				
Igarashi	Shunsuke	Mitsubishi Electric Corporation																				
ishii	yasunori	ADI																				
Itaya	Satoko	National Institute of Information and Communications Technology (NICT)																				
Ito	Yoshihiro	Nagoya Institute of Technology																				
Karl	Michael	Marvell Semiconductor, Inc.																				
Kawabuchi	Ryohei	Mazda Motor Corporation																				
Kehrer	Stephan	Hirschmann Automation and Control, Inc.																				
KINNEY	PATRICK	Kinney Consulting LLC																				
KONDO	Kenji	Yaskawa Electric Corp																				
Kondo	Yoshihisa	Advanced Telecommunications Research Institute International (ATR)																				

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Last name	First name	Affiliation													
Krieger	Ann	US Department of Defense													•
Li	Dong	Shenyang Insititue of Automation, Chinese Academy of Sciences				•		•		•				•	•
Liu	Dan	ITEI				•		•		•				•	•
Mangin	Christophe	Mitsubishi Electric Corporation	•		•			•		•				•	•
Marks	Roger	EthAirNet Associates; Huawei												•	
Maruhashi	Kenichi	NEC Corporation	•		•			•		•				•	•
Max	Sebastian	Ericsson AB												•	
Messenger	John	ADVA Optical Networking Ltd.	•		•	•				•				•	•
Mustala	Tero	Nokia Networks			•			•		•				•	•
Myles	Andrew	Cisco Systems, Inc.												•	
Nishikawa	Takuro	*xÃŽm'E	•												
NOMIZU	TAKUMA	Hitachi, Ltd.												•	•
Ohori	Fumiko	National Institute of Information and Communications Technology (NICT)	•		•	•				•				•	•
Ohsawa	Tomoki	NICT	•		•	•				•				•	•
ohue	hiroshi	panasonic	•		•			•		•				•	•
Osagawa	Daisuke	Mitsubishi Electric Corporation				•		•		•				•	•
Osuga	Toru	National Institute of Information and Communications Technology (NICT)	•		•			•		•					•
Pannell	Donald	NXP Semiconductors	•		•	•				•				•	•
Parsons	Glenn	Ericsson AB	•		•	•				•				•	•
Riegel	Maximilian	Nokia Networks	•		•			•		•				•	•
Rouyer	Jessy	Nokia	•		•	•				•				•	•
Sato	Atsushi	Yokogawa Electric Corporation	•		•	•				•				•	•
Sato	Shinichi	FUJITSU	•		•	•				•				•	•

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Last name	First name	Affiliation																				
Seaman	Michael	Individual	•		•	•				•	•					•		•	•			
Seewald	Maik	Cisco Systems, Inc.	•	•	•	•				•	•					•		•	•	•	•	
Soeda	Tatsuo	Yaskawa			•	•				•	•					•		•				
Specht	Johannes	University of Duisburg-Essen and General Motors Company	•		•	•	•				•	•						•		•	•	
Stanica	Marius	ABB AB									•	•					•		•	•	•	
Steindl	Guenter	Siemens AG	•		•	•					•	•					•		•	•	•	
Tarui	Isao	Mitsubishi Electric Corporation									•	•					•		•		•	
traore	karim	Microchip/Microsemi Corporation	•		•	•	•					•	•					•		•	•	
Wakimoto	Yoshinori	MegaChips Corporation																•		•	•	
Wamsser	Reiner	IEC SC65C MT9-Member				•	•				•	•					•		•	•	•	
Wang	Hao	Fujitsu Research & Development Center	•	•							•						•				•	
Wang	Tongtong	Huawei Technologies Co. Ltd	•		•	•						•	•					•	•	•	•	
Wang	Xuehuan	Huawei Technologies Co. Ltd	•		•	•						•	•					•		•	•	
Weber	Karl	Beckhoff	•		•	•	•				•						•		•		•	
Winkel	Ludwig	Siemens AG										•	•					•		•	•	
Woods	Jordon	Analog Devices Inc.	•		•	•	•					•	•					•		•	•	
Yamaura	Takahiro	TOSHIBA Corporation	•		•	•	•					•	•					•		•	•	
YANG	Yumeng	Huawei Technologies Co., Ltd	•		•	•						•						•			•	
Yano	Kazuto	Advanced Telecommunications Research Institute International (ATR)																•				
Yokoyama	Hitoshi	FUJITSU	•		•	•	•					•										
Yoneda	Mitsuhiro	Omron	•		•	•						•	•					•		•	•	
YU	XIANG	Huawei Technologies Co., Ltd	•		•	•	•					•	•						•	•	•	
YU	Yi	Rockwell Automation	•		•	•	•						•	•					•	•	•	
Zein	Nader	NEC Europe (NLE)	•		•	•						•						•		•	•	
Zhang	Jiayi	Huawei Technologies Co. Ltd	•		•								•						•	•	•	
Zhao	William	Siemens AG	•		•	•	•						•	•					•		•	
Zweck	Harald	Infineon Technologies	•		•	•	•						•	•					•		•	

2 802.1 Officers and Management

Glenn Parsons	Working Group Chair
John Messenger	Working Group Vice-chair
Jessy Rouyer	Working Group Secretary
János Farkas	Time-Sensitive Networking Task Group Chair
Craig Gunther	Time-Sensitive Networking Task Group Secretary
Mick Seaman	Security Task Group Chair
Max Riegel	OmniRAN Task Group Chair
Paul Congdon	Maintenance Task Group Chair
Roger Marks	Nendica Chair
Ludwig Winkel	IEC/IEEE 60802 Joint Project Chair
Josef Dorr	IEC/IEEE 60802 Joint Project Secretary
Mark Hantel	Email maintenance and IEC/IEEE 60802 Joint Project website maintenance
Paul Unbehagen	Website Maintenance
Hal Keen	Email Maintenance

3 Maintenance Task Group

Tuesday 15 January 2019

8:00 AM (call to order by the TG Chair) to 9:00 AM

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>, and made the Call for Potentially Essential Patents. There were no responses to the calls prior to the end of the meeting.

The TG Chair:

- Introduced the agenda that was approved.
- Presented the list of current vehicles (drafts) used for implementing maintenance items, and the current numerical status of maintenance items in the 802.1 maintenance database at <https://www.802-1.org/items>. Details in <http://www.ieee802.org/1/files/public/docs2019/maint-congdon-session-0119-v02.pdf>.
- Presented the items processed prior to the meeting. Several items were closed thanks to the publication of 802.1Xck-2018.
- Led the review and update of existing maintenance items.
 - No action taken on 0170, 0174, 0205 and 210 because they are awaiting a document vehicle to be resolved and are otherwise ready to go.
- Led the discussion of two new maintenance items. A log of the discussion is kept in the 802.1 maintenance database and only unrelated discussion or action items follow:
 - 0223 - IEEE8021-SRP-MIB inappropriate SYNTAX for `ieee8021SrpStreamDataFramePriority`
 - 0224 - Clarify whether frame ends on last bit or after the inter-packet gap and preamble
- Confirmed no 802.1 WG comment resolution was needed.
- Led the review of the incoming liaison and document in http://www.ieee802.org/1/files/public/docs2019/liaison-SG15-LS172-OTNT_standardization_workplan-0119.zip, both of which were discussed.
 - The WG Chair described the current process for updating ITU-T SG15 with 802.1 latest status, and will provide an update to ITU-T SG15 for their September 2019 meeting. There is no need to respond to this liaison, but the WG was asked to provide further review of the current ITU-T SG15 document and raise any concerns at the March 2019 plenary session.
- Led the review of a draft response and plan for responding to CN.1 of IEEE 802c-2017 (ISO/IEC/IEEE FDIS 8802- A:2015/FDAmD 2): see <http://www.ieee802.org/1/files/public/docs2019/maint-randall-SC6CommentResponse802c-0119-v01.pdf>.
 - A response will be finalized at the March 2019 plenary session.
 - It was pointed out that several additional arguments could be included in the response to strengthen the response. These include the fact that using an OID

as a protocol identifier could cause protocol incompatibility with many existing protocols using CID and OUI today. Secondly, the SNAP encoding has been successfully using OUI for many years and replacing OUI with CID is completely compatible, whereas using OID would not map directly. An OID can be a variable length field which makes its use in protocol identifier fields problematic and complex for many implementations.

- Led the review of the status of standards in the SC6 engagement and PSDO process, prepared by Karen Randall.
- Led a discussion on how to progress YANG modules in the WG. Several ballot comments were rejected in November 2018 because they were considered enhancement requests and not bugs against 802.1Qcp. In November 2018, it was suggested that the submitter initiate an amendment project to update and improve the YANG module. There is concern that the overhead and process related to an amendment is too burdensome and it was asked if there is another approach to improve YANG modules. It was suggested that the discussion is related to the 802.1 Open Source strategy which is still evolving. The desire is to be more fluid and agile in developing 'code' such as YANG modules using the Open Source approach and tools such as github. There is a strong desire by everyone to streamline the process of developing 'code' such as YANG modules, and such a new process is in progress but not currently deployed.
- Post-meeting, provided updated session slides <http://www.ieee802.org/1/files/public/docs2019/maint-congdon-session-0119-v02.pdf> based on discussion. The TG website at <http://www.ieee802.org/1/maint.html> provides further details and discussion.

4 OmniRAN Task Group

The OmniRAN Task Group Chair, Max Riegel, presided.
Hao Wang wrote the minutes.

At the beginning of the meetings on Monday, Tuesday, and Wednesday 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>, and made the Call for Potentially Essential Patents. There were no responses to the calls prior to the end of the week's session.

The week's meetings were guided by *IEEE 802.1 OmniRAN TG January 2019 F2F Meeting Hiroshima, Japan* <https://mentor.ieee.org/omniran/dcn/18/omniran-18-0094-01-00TG-jan-2019-f2f-meeting-slides.pptx>, referred to as the "session slides" in the remainder of this OmniRAN Task Group section.

Current status of OmniRAN Task Group activities (including future meeting announcements, past meeting and conference call minutes) is available via a wiki located at <https://mentor.ieee.org/omniran/bp/StartPage>.

Monday 14 January 2019

1:30 PM (call to order by the TG Chair) to 3:30 PM

Agenda Approval

The TG Chair presented the agenda per slide 6 of the session slides.

Disposition: The agenda was reviewed, discussed and approved.

Schedule of topics during the week

The TG Chair discussed availabilities of the contributors and preferences to discuss the various topics.

Disposition: Agreement to arrange the discussion topics according to the following plan over the week:

Monday PM1

Review of minutes

Reports

IEEE 802.1CF socialization activities

Potential Nendica related contributions preview

Input to liaison response to ITU-T JCA-IMT2020

Tuesday AM2 & PM1

P802.1CQ contributions and discussions

- Requirements and scenarios documentation
- Security threats of dynamic local address assignment protocol
- 802.1 position on MAC randomization

Wednesday PM1

Potential new projects for OmniRAN TG

Conference calls until March 2019 F2F

Status report to IEEE 802 WGs

Next meeting

AOB

Review of minutes

The TG Chair presented the minutes of the OmniRAN TG:

- Conference call held 11 December 2018:
<https://mentor.ieee.org/omniran/dcn/18/omniran-18-0093-00-00TG-dec-11th-confcall-minutes.docx>; and
- Face-to-face session held in November 2018 in Bangkok, Thailand
<https://mentor.ieee.org/omniran/dcn/18/omniran-18-0091-00-00TG-nov-2018-f2f-meeting-minutes.docx>

Disposition: No comments were raised.

Reports

The TG Chair provided an oral report on P802.1CF that is ready for forwarding to RevCom after conclusion of sponsor balloting in December 2018. ExCom granted conditional approval

at the November 2018 plenary session to submit P802.1CF to RevCom. The submission deadline for the 20 March 2019 RevCom meeting is 8 February 2019.

Disposition:

- The TG Chair will contact Walter Pieniac, P802.1CF editor, to provide FrameMaker sources and the .svg files of figures.
- The TG Chair will forward to the WG Chair the .zip archive of the source files for all figures once provided by Hao Wang.

802.1CF socialization activities

The TG Chair led a discussion of initial channels to create awareness for IEEE Std 802.1CF:

- 100-word notice to IEEE Communications Standards Magazine
 - The TG Chair will create a draft of a notice for review in the TG.
- Updated presentation on aim and content of standard
 - The TG Chair will update the existing slide set to reflect final standards content.
- Article for IEEE Communications Standards Magazine
 - Joint work of Max Riegel, Walter Pieniac, Antonio de la Oliva, and Hao Wang is to be started soon to meet the submission deadline for the September 2019 issue.
- Potential IEEE 802 press release
 - Has to be approved by ExCom. Requires some customer quote, which may be challenging.
- Contribution to IEEE future networks (conference)
 - Multiple options for contributions to conferences; scope and timeline of conference must fit. Hold for further considerations.

Disposition: Agreement to start with the first three items.

Potential Nendica-related contributions preview

- No contribution indicated.

Input to liaison response to ITU-T JCA-IMT 2020

The TG Chair presented the following incoming liaison from ITU-T JCA-IMT 2020: *Invitation to update the information in the IMT2020 roadmap [to ITU study groups and external IMT-2020 liaison partners]* http://www.ieee802.org/3/minutes/nov18/incoming/JCA_IMT2020_LS-05_to_IEEE_802d3.pdf. When browsing the ITU website (<https://www.itu.int/net4/ITU-T/roadmap/#?topic=0.130&workgroup=1&searchValue=&page=2&sort=Revelance>), the Task Group discovered some category issues in the list of IEEE standards, and the description of these standards should reflect the scope and purpose of the document.

Disposition:

- The WG Chair will get in contact with 802.3 to find out about their plans.
 - The topic should be brought up to ExCom to involve other 802 WGs.
- Max Riegel will draft a document showing proposed 802.1 edits.
 - If approved, an 802.1 liaison response may be sent in March 2019.

Tuesday 15 January 2019

10:30 AM (call to order by the TG Chair) to 3:35 PM, with a 1-hour lunch break

A conference call bridge was setup for remote participants.

P802.1CQ contributions and discussions

P802.1CQ requirements and scenarios documentation: no contributions for discussion

P802.1CQ security threats of dynamic local address assignment protocol: the following two contributions were discussed.

Antonio de la Oliva presented *Analysis on new possibility [of] security threa[t]s in IEEE 802.1CQ* <https://mentor.ieee.org/omniran/dcn/19/omniran-19-0001-00-CQ00-ieee-802-1cq-threat-analysis.pdf> to the TG and to the Security TG chair. Potential security threats were discussed.

Disposition:

- Recommendation not to mention potential vulnerabilities caused by inappropriate implementation of 802 standards.
 - Such statements could lead to the wrong impression of security weaknesses in 802 standards.
- Conclusion that local address assignment does not cause any new threats in addition to threats arising due to inappropriate implementations of the LAAP and LAAP components.
 - LAAP should avoid leakage of information through broadcast of responses, and should not add much overhead to the number of message exchanges for setting up a connection.
- Antonio de la Oliva will create text contribution out of presented material and discussions results.

Max Riegel presented *MAC randomization impacts (WBA liaison to IEEE 802.11)* <https://mentor.ieee.org/omniran/dcn/19/omniran-19-0002-00-CQ00-random-mac-impact.pptx>.

- Max Riegel provided a summary of MAC address usage as device identifier for network operations as brought up by WBA.

Disposition:

- Agreement reached that WBA use cases are legitimate reasons to provide the possibility to assign static device identifier to stations for initiating the dynamic MAC address assignment.
 - Static device identifier allows LAAP to assign fixed MAC addresses to devices.
- Antonio de la Oliva will draft a protocol proposal for secure signaling of a static device identifier to the access network.
- Max Riegel will draft a section for the functional requirements describing the need to provide the possibility of fixed device identifiers.

Wednesday 16 January 2019

1:30 PM (call to order by the TG Chair) to 3:15 PM, with a 1-hour lunch break

Discussions about potential future work in OmniRAN

Satoko Itaya presented *What is potential future work in OmniRAN?*

<https://mentor.ieee.org/omniran/dcn/19/omniran-19-0003-00-00ic-what-is-potential-future-work-in-omniran.pdf>, a model for data characterization with 5 categories.

- This model was presented as simpler and more straightforward than the model under consideration in P60802.
 - The presentation suggested this model could become the base of a generic model.

Disposition:

- Discussion showed good acceptance of the idea of a simpler model for data characterization for industrial applications.
- Satoko Itaya was encouraged to create a more comprehensive slide set for presentation to the IEC/IEEE 60802 Joint Project and to the TSN TG.

Conference calls until March 2019 F2F

The following pre-authorized conference calls will be held before the March 2019 IEEE 802.1 plenary session to review P802.1CQ contributions and other topics as they become available:

- 6 February 2019, 9:00 AM - 10:00 AM ET
- 27 February 2019, 9:00 AM - 10:00 AM ET

Status report to IEEE 802 WGs

The TG Chair presented *IEEE 802.1 OmniRAN TG Status Report to IEEE 802 WGs*

<https://mentor.ieee.org/omniran/dcn/19/omniran-19-0004-00-00TG-jan-2019-report-to-ieee-802-wgs.pptx>

Disposition: The TG agreed with the slides drafted by the TG Chair.

Next meeting

The TG will meet next at the March 2019 IEEE 802.1 plenary session.

AOB

There was no other business to discuss and the TG Chair adjourned the meeting.

5 Time-Sensitive Networking Task Group

The Time-Sensitive Networking (TSN) Task Group Chair, János Farkas, presided. Craig Gunther wrote the minutes.

At the beginning of the meetings on Monday, Tuesday, Wednesday, and Thursday 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>, 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 14 January 2019

8:00 AM (call to order by the TG Chair) to 5:15 PM, with a 1-hour lunch break

The TG Chair presented the participation slide <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-0PNP-ieee-802-participation-slide-ppt.ppt>, and the agenda for the TSN Task Group meeting week <https://1.ieee802.org/january-2019-interim-meeting-in-hiroshima-japan-tsn-tg-agenda/>.

Disposition: The agenda was reviewed and approved.

Hajime Koto reviewed *IEEE 802.1 Interim Meeting* <http://www.ieee802.org/1/files/public/docs2019/admin-koto-Hiroshima-interim-info-0918-v02.pdf>.

Disposition: For information only.

Kenichi Maruhashi presented *Enhancement Considerations for Flexible Factories with Wireless Links* <http://www.ieee802.org/1/files/public/docs2019/new-FFIoT-maruhashi-enhancement-considerations-for-flexible-factories-0119-v01.pdf>

Disposition: Proposed new project; the presentation was discussed.

Yoshihisa Kondo presented *Gap analysis in 1Qcc for enhanced mechanism for Flexible Factories* <http://www.ieee802.org/1/files/public/docs2019/new-FFIoT-kondo-gap-analysis-in-1Qcc-for-enhanced-mechanism-for-flexible-factories-0119-v01.pdf>.

Disposition: Proposed new project; the presentation was discussed.

Geoff Garner, P802.1AS-Rev editor, discussed the status of *IEEE P802.1AS-Rev/D7.5 Draft Standard for Local and Metropolitan Area Networks—Timing and Synchronization for Time-Sensitive Applications*.

Disposition: There were no ballot comments as recorded in <http://www.ieee802.org/1/files/private/as-rev-drafts/d7/802-1AS-Rev-d7-5-dis.pdf>.

Norman Finn, P802.1CS editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/cs-drafts/d2/802-1CS-d2-0.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in <http://www.ieee802.org/1/files/private/cs-drafts/d2/802-1CS-d2-0-dis-v0.pdf>.

Stephen Haddock, P802.1AX-Rev editor, led the resolution of comments received on <http://www.ieee802.org/1/files/private/ax-rev-drafts/d1/802-1AX-Rev-d1-0.pdf>.

Disposition: Continued in a later session.

Tuesday 15 January 2019

9:30 AM (call to order by the TG Chair) to 12:30 PM

Minutes of this meeting, a joint meeting of the TSN TG and IEC/IEEE 60802 Joint Project, are provided in section 0 below.

1:30 PM (call to order by the WG Vice-Chair) to 5:30 PM

Stephen Haddock, P802.1AX-Rev editor, presented *802.1AX -- Link Aggregation: Editor's Report: January 2019 Version 2* <http://www.ieee802.org/1/files/public/docs2019/ax-rev-haddock-editors-report-0119-v2.pdf> then continued the resolution of comments received on <http://www.ieee802.org/1/files/private/ax-rev-drafts/d1/802-1AX-Rev-d1-0.pdf>. As part of this resolution, Haddock also presented *ISS Status Parameters Version 2* <http://www.ieee802.org/1/files/public/docs2019/ax-rev-haddock-status-parameters-0119-v2.pdf>.

Disposition: The presentations were discussed. The resolution continued in a later session.

Wednesday 16 January 2019

8:00 AM (call to order by the TG Chair) to 12:30 PM

Minutes of this meeting, a joint meeting of the TSN TG and IEC/IEEE 60802 Joint Project, are provided in section 0 below.

1:30 PM (call to order by the TG Chair) to 6:00 PM

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>, and made the Call for Potentially Essential Patents.

Disposition: There were no responses.

The TG Chair presented the incoming liaison from the *IEEE 1914 Next Generation Fronthaul Interface (NGFI) Working Group* http://www.ieee802.org/1/files/public/docs2018/liaison-IEEE_1914-CategoryA+-1118.pdf and the incoming liaison with the *CPRI TWG response to Liaison on the "Category A+" TAE Requirement* http://www.ieee802.org/1/files/public/docs2018/liaison-CPRI_Category_Aplus_TAE_Requirement-1218.pdf.

Disposition: The liaison and response were discussed; more discussion needed.

Tero Mustala presented *eCPRI Transport Network Requirements Updates* <http://www.ieee802.org/1/files/public/docs2019/de-Mustala-eCPRI-update-0119.pdf>.

Disposition: Related to proposed project; the presentation was discussed.

Norman Finn presented *Suggestions for Automotive Profile outline*

<http://www.ieee802.org/1/files/public/docs2019/dg-finn-auto-prof-outline-0119-v02.pdf>.

Disposition: Related to proposed project; the presentation was discussed.

Tongtong Wang presented *Bounded Latency Applications over Service Provider Networks*

<http://www.ieee802.org/1/files/public/docs2019/df-wangtt-bounded-latency-use-cases-0119-v01.pdf>.

Disposition: Related to proposed project; more discussion needed.

Jiayi Zhang presented *Bounded latency calculating method, using network calculus*

<http://www.ieee802.org/1/files/public/docs2019/df-zhangjy-bounded-latency-calculating-0119-v01.pdf>.

Disposition: Related to proposed project; the presentation was discussed.

Norman Finn, P802.1DC editor, presented *IEEE P802.1DC/D0.1 Draft Standard for Local and metropolitan area networks — Quality of Service Provision by Network Systems*

<http://www.ieee802.org/1/private/contrib/802-1DC-d0-1.pdf>.

Disposition: Editor's update on existing project; the presentation was discussed.

Thursday 17 January 2019

8:00 AM (call to order by the TG Chair) to 9:20 AM

Minutes of this meeting, a joint meeting of the TSN TG and IEC/IEEE 60802 Joint Project, are provided in section 0 below.

9:20 AM (call to order by the TG Chair) to 5:45 PM, with a 1-hour lunch break

Stephen Haddock, P802.1AX-Rev editor, presented new slides in *802.1AX -- Link Aggregation: Editor's Report: January 2019 Version 3*

<http://www.ieee802.org/1/files/public/docs2019/ax-rev-haddock-editors-report-0119-v3.pdf> then continued the resolution of comments received on

<http://www.ieee802.org/1/files/private/ax-rev-drafts/d1/802-1AX-Rev-d1-0.pdf>.

Disposition: Ballot comments discussed. Disposition recorded in

<http://www.ieee802.org/1/files/private/ax-rev-drafts/d1/802-1AX-Rev-d1-0-dis-v01.pdf>.

The TG Chair presented the incoming liaison *IETF LSVR WG Work on LSoE (Link neighbor, liveness and encapsulation discovery)*

<http://www.ieee802.org/1/files/public/docs2019/liaison-IETF-LSVR-Link-State-over-Ethernet-0119.pdf>

Disposition: The liaison was discussed; more discussion needed.

Paul Congdon presented *Evaluating an LLDPv2 proposal against LSVR Topology Discovery Requirements*

<http://www.ieee802.org/1/files/public/docs2019/new-congdon-lsvr-disco-requirements-for-LLDPv2-0119-v01.pdf>

Disposition: Proposed new project; the presentation was discussed; more discussion needed.

Paul Congdon presented *Consideration of LLDPv2*

<http://www.ieee802.org/1/files/public/docs2019/new-congdon-lsvr-disco-requirements-for-LLDPv2-0119-v01.pdf>

Disposition: Related to possible new project; the presentation was discussed; more discussion needed.

Mark Hantel presented *Industrial Considerations for LLDP v2*
<http://www.ieee802.org/1/files/public/docs2019/new-hantel-industrial-LLDP-considerations-0119-v00.pdf>.

Disposition: Related to possible new project; the presentation was discussed; more discussion needed.

Feng Chen presented *Support for μ Stream Aggregation in RAP (ver 0.3)*
<http://www.ieee802.org/1/files/public/docs2019/dd-chen-flow-aggregation-0119-v03.pdf>.

Disposition: Related to ongoing project; the presentation was discussed.

Christophe Mangin presented *802.1CBdb EISS-parameters-based Mask&Match Stream Identification Function* <http://www.ieee802.org/1/files/public/docs2019/db-mangin-eiss-parameters-based-stream-id-0119-v01.pdf>.

Disposition: Related to new project; the presentation was discussed.

János Farkas briefly reviewed *P802.1CBdb Contribution MPLS Label Match Flow Identification and Mapping to/from TSN (DetNet – TSN Data Plane Interactions)*
<http://www.ieee802.org/1/files/public/docs2018/db-varga-mpls-label-match-1218-v01.pdf>.

Disposition: Related to new project; the presentation was discussed.

János Farkas presented *P802.1CBdb Contribution Sequence Number Mapping between TSN and DetNet MPLS Data Plane (DetNet – TSN Data Plane Interactions)*
<http://www.ieee802.org/1/files/public/docs2019/db-varga-detnet-tsn-sequence-number-mapping-0119-v01.pdf>.

Disposition: Related to new project; the presentation was discussed. This may need to become its own project.

Yolanda Yu presented *Recovery of Congestion Isolation*
<http://www.ieee802.org/1/files/public/docs2018/cz-sun-isolation-recovery-1118-v01.pdf>.

Disposition: Related to existing project; the presentation was discussed.

Paul Congdon presented potential draft text *IEEE P802.1Qcz/D0.0 Draft Standard for Local and Metropolitan Area Networks—Bridges and Bridged Networks—Amendment: Congestion Isolation* <http://www.ieee802.org/1/files/public/docs2019/cz-congdon-draft-text-contribution-0119-v01.pdf>.

Disposition: Related to existing project; the presentation was discussed.

6 IEC/IEEE 60802 Joint Project

Ludwig Winkel, IEC MT9 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 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 MT9 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.
- Final agenda: <http://ieee802.org/1/files/public/docs2019/admin-60802-agenda-0119-v07.pdf>

Draft minutes were reviewed at the end of the week's session.

Tuesday 15 January 2019

9:30 AM (call to order by the 60802 Chair and the TG Chair) to 12:30 AM

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

The TG Chair, János Farkas, and the 60802 Chair, Ludwig Winkel:

- Welcomed the participants of the IEC/IEEE 60802 Joint Project, a joint effort of the:
 - IEC 65C/MT9/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 repeated his new email address Ludwig.Winkel@online.de and notified of the organizational change in IEC from IEC 65C/MT9/PT 60802 to IEC 65C/PT 60802, i.e. PT 60802 is now in parallel to MT9.

Josef Dorr gave an oral status report on *Use Cases IEC/IEEE 60802*

<http://www.ieee802.org/1/files/public/docs2018/60802-industrial-use-cases-0918-v13.pdf> and *Requirements IEC/IEEE 60802*

<http://www.ieee802.org/1/files/public/docs2018/60802-industrial-requirements-1218-v12.pdf>.

The TG Chair showed the planned next sessions of the IEC/IEEE 60802 Joint Project at <https://1.ieee802.org/tsn/iec-ieee-60802-tsn-profile-for-industrial-automation/>.

Jordon Woods, IEC/IEEE 60802 editor, presented *Editor's Report 60802 Draft 0.5* <http://www.ieee802.org/1/files/public/docs2019/60802-woods-D05update-0119-v00.pdf>. Drafting for a first Task Group ballot has started. The TG Chair presented *IEC/IEEE cooperation on TSN* <http://www.ieee802.org/1/files/public/docs2018/admin-IEC-IEEE-JWG-cooperation-process-0118.pdf>, which also includes a description of the common balloting process. Jordon Woods, IEC/IEEE 60802 editor, encouraged IEC nominated experts to provide comments using the IEEE commenting process to receive comments as early as possible. The TG Chair showed an example ballot invitation email <http://www.ieee802.org/1/private/email2/msg27956.html> with information about the IEEE balloting process. Further information can be found in *Introduction to IEEE 802.1 Focus on the Time-Sensitive Networking Task Group* <http://www.ieee802.org/1/files/public/docs2017/tsn-farkas-intro-0517-v01.pdf>.

The TG Chair showed *Major Automation Industry Players join OPC UA including TSN initiative* <https://opcfoundation.org/news/press-releases/major-automation-industry-players-join-opc-ua-including-tsn-initiative/> with the statement "The TSN Profile for Industrial Automation standardized by the IEC/IEEE 60802 committee will be used and all working groups will closely align with this for TSN related specification sections."

Günter Steindl presented *IEC/IEEE 60802 – TSN-IA Profile Scope and Status* <http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ScopeAndStatus-0119-v02.pdf>

Disposition: No further action required.

Post-meeting, the TG Chair pointed out that the "No online participation allowed!" statement of slide 15 is misleading because the TG holds bi-weekly online teleconferences together with IEC 65C/MT9 to progress IEC/IEEE P60802 that anyone is welcome to attend. The TG Chair's interpretation of the intention behind the statement was that there is generally no remote participation to IEEE 802.1 face-to-face meetings (as opposed to some other organizations, e.g., the IETF). The presentation was updated as <http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ScopeAndStatus-0119-v03.pdf>.

Ludwig Winkel and Mark Hantel presented *Update on Collaborative Conformance Assessment of IEC/IEEE 60802* <http://www.ieee802.org/1/files/public/docs2019/60802-Winkel-CAupdate-0119-v01.pdf>.

Disposition: Further discussion needed

The TSN TG and IEC/IEEE 60802 Joint Project met separately after this joint meeting.

1:30 PM to 6:00 PM (call to order by the 60802 Chair)

Jordon Woods, IEC/IEEE 60802 editor, presented

<http://www.ieee802.org/1/files/private/60802-drafts/d0/60802-d0-5.pdf>.

Disposition: Task Group balloting will be started for further drafting of the IEC/IEEE 60802 profile; further discussion needed.

Günter Steindl started to present *An example selection of standards, standard attributes and standard extensions to cover a use cases and requirements selection*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ExampleSelections-0119-v02.pdf>. The presentation was discussed. The presentation was continued on

Wednesday.

Disposition: Further discussion needed

Wednesday 16 January 2019

8:00 AM (call to order by the 60802 Chair and the TG Chair) to 12:30 AM

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

Astrit Ademaj presented *Traffic Type Characteristics*

[http://www.ieee802.org/1/files/public/docs2019/60802-Ademaj-](http://www.ieee802.org/1/files/public/docs2019/60802-Ademaj-TrafficTypesCharacteristics-0119-v01.pdf)

[TrafficTypesCharacteristics-0119-v01.pdf](http://www.ieee802.org/1/files/public/docs2019/60802-Ademaj-TrafficTypesCharacteristics-0119-v01.pdf). The presentation was discussed.

Disposition: Further discussion needed

Yoshi Hotta presented *Traffic Types & their Mapping to TSN Mechanism*

<http://www.ieee802.org/1/files/public/docs2019/60802-Hotta-Traffic-Types-Mapping-to-TSN-Mechanism-0119-v01.pdf>. The presentation was discussed.

Disposition: Further discussion needed

Mark Hantel presented *Data Sheet Model for TSN*

<http://www.ieee802.org/1/files/public/docs2019/60802-Hantel-Data-Sheet-Model-0119-v00.pdf>. The presentation was discussed.

Disposition: Further discussion needed

Astrit Ademaj presented *Datasheet Parameters*

<http://www.ieee802.org/1/files/public/docs2019/60802-ademaj-DatasheetParameters-0119-v01.pdf>. The presentation was discussed.

Disposition: Further discussion needed

Lihao Chen started to present *TSN Management*

<http://www.ieee802.org/1/files/public/docs2019/60802-chen-TSN-management-0119-v00.pdf>. The presentation was discussed. The presentation was continued in the afternoon.

Disposition: Further discussion needed

The TSN TG and IEC/IEEE 60802 Joint Project met separately after this joint meeting.

1:30 PM to 3:30 PM (call to order by the 60802 Chair)

Lihao Chen continued to present *TSN Management*

<http://www.ieee802.org/1/files/public/docs2019/60802-chen-TSN-management-0119-v00.pdf>. The presentation was discussed.

Disposition: Further discussion needed

Günter Steindl continued to present *An example selection of standards, standard attributes and standard extensions to cover a use cases and requirements selection*

<http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ExampleSelections-0119-v02.pdf>. The presentation was discussed.

Disposition: Further discussion needed

Thursday 17 January 2019

8:00 AM (call to order by the 60802 Chair and the TG Chair) to 09:20 AM

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

The TG Chair proposed adding a contribution describing P60802 required LLDP amendments, to the ongoing approach for an IEEE 802.1AB amendment. Three contributions have already been submitted:

- *Evaluating an LLDPv2 proposal against LSVR Topology Discovery Requirements* <http://www.ieee802.org/1/files/public/docs2019/new-congdon-lsvr-disco-requirements-for-LLDPv2-0119-v01.pdf>
- *Consideration of LLDPv2_* <http://www.ieee802.org/1/files/public/docs2019/new-congdon-lldpv2-consideration-0119-v01.pdf>
- *Industrial Considerations for LLDP v2* <http://www.ieee802.org/1/files/public/docs2019/new-hantel-industrial-LLDP-considerations-0119-v00.pdf>

The 60802 Chair and the TG Chair gave a summary of the last two days.

Ravi Subramaniam presented *IEEE Conformity Assessment Program [ICAP] Introduction for TSN* http://www.ieee802.org/1/files/public/docs2019/60802-Subramaniam-IEEE_ICAP_Overview_TSN-0119.pdf.

The 60802 Chair reminded that there will be a doodle poll about the dates for the IECEE ad hoc Group preparation meetings.

The WG Chair indicated that IEEE staff has confirmed that IEEE 802.1 may share drafts relevant to P60802 with the following groups: OPC, Ethercat, ODVA, AVNU, IEC TC 57 WG10, IEC SC65C. LNI is still under review.

The 60802 Chair indicated that the OPC Foundation liaison request has been approved by IEC national committees vote.

The IEC/IEEE 60802 Joint Project was adjourned.

7 Nendica

The Nendica Chair, Roger Marks, presided over the Nendica meeting held at the same time in both Hiroshima, Japan and St Louis, MO, USA.
Hao Wang wrote the minutes.

Additionally to the 21 participants listed in section 1 who registered in IMAT, the following two individuals also participated:

- Joseph Levi, affiliated with InterDigital
- Ian Sherlock, affiliated with Texas Instruments

Wednesday 16 January 2019 in Hiroshima, Japan

Tuesday 15 January 2019 in St Louis, MO, USA

10:31 AM (call to order by the Nendica Chair from St Louis, MO, USA) to 11:40 AM

The Nendica Chair presented the *Guidelines for IEEE-SA Meetings* <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf>, the *IEEE 802 Participation* slide <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0180.pptx>, the *IEEE ICCOM requirements* <https://1.ieee802.org/802-nendica/ieee-iccom-requirements/>.

Agenda

The Nendica Chair presented the proposed agenda in <https://mentor.ieee.org/802.1/dcn/19/1-19-0017-00.docx>.

Disposition: The agenda was approved without objection.

Update

The Nendica Chair led the review of *IEEE 802 “Network Enhancements for the Next Decade” Industry Connections Activity (Nendica): Meeting Overview, 2019-01* <https://mentor.ieee.org/802.1/dcn/19/1-19-0005-00-ICne-nendica-meeting-overview-2019-01.pptx>

Disposition: The presented document was updated post-meeting based on meeting review as <https://mentor.ieee.org/802.1/dcn/19/1-19-0005-01-ICne-nendica-meeting-overview-2019-01.pptx>.

Minutes

The Nendica Chair presented the minutes of the Nendica conference call held 9 January 2019 <https://mentor.ieee.org/802.1/dcn/19/1-19-0006-00-ICne-minutes-of-nendica-meeting-of-2019-01-09.docx>.

Disposition: There were no comments on this document. Minutes were approved.

Future Directions

The Nendica Chair presented of *IEEE 802 Network Enhancements for the Next Decade Industry Connections Activity (Nendica) Initiation Document (ICAID) Version 2.0d1, 2019-01-07* <https://mentor.ieee.org/802.1/dcn/18/1-18-0079-01-ICne-icaid-extension-and-revision-proposed-draft.docx>.

Disposition: When the Nendica Chair called for volunteers willing to have their name listed in section 7.3., Nader Zein, Paul Congdon and Hao Wang responded to the call.

The Nendica Chair presented the 2018 annual report, which was approved in the 802.1 WG at its November 2019 Plenary meeting.

Motion: To approve 802.1-18-0079-02 as a renewal of Nendica ICAID to be submitted to ICCOM together with document 802.1-18-0078-02 as 2018 annual report.

- Moved by Karl Weber, Second by Max Riegel
- Motion passed by unanimous consent

Work Items

- **Lossless Data Center Networks (LLDCN)**

Paul Congdon, LLDCN report editor, introduced a follow-up on publicity:

- Information about Congdon's webinar *The Next Generation Lossless Network in the Data Center* <https://mentor.ieee.org/802.1/dcn/19/1-19-0007-00-ICne-draft-lldcn-webinar-presentation.pdf> was circulated on the Nendica reflector;
- This webinar will be presented 25 January 2019 mainly based on the contents of the Nendica LLDCN report.

Disposition: Information item reviewed without comment.

The Nendica Chair indicated that his previously-approved NANOG presentation had been submitted as a proposal to the NANOG meeting of 18-20 February 2019: *Proposed Nendica Presentation to NANOG 75* <https://mentor.ieee.org/802.1/dcn/19/1-19-0004-01-ICne-proposed-nendica-presentation-to-nanog-75.pptx>.

Disposition: Information item reviewed without comment.

- **Flexible Factory IoT (FFIOT)**

Nader Zein, FFIOT report editor, provided an oral update on the progress of the comment resolution.

Disposition: When the Nendica Chair asked if there is a skeleton document showing the restructuring of the report, the FFIOT report editor revisited the concluded work items from the last conference call.

The group discussed whether the architecture and the contents in IEC/IEEE P60802 are relevant to this report.

Nader Zein, FFIOT report editor, led the resolution of comments received on <https://mentor.ieee.org/802.1/dcn/18/1-18-0025-06-ICne.pdf>.

Disposition: Comment resolutions recorded in <https://mentor.ieee.org/802.1/dcn/18/1-18-0052-09-ICne>.

Future Meetings

The next Nendica face-to-face meeting will be held 12 March 2019 at 7:30 PM in Vancouver, BC, Canada, and an additional backup slot will be considered on 13 March 2019 for comment resolution.

The Nendica Chair suggested to meet in both 802.1 and wireless interim meetings in May 2019.

At the request of FFIOT report editor, the group agreed to hold three teleconferences for comment resolution 31 January 2019, 7 February 2019 and 14 February 2019.

AOB

There was no other business to discuss and the meeting was adjourned at 11:40 AM.

8 Next Session

11-15 March 2019, Vancouver, BC, Canada