

**Meeting of the IEC/IEEE 60802 Joint Project**

**2018-12-15**

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**INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)**

**TC65:** Industrial-process measurement, control and automation

**SC65C:** Industrial communication networks

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**Institute of Electrical and Electronics Engineers, Inc. (IEEE)**

**IEEE 802:** LAN/MAN Standards Committee

**IEEE 802.1:** Higher Layer LAN Protocols Working Group

**IEEE 802.1 TSN:** Time-Sensitive Networking Task Group

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**Meeting:** IEC/IEEE 60802 Joint Project

Meeting was based on the meeting announcement; see IEC collaboration tool <http://collaboration.iec.ch/> and <http://www.ieee802.org/1>

**Date:** 2018-11-12 — 2018-11-14

**Location:** Bangkok, Thailand

**IEC MT9 Convenor and IEC/IEEE 60802 Joint Project chair:** Ludwig Winkel

**Daily minutes by:** Josef Dorr

**Minutes compiled by:** Ludwig Winkel and Jessy Rouyer

**Published minutes:** Collaboration tool <http://collaboration.iec.ch/>, and IEEE 802.1 web site <http://www.ieee802.org/1/files/public/60802>

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Ludwig Winkel, IEC MT9 Convenor, and János Farkas, IEEE 802.1 TSN Task Group 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. The final agenda is in Annex A.

Draft minutes were reviewed at the end of the meeting.

Attendance:

| Last name    | First name   | Affiliation                               | Mon AM1 TSN & 60802 JP Pre-Meeting | Mon PM IEC/IEEE 60802 JP | Tue AM2 IEC/IEEE 60802 JP | Tue PM IEC/IEEE 60802 JP | Wed AM1 IEC/IEEE 60802 JP | Wed PM1 IEC/IEEE 60802 JP | Wed PM2 TSN & 60802 JP |
|--------------|--------------|---|------------------------------------|--------------------------|---------------------------|--------------------------|---------------------------|---------------------------|------------------------|
| Andersdotter | Amelia       | Article19                                 |                                    |                          | •                         |                          |                           |                           |                        |
| Bao          | Shenghua     | HUAWEI                                    | •                                  |                          |                           |                          |                           |                           |                        |
| Belitz       | Tobias       | Renesas Electronics Corporation           | •                                  |                          |                           |                          |                           |                           |                        |
| Berger       | Louis        | LabN Consulting, L.L.C.                   | •                                  | •                        |                           |                          |                           |                           | •                      |
| Bierschenk   | Jens         | Robert Bosch GmbH                         | •                                  | •                        |                           |                          |                           |                           |                        |
| Boiger       | Christian    | b-plus GmbH                               | •                                  |                          |                           |                          |                           | •                         |                        |
| Bottorff     | Paul         | Hewlett-Packard Development Company, L.P. | •                                  |                          |                           |                          |                           |                           |                        |
| Canchi       | Radhakrishna | Kyocera International Inc.                | •                                  | •                        |                           |                          |                           |                           |                        |
| Chen         | David        | Nokia                                     | •                                  |                          |                           | •                        |                           |                           |                        |
| Chen         | Feng         | Siemens AG                                | •                                  |                          |                           |                          | •                         | •                         | •                      |
| Chen         | Lihao        | Huawei Technologies Co. Ltd               | •                                  | •                        |                           | •                        | •                         | •                         | •                      |
| Cheng        | Weiyong      | Coriant                                   | •                                  |                          |                           |                          |                           |                           | •                      |
| Chou         | Vincent      | Marvell Semiconductor, Inc.               |                                    | •                        |                           | •                        |                           |                           | •                      |
| Congdon      | Paul         | Tallac Networks; Huawei                   | •                                  |                          |                           |                          |                           |                           |                        |
| Cummings     | Rodney       | National Instruments Corporation          | •                                  |                          |                           |                          |                           | •                         | •                      |

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|-----------|------------|---|------------------------------------|--------------------------|---------------------------|--------------------------|--------------------------|---------------------------|------------------------|
| Dorr      | Josef      | Siemens AG  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Duan      | Shihui     | China Academy of Information and Communications Technology (China Academy of TeleCommunication Research, MIIT) CAICT (CATR) |                                    |                          |                           |                          | •                        |                           |                        |
| Elbakoury | Hesham     | Huawei Technologies Co. Ltd   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Enzinger  | Thomas     | B&R Industrial Automation   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Fang      | Yonggang   | ZTE TX Inc  |                                    |                          |                           |                          |                          |                           | •                      |
| Farkas    | Janos      | Ericsson  | •                                  |                          |                           |                          |                          |                           | •                      |
| Finn      | Norman     | Huawei Technologies Co. Ltd   | •                                  |                          |                           |                          |                          |                           | •                      |
| Garner    | Geoffrey   | Huawei Technologies Co. Ltd   | •                                  |                          |                           |                          |                          |                           | •                      |
| Gray      | Eric       | Ericsson AB   |                                    |                          |                           |                          |                          |                           | •                      |
| Gunther   | Craig      | Craig Gunther Consulting, LLC   | •                                  |                          |                           |                          |                          |                           |                        |
| Gutierrez | Marina     | TTTech Computertechnik AG   |                                    | •                        |                           |                          |                          |                           | •                      |
| Haddock   | Stephen    | Stephen Haddock Consulting, LLC   | •                                  |                          |                           |                          |                          |                           |                        |
| Hantel    | Mark       | Rockwell Automation   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Harima    | Taro       | Mitsubishi Electric Corporation   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Hemmer    | David      | PILZ  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Holness   | Marc       | Ciena Corporation   | •                                  |                          |                           |                          |                          |                           | •                      |
| Hotta     | Yoshifumi  | Mitsubishi Electric Corporation   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| HUH       | WOOJUNG    | Microchip Technology, Inc.  | •                                  |                          |                           |                          |                          |                           | •                      |
| Itaya     | Satoko     | National Institute of Information and Communications Technology (NICT)  | •                                  | •                        |                           | •                        | •                        | •                         |                        |
| Ito       | Yoshihiro  | Nagoya Institute of Technology  | •                                  | •                        |                           |                          |                          |                           | •                      |
| Joung     | Jinoo      | Sangmyung Univ.   | •                                  | •                        |                           |                          |                          |                           | •                      |
| Kabra     | Lokesh     | Synopsys, Inc.  |                                    | •                        |                           | •                        |                          |                           |                        |
| Kanuri    | Mrudula    | NVIDIA Corporation  | •                                  | •                        |                           |                          |                          |                           |                        |
| Karl      | Michael    | Marvell Semiconductor, Inc.   | •                                  |                          |                           |                          |                          |                           | •                      |
| Kehrer    | Stephan    | Hirschmann Automation and Control, Inc.   | •                                  |                          |                           | •                        | •                        | •                         | •                      |
| Kelsey    | Randy      | Engineering Solutions, Inc  |                                    |                          |                           |                          | •                        | •                         | •                      |
| Kim       | Ryangsoo   | ETRI  | •                                  |                          |                           | •                        |                          |                           | •                      |
| Kim       | Yongbum    | NIO   |                                    | •                        |                           |                          |                          |                           |                        |
| Koga      | Hidetsugu  | YASKAWA ELECTRIC CORPRATION   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| KONDO     | Kenji      | Yaskawa Electric Corp   | •                                  | •                        |                           | •                        | •                        |                           |                        |
| Kondo     | Yoshihisa  | Advanced Telecommunications Research Institute International (ATR)  | •                                  | •                        |                           | •                        | •                        |                           |                        |

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|-----------|------------|--|------------------------------------|--------------------------|---------------------------|--------------------------|--------------------------|---------------------------|------------------------|
| KOTO      | Hajime     | National Institute of Information and Communications Technology (NICT) | •                                  | •                        |                           |                          | •                        |                           |                        |
| Mangin    | Christophe | Mitsubishi Electric Corporation  | •                                  |                          |                           |                          | •                        | •                         | •                      |
| Mansfield | Scott      | Telefon AB LM Ericsson   | •                                  |                          |                           |                          |                          |                           |                        |
| Maruhashi | Kenichi    | NEC Corporation  | •                                  |                          |                           | •                        | •                        | •                         |                        |
| Messenger | John       | ADVA Optical Networking Ltd.   |                                    |                          |                           |                          |                          |                           | •                      |
| Mustala   | Tero       | Nokia Networks   |                                    |                          |                           |                          |                          | •                         | •                      |
| Ohba      | Yoshihiro  | Toshiba Memory Corporation   |                                    | •                        |                           |                          |                          |                           |                        |
| Ohsawa    | Tomoki     | NICT   | •                                  | •                        |                           | •                        | •                        |                           |                        |
| ohue      | hiroshi    | panasonic  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Osagawa   | Daisuke    | Mitsubishi Electric Corporation  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Pannell   | Donald     | NXP Semiconductors   | •                                  | •                        |                           | •                        |                          |                           | •                      |
| Parsons   | Glenn      | Ericsson AB  |                                    | •                        |                           |                          |                          |                           |                        |
| Petre     | Razvan     | Spirent Communications   |                                    | •                        |                           |                          |                          | •                         | •                      |
| Potts     | Michael    | General Motors Company   | •                                  | •                        |                           |                          |                          |                           | •                      |
| Randall   | Karen      | INDEPENDENT  | •                                  |                          |                           |                          |                          |                           |                        |
| Rouyer    | Jessy      | Nokia  | •                                  |                          |                           |                          |                          |                           | •                      |
| Ryoo      | Jeong      | ETRI   | •                                  | •                        |                           | •                        |                          |                           | •                      |
| Sato      | Atsushi    | Yokogawa Electric Corporation  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Schewe    | Frank      | Phoenix Contact  | •                                  | •                        |                           | •                        |                          | •                         |                        |
| Seewald   | Maik       | Cisco Systems, Inc.  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Sinicrope | David      | Ericsson AB  | •                                  |                          |                           |                          |                          |                           |                        |
| 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  | •                                  | •                        |                           | •                        | •                        | •                         |                        |
| Unbehagen | Paul       | Avaya Inc.   | •                                  |                          |                           |                          |                          |                           | •                      |
| Varga     | Balazs     | Ericsson AB  | •                                  | •                        |                           | •                        | •                        |                           |                        |
| Wamsser   | Reiner     | IEC SC65C MT9-Member   | •                                  |                          |                           | •                        | •                        | •                         | •                      |
| Wang      | Hao        | Fujitsu Research & Development Center                                  | •                                  |                          |                           |                          |                          |                           |                        |
| Wang      | Tongtong   | Huawei Technologies Co. Ltd  | •                                  |                          |                           |                          |                          |                           |                        |
| Wang      | Xinyuan    | Huawei Technologies Co. Ltd  | •                                  |                          |                           |                          |                          |                           |                        |
| Winkel    | Ludwig     | Siemens AG   | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Wood      | Graeme     | British Standards Institution (BSi), Rockwell Corp                     | •                                  |                          |                           |                          |                          |                           | •                      |

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|-----------|------------|--|------------------------------------|--------------------------|---------------------------|--------------------------|--------------------------|---------------------------|------------------------|
| Woods     | Jordon     | Analog Devices Inc.  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Yamaura   | Takahiro   | TOSHIBA Corporation  | •                                  |                          |                           | •                        |                          |                           | •                      |
| Yoo       | Hark       | Electronics and Telecommunications Research Institute (ETRI) | •                                  |                          |                           | •                        |                          |                           | •                      |
| YU        | XIANG      | Huawei Technologies Co., Ltd                                 | •                                  |                          |                           |                          |                          |                           |                        |
| YU        | Yi         | Rockwell Automation  | •                                  | •                        |                           | •                        | •                        | •                         | •                      |
| Yun       | Jinhwa     | Hyundai Motor Company  |                                    | •                        |                           | •                        |                          |                           | •                      |
| Zein      | Nader      | NEC Europe (NLE)   | •                                  | •                        |                           |                          |                          |                           |                        |
| Zhang     | Jiayi      | Huawei Technologies Co. Ltd                                  | •                                  |                          |                           |                          |                          |                           | •                      |
| Zuponic   | Steven     | Rockwell Automation  | •                                  |                          |                           |                          | •                        | •                         | •                      |

**Monday 12 November 2018**

**8:00 AM (call to order by Ludwig Winkel and János Farkas) to 10:00 AM**

The TSN Task Group and IEC/IEEE 60802 Joint Project met together for a joint session.

Ludwig Winkel and János Farkas:

- 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 János Farkas.
- Provided information about internet access, lunch, attendance log to the IEC/IEEE 60802 Joint Project.

Ludwig Winkel, IEC/IEEE 60802 chair, provided his new email address:

[Ludwig.Winkel@online.de](mailto:Ludwig.Winkel@online.de).

János Farkas gave an oral status report of the DetNet - TSN joint workshop that was held in Bangkok, Thailand on Sunday 11 November 2018.

Josef Dorr gave an oral status report on the IEC/IEEE 60802 use cases and requirements documents.

Jordon Woods, IEC/IEEE 60802 editor, gave an oral status report on the draft IEC/IEEE 60802 profile.

Ludwig Winkel and Steven Zuponic presented *Motivation for a Collaborative Conformance Assessment for IEC/IEEE 60802*

<http://www.ieee802.org/1/files/public/docs2018/60802-zuponic-conformance-assessment-1118-v01.pdf>. The presentation was discussed.

**Disposition:** The joint IEC/IEEE/AVNU approach was supported by the IEC/IEEE 60802 Joint Project. The discussion of the subject continued on Wednesday.

Jordon Woods, IEC/IEEE 60802 editor, presented *Status of Accumulated latency in industrial applications Call for Interest*

<http://www.ieee802.org/1/files/public/docs2018/new-woods-accumulated-latency-1118-v00.pdf>

**Disposition:** Further discussion needed

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

**1:30 PM to 6:00 PM**

Taro Harima presented *Proposal for IEC/IEEE 60802 conformance section structure*

<http://www.ieee802.org/1/files/public/docs2018/60802-harima-Requirement-Structure-1118-v02.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed

Taro Harima presented *TSN domain*

<http://www.ieee802.org/1/files/public/docs2018/60802-harima-TSN-Domain-1118-v02.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed

Taro Harima presented *Common bridge requirements*

<http://www.ieee802.org/1/files/public/docs2018/60802-harima-TSN-Comon-Requirements-1118-v02.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed

Lihao Chen presented *TSN – brownfield compatibility*

<http://www.ieee802.org/1/files/public/docs2018/60802-chen-TSN-brownfield-compatibility-1118-v00.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed

Kenichi Maruhashi presented *Enhancement Considerations for Flexible Factories with Wireless Links*

<http://www.ieee802.org/1/files/public/docs2018/new-FFIoT-maruhashi-enhancement-considerations-for-flexible-factories-1118-v00.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed

Yoshihisa Kondo presented *Gap analysis in 1Qcc for enhanced mechanism for Flexible Factories*

<http://www.ieee802.org/1/files/public/docs2018/new-FFIoT-kondo-gap-analysis-in-1Qcc-for-enhanced-mechanism-for-flexible-factories-1118-v00.pdf>. The presentation was discussed.

The presentation was discussed.

**Disposition:** Further discussion needed

Mark Hantel started to present *Industrial Automation Traffic Types and their Mapping to QoS/TSN Mechanisms* in comparison to the traffic types that are described in the use case document.

<http://www.ieee802.org/1/files/public/docs2018/60802-ademaj-traffic-type-characterization-1118-v01.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed

## Tuesday 13 November 2018

**10:30 AM (call to order by Ludwig Winkel) to 6:00 PM, with a 1-hour lunch break**

Mark Hantel continued to present *Industrial Automation Traffic Types and their Mapping to QoS/TSN Mechanisms* in comparison to the traffic types that are described in the use case document.

<http://www.ieee802.org/1/files/public/docs2018/60802-ademaj-traffic-type-characterization-1118-v01.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed. Contributions about expected Traffic Type mappings and Traffic Queue setups are highly welcomed.

Steven Zuponic presented *Avnu Alliance™ Best Practices Theory of Operation for TSN-enabled Systems Applied to Industrial Markets*

[http://www.ieee802.org/1/files/private/liaisons/liaison-Avnu\\_Industrial\\_TheoryOfOperations-1118.pdf](http://www.ieee802.org/1/files/private/liaisons/liaison-Avnu_Industrial_TheoryOfOperations-1118.pdf)

**Disposition:** The Avnu Alliance granted rights to use the document as informational input for the joint project. There is a copyright permission form submitted by Avnu to IEEE/IEC on file. Further discussion needed.

Steven Zuponic presented on *Industrial Bridged and non-Bridged End Stations*

<http://www.ieee802.org/1/files/public/docs2018/60802-Zuponic-Bridged-non-Bridged-End-Stations-1118-v01.pdf>

**Disposition:** Further discussion needed.

Günter Steindl presented on *IEEE802.1Q identified gaps – Rules for gates control vs. inter packet gap*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-TasGateControl-1118-v02.pdf>

**Disposition:** The current version of IEEE 802.1Q does not specify the IPG positions at gate open and close time. The discussion of the questions in this presentation continued on Wednesday and the questions were further discussed with the TSN Task Group as a whole.

Günter Steindl presented on *Expected behavior when receiving a frame containing the own MAC address as Source Address*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-OwnMacAsSA-1118-v01.pdf>

**Disposition:** The current version of IEEE 802.1Q does not specify the required behavior. The discussion of the questions in this presentation continued on Wednesday and the questions were further discussed with the TSN Task Group as a whole.

Thomas Enzinger and Marius Stanica presented *comments*

<http://www.ieee802.org/1/files/public/docs2018/60802-enzinger-comments-industrial-requirements-1118-v01.pdf> on the requirements document and led a discussion on the provided comments.

**Disposition:** The requirements document will be updated according to the outcome of the discussion.

Thomas Enzinger presented *Additional requirements to 60802-industrial-requirements-0918-v10.pdf*

<http://www.ieee802.org/1/files/public/docs2018/60802-enzinger-more-industrial-requirements-1118-v03.pdf>. The presentation was discussed.

**Disposition:** Further discussion needed.

### Wednesday 14 November 2018

#### 8:00 AM (call to order by Ludwig Winkel) to 1:50 PM

Josef Dorr summarized *IEC/IEEE 60802 Profile Contribution*

<http://www.ieee802.org/1/files/public/docs2018/60802-Dorr-ProfileContribution-0918-v02.pdf> The proposed feature selection approach of the contribution was discussed.

**Disposition:** Further discussion needed.

Jordon Woods, IEC/IEEE 60802 editor, presented *Editor's Report 60802 Draft 0.4*

<http://www.ieee802.org/1/files/public/docs2018/60802-woods-D04update-1118-v00.pdf> providing an overview of the current status and structure of the draft IEC/IEEE 60802 profile.

**Disposition:** The approach of the editor to describe functional requirements in an additional device-type specific Conformance column of the selection tables was agreed by the IEC/IEEE 60802 Joint Project. Further discussion needed.

Marius Stanica presented *Event based Control*

<http://www.ieee802.org/1/files/public/docs2018/60802-stanica-event-based-control-1118-v02.pdf>.

**Disposition:** Further discussion needed.

Marius Stanica presented *Link aggregation with TSN*

<http://www.ieee802.org/1/files/public/docs2018/60802-stanica-link-aggregation-1118-v02.pdf>.

**Disposition:** The topic was added as a gap to Annex Z of the draft IEC/IEEE 60802 profile, to be discussed with the TSN Task Group. Further discussion needed.

#### 3:30 PM (call to order by Ludwig Winkel and János Farkas) to 5:00 PM

The TSN Task Group and IEC/IEEE 60802 Joint Project met together for a joint session.

The IEC/IEEE 60802 Joint Project agreed to start Conformity Assessment activities under the umbrella of IEC/IEEE. Ludwig Winkel was encouraged to start an ad-hoc working group on this behalf in IEC/IEEE in collaboration with Avnu (optionally with IEEE

CAP and others). Information exchange between this ad-hoc working group and IEEE 802.1 shall be established.

The IEC/IEEE 60802 Joint Project agreed not to have an additional interim meeting in February 2019, which had been discussed at the September 2018 interim meeting in Oslo, Norway. For future interim and plenary meetings after the January 2019 interim meeting in Hiroshima, Japan, the IEC/IEEE 60802 Joint Project asks the IEEE 802.1 meeting planner to schedule IEC/IEEE 60802 Joint Project meeting time from Wednesday to Friday.

Jordon Woods, IEC/IEEE 60802 editor, presented the *IEEE802.1Q identified gaps* that were discussed in the IEC/IEEE 60802 Joint Project on Tuesday November 13, 2018:

*Gates control vs. inter packet gap*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-TasGateControl-1118-v02.pdf>

According to IEEE 802.1Q-2018:

- For bandwidth calculation, IPG and Preamble have to be included; and
- For latency calculations, the worst-case scenario has to be used.

*Expected behaviour when receiving a frame containing the own MAC address as Source Address*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-OwnMacAsSA-1118-v01.pdf>

IEEE 802.1Q-2018 does not mandate to drop such frames. Static FDB entries are not changed.

## Annex A

### Agenda of the IEC/IEEE 60802 Joint Project meeting held in Bangkok, Thailand November 12-14, 2018

#### 1 Monday: [TSN](#) with [IEC/IEEE 60802](#)

(single track)

|  | Subject  | Presenter           | Affiliation         | Length |
|--|--|---------------------|---------------------|--------|
| <b>8:00-10:00</b>  | <b>AM1</b>   |                     |                     |        |
|  | Welcome and organizational issues, incl.:<br><a href="#">intro</a> , <a href="#">participation</a> | Ludwig Winkel       | Siemens AG          | 15     |
|  |  | János Farkas        | Ericsson            |        |
|  | <a href="#">Agenda</a>   | Ludwig Winkel       | Siemens AG          | 25     |
|  |  | János Farkas        | Ericsson            |        |
|  | <a href="#">Report on the DetNet - TSN workshop</a><br>(last slide)                                | János Farkas        | Ericsson            | 5      |
|  |  | Ludwig Winkel       | Siemens AG          |        |
|  | <a href="#">LNI4.0</a>   | János Farkas        | Ericsson            | 5      |
|  | <a href="#">IEC TC57WG10</a>   |                     |                     |        |
|  | <a href="#">Avnu Submissions for 60802</a>   |                     |                     |        |
|  | Status of <a href="#">use cases</a> , Status of <a href="#">requirements</a>                       | Josef Dorr          | Siemens AG          | 5      |
|  | Status of the <a href="#">draft</a>  | Jordon Woods        | Analog Devices Inc. | 5      |
|  | <a href="#">Conformity Assessment</a>  | Steve Zuponic       | Rockwell Automation | 30     |
|  |  | Ludwig Winkel       | Siemens AG          |        |
| Next meetings  | Ludwig Winkel  | Siemens AG          | 10                  |        |
|  | János Farkas   | Ericsson            |                     |        |
| Status of the <a href="#">NEA on accumulated latency</a> | Jordon Woods   | Analog Devices Inc. | 10                  |        |

#### 2 Monday: Track A: [IEC/IEEE 60802](#)

|                    | Subject                                 | Presenter   | Affiliation         | Length |
|--------------------|---|-------------|---------------------|--------|
| <b>13:30-18:00</b> | <b>PM1 &amp; PM2</b>                    |             |                     |        |
|                    | <a href="#">TSN Common Requirements</a> | Taro Harima | Mitsubishi Electric | 30     |
|                    | <a href="#">TSN-IA Domain</a>           | Taro Harima | Mitsubishi Electric | 30     |

|  | Subject   | Presenter         | Affiliation         | Length |
|--|---|-------------------|---------------------|--------|
|  | <a href="#">Requirement Structure</a>   | Taro Harima       | Mitsubishi Electric | 20     |
|  | <a href="#">TSN – Industrial Ethernet compatibility</a>                               | Lihao Chen        | Huawei              | 20     |
|  | <a href="#">Enhancement considerations for flexible factories with wireless links</a> | Kenichi Maruhashi | NEC                 | 50     |
|  | <a href="#">Gap analysis in 1Qcc for enhanced mechanism for Flexible Factories</a>    | Yoshihisa Kondon  | ATR                 | 50     |
|  | <a href="#">Traffic types and their mapping to QoS/TSN mechanisms</a>                 | Mark Hantel       | Rockwell Automation | 30     |

### 3 Monday: Track B: Generic [TSN](#)

|   | Subject                                    | Presenter                   | Affiliation | Length |
|---|--|-----------------------------|-------------|--------|
| 13:30-18:00   | <b>PM1 &amp; PM2</b>                       |                             |             |        |
|   | Incoming Liaisons:                         |                             |             |        |
|   | <a href="#">LNI4.0</a>                     |                             |             |        |
|   | <a href="#">IEC TC57WG10</a>               |                             |             |        |
|   | <a href="#">Avnu Submissions for 60802</a> |                             |             |        |
|   | <a href="#">SG15 LS125 fronthaul</a>       |                             |             |        |
|   | <a href="#">SG15 LS164 sync update</a>     |                             |             |        |
|   | <a href="#">IEEE 1914</a>                  |                             |             |        |
|   | <a href="#">SG15 LS153 G.8021 G.8013</a>   |                             |             |        |
|   | <a href="#">SG15 LS159 YANG coord</a>      |                             |             |        |
|   | expected results of the week               | János Farkas                | Ericsson    | 30     |
| P802.1CS/ <a href="#">D1.6</a> TG ballot <a href="#">comment</a> resolution | Norman Finn                                | Huawei Technologies Co. Ltd | 210         |        |

### 4 Tuesday: Track A: [IEC/IEEE 60802](#)

|             | Subject  | Presenter      | Affiliation         | Length |
|-------------|--|----------------|---------------------|--------|
| 10:30-18:00 | <b>AM2, PM1, &amp; PM2</b>                                 |                |                     |        |
|             | Review Agenda; expected results of the day                 | Ludwig Winkel  | Siemens AG          | 10     |
|             | <a href="#">Comments on use cases</a>                      | Marius Stanica | ABB                 | 50     |
|             |  | Mark Hantel    | Rockwell Automation |        |
|             | <a href="#">Theory of Operation for TSN-enabled System</a> | Steve Zuponic  | Rockwell Automation | 25     |

|  | Subject  | Presenter       | Affiliation         | Length |
|--|--|-----------------|---------------------|--------|
|  | <a href="#">Bridged and non-Bridged End Stations</a>   | Steve Zuponic   | Rockwell Automation | 35     |
|  | <a href="#">Rules for gates control vs. inter packet gap</a>   | Günter Steindl  | Siemens AG          | 40     |
|  | <a href="#">Expected behaviour when receiving a frame containing the own MAC address as Source Address</a> | Günter Steindl  | Siemens AG          |        |
|  | <a href="#">Comments on Industrial Requirements V1.0</a>   | Thomas Enzinger | B&R                 | 85     |
|  |  | Marius Stanica  | ABB                 |        |
|  | <a href="#">Additional requirements</a>  | Thomas Enzinger | B&R                 | 70     |
|  | <a href="#">Profile contribution</a>   | Josef Dorr      | Siemens AG          |        |
|  | Review of minutes of the day   | Josef Dorr      | Siemens AG          | 30     |

## 5 Tuesday: Track B: Generic [TSN](#)

|                    | Subject  | Presenter         | Affiliation                 | Length |
|--------------------|--|-------------------|-----------------------------|--------|
|                    | <b>AM2, PM1, &amp; PM2</b>   |                   |                             |        |
|                    | <a href="#">IETF Sub-interface VLAN YANG Data Models</a>                     | Lou Berger        | LabN Consulting LLC         | 30     |
|                    | P802.1Qcx/ <a href="#">D0.4</a> TG ballot <a href="#">comment</a> resolution | Marc Holness      | Ciena                       | 60     |
|                    | P802.1Qcw/ <a href="#">D0.2</a> TG ballot <a href="#">comment</a> resolution | Marina Gutierrez  | TTTech                      | 60     |
| <b>10:30-18:00</b> | P802.1ABcu/ <a href="#">D0.6</a> and Editor's <a href="#">update</a>         | Scott Mansfield   | Ericsson                    | 10     |
|                    | <a href="#">P802.1AS-Rev status update</a>                                   | Geoff Garner      | Huawei                      | 60     |
|                    | <a href="#">802.1CBdb Generic stream identification function</a>             | Christophe Mangin | Mitsubishi Electric         | 60     |
|                    | <a href="#">P802.1DC and QoS in DetNet</a>                                   | Norman Finn       | Huawei Technologies Co. Ltd | 45     |

## 6 Tuesday: 802.24 – 802.1 [TSN](#)

(single track)

|                    | Subject  | Presenter   | Affiliation | Length |
|--------------------|--|-------------|-------------|--------|
| <b>18:00-18:30</b> | <a href="#">Utility Applications of Time Sensitive Networking White Paper</a> review | Tim Godfrey | EPRI        | 30     |

**7 Wednesday: Track A: [IEC/IEEE 60802](#)**

|            | Subject  | Presenter      | Affiliation         | Length |
|------------|--|----------------|---------------------|--------|
| 8:00-15:00 | <b>AM1, AM2, &amp; PM1</b>   |                |                     |        |
|            | Review Agenda; expected results of the day                         | Ludwig Winkel  | Siemens AG          | 10     |
|            | <a href="#">Profile contribution</a>                               | Josef Dorr     | Siemens AG          | 20     |
|            | <a href="#">Editor's report</a> on <a href="#">D0.4</a> ; drafting | Jordon Woods   | Analog Devices Inc. | 120    |
|            | <a href="#">Event based control</a>                                | Marius Stanica | ABB                 | 10     |
|            | <a href="#">Link aggregation</a>                                   | Marius Stanica | ABB                 | 10     |
|            | Review of minutes  | Josef Dorr     | Siemens AG          | 5      |

**8 Wednesday: Track B: Generic [TSN](#)**

|             | Subject  | Presenter       | Affiliation                     | Length |
|-------------|--|-----------------|---------------------------------|--------|
| 8:00-12:00  | <b>AM1 &amp; AM2</b>   |                 |                                 |        |
|             | P802.1CMde <a href="#">PAR</a> & <a href="#">CSD, comments</a>   | János Farkas    | Ericsson                        |        |
|             | <a href="#">TSN over 802.3cg - status update</a>   | Craig Gunther   | Craig Gunther Consulting LLC    | 15     |
|             | P802.1DG <a href="#">PAR</a> & <a href="#">CSD, comments</a>   | Mike Potts      | GM                              |        |
|             | P802.1DF <a href="#">PAR</a> & <a href="#">CSD, comments</a>   | Tongtong Wang   | Huawei                          |        |
| 13:00-15:00 | <b>PM1</b>   |                 |                                 |        |
|             | P802.1AX-Rev/ <a href="#">D0.4</a> TG ballot <a href="#">comment</a> resolution with <a href="#">Editor's report</a> | Stephen Haddock | Stephen Haddock Consulting, LLC | 120    |

**9 Wednesday: [TSN](#) with [IEC/IEEE 60802](#)**

(single track)

|             | Subject                             | Presenter     | Affiliation         | Length |
|-------------|-------------------------------------|---------------|---------------------|--------|
| 15:15-17:00 | <b>PM2</b>                          |               |                     |        |
|             | Recap past days                     | Ludwig Winkel | Siemens AG          | 10     |
|             |                                     | János Farkas  | Ericsson            |        |
|             | Next steps on Conformity Assessment | Steve Zuponic | Rockwell Automation | 20     |
|             | next meetings                       | Ludwig Winkel | Siemens AG          | 5      |

|  | Subject   | Presenter     | Affiliation | Length |
|--|---|---------------|-------------|--------|
|  |   | János Farkas  | Ericsson    |        |
|  | Timeline 60802  | Ludwig Winkel | Siemens AG  | 10     |
|  | Identify and discuss IEEE 802 gaps for TSN-IA profile | Ludwig Winkel | Siemens AG  | 45     |
|  |   | János Farkas  | Ericsson    |        |
|  | Review of minutes                                     | Josef Dorr    | Siemens AG  | 15     |

## 10 Thursday: [TSN](#)

(single track)

|                   | Subject  | Presenter       | Affiliation                     | Length |
|-------------------|--|-----------------|---------------------------------|--------|
| <b>8:00-12:30</b> | <b>AM1 &amp; AM2</b>   |                 |                                 |        |
|                   | <a href="#">Privacy considerations for bridged networks</a> ; with a <a href="#">presentation</a>                    | Mick Seaman     | Mick Seaman                     | 30     |
|                   | outgoing liaisons, e.g., responses to:   |                 |                                 | 30     |
|                   | <a href="#">ITU-T Q13/15 TSN for fronthaul</a>   |                 |                                 |        |
|                   | <a href="#">SG15 YANG coord</a>  |                 |                                 |        |
|                   | <a href="#">Avnu Alliance</a>  |                 |                                 |        |
|                   | <a href="#">IEC TC57WG10</a>   |                 |                                 |        |
|                   | <a href="#">LNI4.0</a>   |                 |                                 |        |
|                   | <a href="#">BBF</a>  |                 |                                 |        |
|                   | P802.1AX-Rev/ <a href="#">D0.4</a> TG ballot <a href="#">comment</a> resolution with <a href="#">Editor's report</a> | Stephen Haddock | Stephen Haddock Consulting, LLC |        |
|                   | P802.1CS/ <a href="#">D1.6</a> TG ballot <a href="#">comment</a> resolution  | Norman Finn     | Huawei Technologies Co. Ltd     | 30     |
|                   | <a href="#">P802.1Qcz design topics</a>  | Paul Congdon    | Huawei                          | 60     |