|  |
| --- |
| Minutes of the IC NEND session at the Nov 2018 plenary meeting |
| **Date: 2017-11-30** |
| **Author(s):** |
| **Name** | **Affiliation** | **Phone** | **email** |
| Max Riegel | Nokia Bell Labs |  | maximilian.riegel@nokia.com |

## Abstract

Minutes of the IEEE 802 Network Evolution for the Next Decade Industry Connections activity session at the November 2017 IEEE 802 plenary meeting in Orlando, FL on November 7th, 2017

Chair: Glenn Parsons

Recording secretary: Max Riegel

## Call to order

* Meeting called to order by chair at 19:30
* The meeting was guided through the chair’s slide set available on mentor
<https://mentor.ieee.org/802.1/dcn/17/1-17-0005-01-ICne-november-2017-agenda.pdf>

## Minutes

* Max Riegel volunteered to take notes.

## Attendance

* Participation was recorded through entry under IEEE 802.1 in the IMAT system.
The following table lists the registrations in IMAT:

|  |  |
| --- | --- |
| **Name** | **Affiliation** |
| Andersdotter, Amelia | Article19 |
| Arad, Carmi | Marvell Semiconductor, Inc. |
| Congdon, Paul | Tallac Networks; Huawei |
| DeLaOlivaDelgado, Antonio | Universidad Carlos III Madrid |
| Ellegaard, Lars | Microsemi Corporation |
| Fang, Yonggang | ZTE TX Inc |
| Farkas, Janos | Ericsson |
| Gravel, Mark | Hewlett Packard Enterprise |
| Guo, Jianlin | Mitsubishi Electric Research Labs (MERL) |
| Haddock, Stephen | Stephen Haddock Consulting, LLC |
| Hantel, Mark | Rockwell Automation |
| Hasegawa, Akio | Advanced Telecommunications Research Institute International (ATR) |
| Hiertz, Guido | Ericsson AB |
| Inoue, Yasuhiko | NTT Communications |
| Itaya, Satoko | National Institute of Information and Communications Technology (NICT) |
| Jeffries, Timothy | Huawei R&D USA |
| Karl, Michael | Marvell Semiconductor, Inc. |
| Kehrer, Stephan | Hirschmann Automation and Control, Inc. |
| Kitazawa, Shoichi | Muroran IT |
| KOTO, Hajime | National Institute of Information and Communications Technology (NICT) |
| Levy, Joseph | InterDigital, Inc. |
| Marks, Roger | EthAirNet Associates; Huawei |
| Maruhashi, Kenichi | NEC Corporation |
| Nagai, Yukimasa | Mitsubishi Electric Research Labs (MERL) |
| Ohsawa, Tomoki | NICT |
| ohue, hiroshi | panasonic |
| Orlik, Philip | Mitsubishi Electric Research Labs (MERL) |
| Parsons, Glenn | Ericsson AB |
| Pienciak, Walter | IEEE |
| QIU, WEI | Huawei Technologies Co., Ltd |
| Riegel, Maximilian | Nokia Networks |
| Sakata, Ren | TOSHIBA Corporation |
| Sato, Atsushi | Yokogawa Electric Corporation |
| Sato, Noriyuki | Oki Electric Industry Co., Ltd. |
| Shen, Li | Huawei Technologies Co., Ltd |
| Sumi, Takenori | Mitsubishi Electric Corporation |
| Thaler, Patricia | Broadcom Limited |
| Ting, Ao | ZTE Corporation |
| Wang, Hao | Fujitsu Research & Development Center |
| Wang, Lei | Huawei R&D USA |
| Wang, Xinyuan | Huawei Technologies Co. Ltd |
| Weber, Karl | Beckhoff |
| XU, LI | Huawei Technologies Co., Ltd |
| Yamaura, Takahiro | Toshiba |
| Yano, Kazuto | Advanced Telecommunications Research Institute International (ATR) |
| Yin, Yue | Huawei Technologies Co., Ltd |
| YU, XIANG | Huawei Technologies Co., Ltd |
| Yuda, Tetsuya | KYOCERA Corporation |
| Zein, Nader | NEC Corporation |

## IEEE WG Guidelines

* The chair presented the mandatory IEEE SA guideline slides.

## Agenda approval

* Agenda as proposed in the chair’s meeting slides:
* Introduction
* Role of the IC activity
* Background (the origins of this IC Activity)
* Project Objectives/Scope/Deliverables
* Contributions
* Industrial Networking
* Future Data Centre Networks
* Communications Plan
* (information sharing, meetings, schedule, etc.)
* Actions/Next Steps
* Agenda was approved without further requests.

## Introduction

* Instead performing a roll-call, the chair asked for registration in IMAT under IEEE 802.1 in order to have more time for the technical presentations

## Role of the Industry Connections Activity

* Background (the origins of this IC Activity)
* The chair introduced role of ICA through referencing IC17-001-01 containing the ICAID of the activity
* NEND is a follow-on activity initiated out of the 5G SC work.
* Project Objectives/Scope/Deliverables
* Through presenting slides 10, 12, and 13 of the guiding slides, it was the NEND objectives and deliverables expressing that ICA would identify the area for new project and lead to establishment of SG for creation of PAR
* Reminding about the operating practice:
* Voting: everybody can vote
* Reciprocal attendance credits according to the policy of the home WG
* Approval until March 2019
* Website <http://1.ieee802.org/802-nend/>
* Mentor space for documents: <https://mentor.ieee.org/802.1/documents>
* Mailinglist: stds-802-nend@ieee.org
* To subscribe: <http://listserv.ieee.org/cgi-bin/wa?SUBED1=STDS-802-NEND&A=1>
* The chair pointed out the planned deliverables out of the NEND ICA with records of the meetings with presentation material and a report documenting the essential findings
* Initial report due in March 2018

## Contributions

* Industrial Networking:
* Satoko Itaya: Radio Environment in Factories
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0010-00-ICne-examples-of-radio-environment-in-the-factories.pdf>
* Document was aimed to provide use case scenarios as demanded in July, and to provide an introduction for the following presentation
* Summarizing the basic requirements on the last slide
* Kenichi Maruhashi: Wired/Wireless Convergence for factory IoT
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0011-02-ICne-wired-wireless-convergence-for-factory-iot.pdf>
* Providing more details on E2E reliability and short delay, dynamically changing wireless environment, and wired and wireless bridges in heterogeneous networks
* Summarizing the essential issues appearing in systems: unpredictable data stream behind bridging, and dynamic link quality deterioration of wireless link
* Next step will be development of E2E connectivity profile for factory environment
* Q&A:
* It was expressed that proposal looks interesting, but misses to provide some concreate examples what could be enhanced. PFC was only developed for non-shared media, and it may be challenging to make PFC working on wireless links.
* Another participant expressed that he was astonished about requirements for safety in the range of 1… 10 sec. He thought that the requirements would be in much shorter range.
* Satako responded that much shorter delays in the range of 10ms is required for safety critical cases.
* The participant also wondered about the two different frequencies coming out of the machinery
* Satako responding that practical measurement have shown that noise and interference is occurring in various bands. Very rarely only one band is impacted
* Other commenter confirmed that issues are well presented and amended that noise is another severe issue.
* Kenichi responded that noise impact was very visible in the factory environment
* It was commented that effects like EMC are very strictly handled in consumer equipment and wondering whether same strict regulation would apply to factories
* Satako explained that manufacturers are indeed checking about EMC levels in factories, as well.
* Chair asked about meaning of the concluding statement that system profile will be developed, asking what would be desired from the standardization environment
* Kenichi responding that profile will be created to provide input for PAR discussion.
* The chair wondered where the requirements for new standardization activities would come from
* It was explained through reference to slide 10 that the mentioned profile would investigate the possibilities to make use of the 802.1 standards in the wireless domain, and that profile would also provide further details on the E2E network topology.
* The chair asked for input for the report out of the presented use cases, repeating the demand to investigate the possibilities to deploy TSN protocols on wireless links. He demanded to work towards clear documentation of missing pieces for existing specifications.
* Presenter offered to provide further details at the next plenary meeting in March.
* Much more information about the wireless environment was requested to better understand the wireless issues, and to evaluate whether adaptations to the higher protocols would lower the challenges of the wireless lower layer.
* Future Data Centre Networks
* "Baidu's Best Practice with Low Latency Networks" - Yolanda Yu, Huawei (on behalf of Baidu)
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0008-02-ICne-baidu-s-best-practice-with-low-latency-networks.pdf>
* Feng Gao of Huawei made presentation on behalf of Baidu, showing that Baidu is moving towards latency centric design with Baidu’s perspective summarized on the last slide
* "Network (R)evolution - Challenges and Solutions from a Switching Silicon Perspective" - Carmi Arad (Marvell)
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0009-00-ICne-network-infrastructure-challenges.pdf>
* Carmi introduced himself as a switching architect for the past 20 years at Marvell. He showed that sophisticated congestion avoidance is driven by reduced buffering time.
* "The Lossless Network for the Data Center” & white paper - Paul Congdon (Huawei)
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0007-01-ICne-the-lossless-network-for-data-centers-presentation.pdf>
* Slides are summary of whitepaper that is posted as well on mentor site:
* <https://mentor.ieee.org/802.1/dcn/17/1-17-0006-01-ICne-the-lossless-network-for-data-centers-white-paper.pdf>
* The presentation was about various ideas how to prevent loses due to congestion, and to realize lossless networking for reduced latency.
* Q&A:
* The needs and methods for identifying flows by filtering layer 3 and layer 4 header information were brought up.
* Paul responded that the links are layer 2 while decision making usually happens on layer 3 and layer 4. Only investigation of layer 2 would be able to introduce more fine grain control.
* It was asked about the difference in IEEE 802 in comparison to IETF, which only works on higher layers
* Only one sublayer can decide what is transmitted first. IETF does not have such capabilities as existing in IEEE 802 due to its specifications for the link layer.
* Also the quite a number of ideas for additional functionalities in IEEE 802.1 were appreciated.
* The chair summarized that 4 ideas have been explicitly shown and asked whether some of the proposals would directly map to a PAR proposal?
* Paul responded that one of the presented technologies would go into a PAR proposal for IEEE 802.1. To address the goal of a congestion-free network some more technology additions would be required.
* The chair offered that such functionalities could be considered in upcoming NEND meetings.

## Actions/Next steps:

* Next meetings:
* F2F at plenaries on Tuesday evening
* Monthly conference calls on Wednesday 8AM ET, 5AM PT, 10PM in Japan
* Dec 20th
* Jan 10th
* Feb 14th
* Will be cancelled if no agenda requests
* Chair will send announces on the NEND mailing list
* Duration will be according to agenda, usually 1 hour
* Advertising as outlined on slide 19 of the chair’s slide deck
* It was proposed to send out two eBlasts on the two topics presented in the meeting
* It was mentioning that more users and operators would appear at IETF meetings and it might be beneficial to make IETF aware of the IC NEND
* The chair confirmed to bring the topic up in the IEEE/IETF coordination meetings. As it might be too short notice for the next week’s meeting, it will be put forward to the first meeting next year
* The chair will work on the eBlasts, and he mentioning to bring up the topic of report creation in one of the upcoming conf calls.
* With his concluding slide, The chair reminded to
* Solicit more contributions
* Reach out to more customers
* Find evangelists
* Start report…

## AOB

* No other topics were brought up.

Meeting adjourned by chair at 21:57