

IEEE 802.1 Working Group

September 20-24, 2021 Interim Session

Electronic

Session Minutes

The Working Group (WG) Chair, Glenn Parsons, presided.
The Recording Secretary, Jessy Rouyer, wrote and/or edited the minutes in part based on input from subgroup Chairs and their Secretaries.

Note that, throughout this document, minuted/recorded inputs from any attendee can not/shall not be assumed to represent a position of their employer or affiliated organization. Discussion points captured do not necessarily reflect the views of the presenter, discussion leader or minute taker, and do not imply consensus unless that is explicitly minuted. The content of draft standards is determined by the ballot process; other formal decisions are the subject of Working Group motions.

1 Attendance and affiliation

The table in this section reflects the attendance (denoted by the ● symbol) and affiliation of all participants in all 802.1 WG and subgroup meetings held in this session.

			Maintenance, Fri Sep 24, 14:00-16:00																	
			TSN, Fri Sep 24, 11:30-13:30																	
			Security, Fri Sep 24, 11:00-13:00																	
			TSN - IEC/IEEE 60802, Fri Sep 24, 09:00-11:00																	
			TSN, Fri Sep 24, 09:00-11:00																	
			YANGsters, Thu Sep 23, 14:00-16:00																	
			TSN - IEC/IEEE 60802, Thu Sep 23, 11:30-13:30																	
			Security, Thu Sep 23, 11:00-13:00																	
			TSN, Thu Sep 23, 09:00-11:00																	
			Nendica, Thu Sep 23, 09:00-11:00																	
			TSN, Wed Sep 22, 14:00-16:00																	
			TSN - P802.1DP/AS6675, Wed Sep 22, 11:30-13:30																	
			TSN - IEC/IEEE 60802, Wed Sep 22, 09:00-11:00																	
			TSN, Wed Sep 22, 09:00-11:00																	
			Maintenance, Tue Sep 21, 14:00-16:00																	
			TSN - IEC/IEEE 60802, Tue Sep 21, 11:30-13:30																	
			Security, Tue Sep 21, 11:00-13:00																	
			TSN, Tue Sep 21, 09:00-11:00																	
			TSN, Mon Sep 20, 14:00-16:00																	
			TSN, Mon Sep 20, 11:30-13:30																	
			TSN - IEC/IEEE 60802, Mon Sep 20, 09:00-11:00																	
Last name	First name	Affiliation																		
Alexandris	Konstantinos	Huawei Technologies Duesseldorf GmbH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ananda	Narasimha	Rockwell Automation*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Arunarathi	Venkat	Broadcom Corporation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Assmann	Ralf	Marvell Semiconductor, Inc.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ayaz	Serkan	Denso*			●															
Belliardi	Rudy	Schneider Electric	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bierschenk	Jens	Robert Bosch GmbH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bissonette	David	Comcores	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Biswas	Swarnali	Ford Motor Company			●	●					●	●								
Boiger	Christian	b-plus technologies GmbH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bordogna	Mark	Intel Corporation			●															
Bottorff	Paul	Hewlett-Packard Development Company, L.P.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bruckman	Leon	Huawei Technologies Co., Ltd										●								

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			TSN - IEC/IEEE 60802, Mon Sep 20, 09:00-11:00																					
Last name	First name	Affiliation																						
Canchi	Radhakrishna	Kyocera International Inc
Chan	Pauline	Intel Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Chen	Feng	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Chen	Sean	Not provided*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Choudhury	Abhijit	Broadcom Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Coelho	Rodrigo	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Congdon	Paul	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cummings	Rodney	National Instruments Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dorr	Josef	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dubrawski	Richard	ViaSat, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Elbakoury	Hesham	IEEE member / Self Employed	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ellegaard	Lars	Microchip Technology, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Engelmann	Anna	Volkswagen AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Enziger	Thomas	B&R Industrial Automation GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Farkas	Janos	Ericsson AB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fedyk	Donald	LabN Consulting, L.L.C.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Finn	Norman	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fischer	Kai	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Franchuk	Brian	Emerson Process Management	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Furch	Andreas	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Garner	Geoffrey	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gaur	Shashank	TTTech Auto	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gelish	Joseph	ANSI, SAE, NIST, DOE, ITS America	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gopal	Amrit	Ford Motor Company	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gravel	Mark	Hewlett Packard Enterprise	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Greenland	Aaron	Ericsson Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gunther	Craig	LabN Consulting, L.L.C.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gutierrez	Marina	RealTime-at-Work (RTaW)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Haasz	Jodi	IEEE Standards Association (IEEE-SA)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Haddock	Stephen	Stephen Haddock Consulting, LLC; Tallac Networks; Aruba Networks	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Han	Ruiibo	China Mobile Communications Corporation (CMCC)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hantel	Mark	Rockwell Automation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Harris	Ken	Rockwell Automation*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hasegawa	Akio	Advanced Telecommunications Research Institute International (ATR)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Heiss	Heinrich	IFAG PSS RFS D1 FIM*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hernandez	Marco	National Institute of Information and Communications Technology (NICT)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Holness	Marc	Ciena Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hopf	Daniel	Continental Automotive GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
HUH	WOOJUNG	Microchip Technology, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Itaya	Satoko	National Institute of Information and Communications Technology (NICT)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ito	Yoshihiro	Nagoya Institute of Technology	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

IEEE 802.1 September 20-24, 2021 Interim Session (Electronic)

Last name	First name	Affiliation																											
Riegel	Maximilian	Nokia	.		.																								
Rodrigues	Silvana	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rouyer	Jessy	Nokia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Santinelli	Luca	Airbus Group	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Sato	Atsushi	Yokogawa Electric Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Schavey	Todd	GE	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Schlechter	Greg	Intel Corporation*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seaman	Michael	Individual	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seewald	Maik	Cisco Systems, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Selent	Rafael	ABB AB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Sivakolundu	Ramesh	Cisco Systems, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Specht	Johannes	Self; Analog Devices, Inc.; Mitsubishi Electric Corporation; Phoenix Contact GmbH & Co. KG; PROFIBUS Nutzerorganisation e.V.; Siemens AG; Texas Instruments Inc	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Stamenic	Nemanja	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Stanica	Marius	ABB AB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Stanton	Kevin	Intel Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Steindl	Guenter	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Striffler	Tobias	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Takita	Daisuke	Mitsubishi Electric Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Tatolov	Ievgen	ADIT GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Thomas	Angela	IEEE*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
traore	karim	Microchip/Microsemi Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Turner	Max	Ethernova, BMW, Ruetz System Solutions	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Varga	Balazs	Ericsson AB	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Venkatesan	Ganesh	Intel Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Waineo	Nels	Collins Aerospace	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Wang	Tongtong	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Wang	Xinyuan	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Weber	Karl	Beckhoff Automation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Wessels	Leon	Uman Technologies ZA	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Winkel	Ludwig	PNO e.V.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Wood	Tim	General Electric Company (GE)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Woods	Jordon	Analog Devices Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Yin	Yue	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
YU	Yi	Rockwell Automation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zeier	Uwe	Hilscher Gesellschaft für Systemautomation mbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zein	Nader	NEC Europe (NLE)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zhang	Jiayi	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zhao	William	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zhuang	Max	Huawei*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zhuang	Yan	Huawei Technologies Co., Ltd	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ziegler	Dominik	Siemens AG*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Zinner	Helge	Volkswagen AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

(*) Last name, first name and affiliation derived from Webex access information and not otherwise provided in IMAT.

2 802.1 Officers and Leadership

- Chair: Glenn Parsons
- Vice-Chair and Recording Secretary: Jessy Rouyer
- Executive Secretary: Stephan Kehrer
- Liaison Secretary: Karen Randall
- Maintenance TG Chair: Paul Congdon
- Security TG Chair: Mick Seaman
 - Security TG Vice-Chair: Karen Randall
- TSN TG Chair: János Farkas
 - TSN TG Vice-Chair: Craig Gunther
 - TSN TG Secretary: Christian Boiger
 - IEC/IEEE 60802 Joint Project Chair: Ludwig Winkel
 - IEC/IEEE 60802 Joint Project Secretary: Josef Dorr
 - IEEE P802.1DP / SAE AS6675 joint project co-Chairs: Abdul Jabbar and János Farkas
 - IEEE P802.1DP/SAE AS6675 joint project Secretary: Marina Gutiérrez
- Nendica Chair: Roger Marks
- YANGsters Chair: Scott Mansfield
 - YANGsters Vice-Chair and Secretary: Stephan Kehrer
- Maintenance of Email exploder: Mark Hantel and Hal Keen
- Maintenance of website: Roger Marks

3 Maintenance Task Group

Between this session and the preceding session, the IEEE 802.1 Maintenance Task Group (TG) held electronic meetings whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the Maintenance TG meeting held 2021-07-29 11:01 – 12:58 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;3d0ef1d4.21>
- Minutes of the Maintenance TG meeting held 2021-08-11 11:00 – 13:06 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;d53093bb.21>
- Minutes of the Maintenance TG meeting held 2021-08-27 11:00 – 13:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES:e8972fbb.21>
- Minutes of the Maintenance TG meeting held 2021-09-07 11:00 – 13:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;7a8f97fb.21>

The table in section 1 reflects the attendance and affiliation of all participants in all 802.1 WG and subgroup meetings held in this session.

Call to order Sep 21, 2021 at 14:00 ET by Paul Congdon, IEEE 802.1 Maintenance TG Chair who presided and wrote the minutes.

Agenda items and dispositions:

1. Meeting introduction. The IEEE SA slides on IEEE Patent Policy and IEEE SA Copyright and Participation Policies were provided beforehand as part of “MEETING INTRODUCTION” <http://www.ieee802.org/1/files/public/templates/admin-TG-intro-0721-v01.pdf>.

The Maintenance TG Chair showed this presentation advising that the following, provided beforehand, applies:

- IEEE’s Patent Policy is described in Clause 6 of the IEEE SA Standards Board Bylaws;

- Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
- There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.
- IEEE SA's copyright policy is described in Clause 7 of the IEEE SA Standards Board Bylaws and Clause 6.1 of the IEEE SA Standards Board Operations Manual;
- Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy.

The Maintenance TG Chair made the Calls for Potentially Essential Patents at the beginning of each TG meeting during this session thereby providing an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard: there were no responses to these Calls prior to the end of the session.

The Maintenance TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

2. Approval of agenda. The TG chair presented the agenda in <https://1.ieee802.org/september-2021-interim-session-electronic-maintenance-tg-agenda/>
Disposition: The agenda was reviewed, discussed, and updated as recorded by these minutes.
3. P802.1ACct PAR Extension. The Maintenance TG chair led the discussion on the P802.1ACct PAR extension <https://www.ieee802.org/1/files/public/docs2021/ct-draft-PAR-extension-0921-v00.pdf>. The Maintenance TG chair reviewed the "Motion" slide in <https://www.ieee802.org/1/files/public/docs2021/maint-congdon-em-0921-2-v01.pdf>.
Disposition: No changes required. An ePoll with PAR extension motion is scheduled.
4. P802.1ASdr Editor's Update. Silvana Rodrigues, P802.1ASdr editor, presented "802.1ASdr Editor's Update" <https://www.ieee802.org/1/files/public/docs2021/dr-Rodrigues-editors-update-0921-v00.pdf> and led a discussion of the plans for developing the initial draft.
Disposition: Continued discussions in November to select between the three options.
5. SC6 Status. Karen Randall presented "ISO/IEC JTC1 SC6 STATUS September 2021" slides in "Maintenance Task Group Electronic Meetings" <https://www.ieee802.org/1/files/public/docs2021/maint-congdon-em-0921-2-v01.pdf>.
Disposition: For information.
6. Document Vehicle Status. The Maintenance TG chair presented "Brief Vehicle Status Update" from <https://www.ieee802.org/1/files/public/docs2021/maint-congdon-em-0921-2-v01.pdf>
Disposition: For Information.

16:03 ET recess

Call to order Sep 24, 2021 at 14:05 ET by Paul Congdon, IEEE 802.1 Maintenance TG Chair who presided and wrote the minutes.

7. The Maintenance TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1 and asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
8. Existing Maintenance Items. The Maintenance TG chair led the discussion of the following existing maintenance items:

- 0242: IEEE Std 802.1Qcp-2018: Collected issues on data consistency and others
- 0248: Managed objects for ECP in 802.1Q-2018
- 0311: 802.1Q: Resolution of stream filters with wildcard stream_handle specification
- 0314: network media and PHY
- 0316: Scaling Parameters for FRER
- 0317: Clarification on precedence in Stream Identity Table
- 0319: Race condition in 802.1Q-2018 between List Config state machine (clause 8.6.9.3) and Cycle Timer state machine (clause 8.6.9.1)
- 0322: Alternate set of information needed to correlate preciseOriginTimestamp
- 0324: Use of Tick in List Execute state machine (802.1Q) – Max Turner
- 0325: AVB latency calculation
- 0330: Incorrect definition of BucketEmptyTime in IEEE Std 802.1Qcr-2020
- 0333: Wildcard support for tsnCpeNullDownDestMac
- 0335: clarification of difference between currentTime and localTime in 802.1AS

Disposition: Details for discussion on all items are logged in the IEEE 802.1 maintenance database at <https://www.802-1.org/home> where items progressed at the meeting can be reviewed by selecting 'Meetings'.

9. Any Other Business. No other business was discussed by the Maintenance TG in this session.
10. Future meetings. Agreed (informally, none dissenting) to hold an electronic meeting of the Maintenance TG to finalize P802.1BA-Rev/D2.0 comment resolution on Sep 28, 2021 at 11:00 ET <https://1.ieee802.org/maintenance-tg-electronic-meeting-agenda-september-28-2021-11-am-et/>.

16:03 ET adjournment

4 Security Task Group

Between this session and the preceding session, the IEEE 802.1 Security Task Group (Security TG) held electronic meetings whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the Security TG meeting held 2021-08-03 13:01 - 13:30 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=338932>
- Minutes of the Security TG meeting held 2021-08-17 13:00 - 14:20 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=342810>
- Minutes of the Security TG meeting held 2021-08-31 13:00 - 14:04 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=413087>

The table in section 1 reflects the attendance and affiliation of all participants in all 802.1 WG and subgroup meetings held in this session.

Call to order Sep 21, 2021 at 11:00 ET by Mick Seaman, IEEE 802.1 Security TG Chair, who presided and wrote the minutes assisted by Karen Randall, Security TG Vice-Chair.

Agenda items and dispositions:

1. Meeting introduction. The IEEE SA slides on IEEE Patent Policy and IEEE SA Copyright and Participation Policies were provided beforehand as part of "MEETING

INTRODUCTION” <http://www.ieee802.org/1/files/public/templates/admin-TG-intro-0721-v01.pdf>.

The Security TG Chair announced that the meeting is subject to these Policies as read and displayed at the opening plenary meeting.

The Security TG Chair made the Calls for Potentially Essential Patents thereby providing an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard: there were no responses to these Calls prior to the end of the session.

The Security TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

2. Approval of agenda. The Security TG Chair presented the agenda in <https://1.ieee802.org/september-2021-interim-session-electronic-security-tg-agenda/>
Disposition: the agenda was reviewed, discussed and updated as recorded by these minutes.
Discussion of the responses to ISO/IEC JTC1 SC6 comments (including security related comments) on IEEE 802.1 currently adopted (or in progress for adoption) under the ISO/IEEE PSDO Agreement would take place in the Maintenance TG.
Security discussions would also take place in the IEC/IEEE 60802 Joint Project (TSN Profile for Industrial Automation) <https://1.ieee802.org/tsn/iec-ieee-60802/>.
It would be useful to compare what is proposed with BRSKI (IETF RFC 8995).
3. P802.1AEdk MAC Privacy protection (draft development). Mick Seaman, P802.1AE Editor, led a discussion of <https://www.ieee802.org/1/files/private/dk-drafts/d1/802-1AEdk-d1-0.pdf>

This draft represented work in progress merging and aligning the technical material in prior drafts with the base text, removing both editorial and technical inconsistencies from the draft and the base text. A summary of changes had been included in the “Introduction to the current draft” and was reviewed, with further discussion of the following points:

- 802.1AE (MAC Security) was originally written on the premise that MACsec (the protocol) and MAC Security (the subject) were one and the same. While not at all extensive, some changes are required to clarify the two: “MACsec” being the MAC Security protocol; “MAC Privacy protection” being realized by separate additional “MAC Privacy protection protocol” over MACsec (or an equivalent service providing integrity, confidentiality, and data origin authenticity tying each peer’s source address to authenticated and authorized peer); and “MAC Security” covering both.
- Bibliographic and normative references have been updated.
- The proposed project for improving text on PFC (priority flow control using PAUSE frames) in 802.1Q was noted. There are also privacy aspects to PAUSE, as its use may be correlated (to meet timeliness requirements, it is likely that PAUSE will be sent without MACsec protection or without MAC Privacy protection or as an individual Privacy Frame) with the level of real traffic in a Privacy Channel. The draft does not yet include a discussion of privacy aspects of PFC/PAUSE.
- Figure 10-5 “UMLish” depiction of SecY controls is not just about network management (YANG or SNMP) but covers the totality of SecY internal interfaces, including those from the KaY (Key Agreement Entity) responsible for installing SAKs (data keys) for which there is deliberately no network management access. Figure 10-5 is also deliberately aligned to the description of SecY operations, rather than to grouping information for ease of network management so there can be organizational differences in the latter.

- Calculations and parameters for Privacy Channel frame size, bandwidth, and permitted burst size have been updated.
- Further discussion of ways to record and report the case where a PrY has more peers than the number for which it can guarantee fragmented frame reassembly is required.

Disposition: For further discussion.

13:00 ET recess

Call to order Sep 23, 2021 at 11:00 ET by Mick Seaman, IEEE 802.1 Security TG Chair who reminded the meeting that participation was subject to the IEEE Patent Policy, IEEE SA Copyright Policy, and IEEE SA Participation Policy as provided in advance of the meeting, noted that the Call for Patents had been made at the beginning of the session on Tuesday, reviewed the Decorum and Electronic Meeting Guidelines from Tuesday's meeting introduction slide set, and reminded participants to register their attendance in IMAT.

4. IETF Liaison on YANG keystore draft. Karen Randall, IEEE 802.1 Security TG Vice-Chair and IEEE 802.1 Liaison Secretary, led a review of the IETF Internet-Draft "A YANG Data Model for a Keystore". A draft liaison "Liaison on a YANG Data Model for a Keystore" <https://www.ieee802.org/1/files/public/docs2021/liaison-ietf-YANGkeystore-0921-v01.pdf> was prepared during the course of discussion.

Disposition: Liaison to be sent subject to ePoll approval and giving the 802.1 Chair editorial discretion.

5. P802.1AEdk MAC Privacy protection (draft development) continued. Mick Seaman, P802.1AE Editor, led a continuation of the discussion of <https://www.ieee802.org/1/files/private/dk-drafts/d1/802-1AEdk-d1-0.pdf> and the points noted in the "Introduction to the current draft", with further discussion of the following points:

- The IF-MIB (RFC 2863) use of the MAC status and point-to-parameters in Clause 13 needs to be stated as a definite rule, not as a possibility.
- The reassembly state machines have been updated and require careful review.
- Need to provide a concise statement of the managed variable/object naming rules and mappings between the convenient short names in the operational description and the (longer) names used in the MIB module and YANG (each with their own naming conventions).
- Intention is that the PrY MIB will have clickable cross-references to and from the operational model text in Clause 20 (and elsewhere).
- Use of notifications needs to be discussed with YANGsters.

Don Fedyk, P802.1AEdk Editor, presented "IEEE 802.1 Security MACsec Privacy YANG Update YANG Statistics" <https://www.ieee802.org/1/files/public/docs2021/dk-fedyk-ieee802-dot1ae-mac-privacy-yang-0921-v00.pdf>

Disposition: For further discussion.

13:05 ET recess

Call to order Sep 24, 2021 at 11:12 ET by Mick Seaman, IEEE 802.1 Security TG Chair who showed "MEETING INTRODUCTION" <http://www.ieee802.org/1/files/public/templates/admin-TG-intro-0721-v01.pdf>, repeated the call for patents, and reminded participants to register their attendance in IMAT.

General discussion of PrY addressing:

- Needs to be clear that each PrY uses a unique source address. Use of a separate CA/SCI is not a universal substitute, nor is the use of separate VLANs to support two PrYs in the same system. PrY operates below the VLAN tagging in the interface stack of a single bridge components, and removal of an externally added tag would occur before reception by a peer PrY – so two PrYs in one system talking to a third PrY in another system will not operate correctly if the two share an address.
- In general a 'PrY appliance' without MACsec can be architected in the same way as an EDE, with the MACsec functionality disabled.

Don Fedyk, P802.1AEdk Editor, continued the discussion of YANG statistics.

Discussion:

- It needs to be noted that MACsec provides more useful statistics if the management concern is loss (or potential loss) of MPPDUs between peer PrYs. Counting reassembly failures is not a good proxy for MACsec stats, and does not cover user data frames conveyed without fragmentation. Even when SecY and PrY are in separate systems they should be adjacent, connected without competing traffic, so there should be no additional loss between them.
- Express and Preemptable reassembly discards should be counted separately.

Disposition: Discussion to be continued.

6. Any Other Business

6.1 IEEE Std 802.1AE maintenance. Mick Seaman, P802.1AE Editor, led a discussion of 802.1AE maintenance.

Discussion:

- A number of minor items, all so far with no -interoperability/technical consequences.
- Figure 13-1 shows incorrect ifIndex/ifEntry for Common Port and labels Common Port as "Physical Interface". ifIndex error introduced in 802.1AE-2018, as a consequence of the 802.1AE-2006 source files not being up to date with the published text. No interoperability problem anticipated in reverting to the original as the same figure in the actual MIB remained correct, and would have been the natural reference point for implementation.

Disposition: Document necessary corrections and submit to the 802.1 Maintenance process in parallel with correction in P802.1AEdk.

7. Future meetings. Agreed, none dissenting, to schedule an electronic meeting of the Security TG for Oct 19, 2021 13:00 ET. Agenda: P802.1AEdk draft development and task group matters arising.

12:24 ET adjournment

5 Time-Sensitive Networking Task Group

Between this session and the preceding session, the IEEE 802.1 Time-Sensitive Networking (TSN) Task Group (TG) held electronic meetings on generic TSN topics whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the TSN TG meeting held 2021-08-02 11:00 – 13:03 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=322447>
- Minutes of the TSN TG meeting held 2021-08-09 11:00 – 13:22 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=323346>

- Minutes of the IEEE 802.1 TSN TG meeting held 2021-08-23 11:00 - 11:48
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=352636>
- Minutes of the IEEE 802.1 TSN TG meeting held 2021-08-30 11:00 - 13:00
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=353548>
- Minutes of the IEEE 802.1 TSN TG meeting held 2021-09-13 11:00 - 12:39
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=382254>

Between this session and the preceding session, the IEEE 802.1 TSN TG held electronic meetings on P802.1DG whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the IEEE P802.1DG meeting held 2021-07-27 9:00 - 10:23 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=301281>
- Minutes of the IEEE P802.1DG meeting held 2021-08-10 9:00 - 11:00 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=320635>
- Minutes of the IEEE P802.1DG meeting held 2021-08-31 9:00 - 10:06 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=349945>

Between this session and the preceding session, the IEEE 802.1 TSN TG held electronic meetings on P802.1DP/SAE AS 6675 whose minutes are incorporated to these session minutes by reference as follows:

- - Minutes of the IEEE P802.1DP/SAE AS6675 meeting held 2021-08-04 10:00 - 12:01 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=355561>.
- Minutes of the IEEE P802.1DP/SAE AS6675 meeting held 2021-09-01 10:00 - 12:08 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=354460>.

The table in section 1 reflects the attendance and affiliation of all participants in all 802.1 WG and subgroup meetings held in this session.

The TSN TG and the IEC/IEEE 60802 Joint Project held joint meetings minuted in section 5.1.

Call to order Sep 20, 2021 at 11:30 ET by János Farkas, IEEE 802.1 TSN TG Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

Agenda items and dispositions:

1. Meeting introduction. The IEEE SA slides on IEEE Patent Policy and IEEE SA Copyright and Participation Policies were provided beforehand as part of "MEETING INTRODUCTION" <http://www.ieee802.org/1/files/public/templates/admin-TG-intro-0721-v01.pdf>.

The TSN TG Chair announced that the meeting is subject to these Policies as read and displayed at the TSN - IEC/IEEE 60802 Joint Project meeting held Sep 20, 2021 at 09:00 ET.

The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

2. Approval of agenda. The TSN TG Chair presented the agenda in <https://1.ieee802.org/2021-09-interim-tsn-agenda/>.

Disposition: The agenda was reviewed, discussed and updated as recorded by these minutes.

3. The TSN TG Chair presented “Liaison for draft sharing between IEEE 802.1 WG and EtherCAT” <https://www.ieee802.org/1/files/public/docs2021/liaison-EtherCAT-draftsharing-0921.pdf>.
Disposition: Liaison discussed. More discussion needed.
4. Roger Marks, Nendica Chair, presented “IEEE 802 “Network Enhancements for the Next Decade” Industry Connections Activity (Nendica): Status”
<https://mentor.ieee.org/802.1/dcn/21/1-21-0053-05-ICne-nendica-status-september-2021.pdf>.
Disposition: Presentation discussed.
5. Scott Mansfield, YANGsters Chair, presented “YANGsters Introduction and Status”
<https://www.ieee802.org/1/files/public/docs2021/yangsters-smansfield-tsn-update-0921-v02.pdf>.
Disposition: Presentation discussed.
6. Scott Mansfield, YANGsters Chair, presented “IEC/IEEE 60802 YANG Issues”
<https://www.ieee802.org/1/files/public/docs2021/yangsters-smansfield-60802-yang-0821-v01.pdf>.
Disposition: Presentation discussed.
7. Scott Mansfield, P802.1ABcu editor, presented
<https://www.ieee802.org/1/files/private/abcu-drafts/d2/802-1ABcu-d2-2-pdis-v01.pdf> and led the resolution of comments received on <https://www.ieee802.org/1/files/private/abcu-drafts/d2/802-1ABcu-D2-2.pdf>.
Disposition: Final **Disposition:** <https://www.ieee802.org/1/files/private/abcu-drafts/d2/802-1ABcu-d2-2-dis-v01.pdf>
8. The TSN TG Chair led the review of the P802.1ABcu PAR extension request
<https://www.ieee802.org/1/files/public/docs2021/cu-PAR-extension-0921-v00.pdf>.
Disposition: Updated PAR extension request:
<https://www.ieee802.org/1/files/public/docs2021/cu-PAR-extension-0921-v01.pdf>
9. Stephen Haddock, P802.1ABdh editor, presented
<https://www.ieee802.org/1/files/private/dh-drafts/d2/802-1ABdh-d2-0-pdis-v1.pdf> and led the resolution of comments received on <https://www.ieee802.org/1/files/private/dh-drafts/d2/802-1ABdh-d2-0.pdf>.
Disposition: Partial disposition. Comment 8 discussed and resolved as documented in <https://www.ieee802.org/1/files/private/dh-drafts/d2/802-1ABdh-d2-0-dis-v1.pdf>.

13:26 ET recess

Call to order Sep 20, 2021 at 14:00 ET by János Farkas, IEEE 802.1 TSN TG Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

10. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.
The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
11. Stephen Haddock, P802.1ABdh editor, continued leading the resolution of comments received on <https://www.ieee802.org/1/files/private/dh-drafts/d2/802-1ABdh-d2-0.pdf>.
Disposition: Final **Disposition:** <https://www.ieee802.org/1/files/private/dh-drafts/d2/802-1ABdh-d2-0-dis-v1.pdf>
12. The TSN TG Chair presented a draft motion on the P802.1ABcu PAR extension for approval by ePoll.
Disposition: Draft motion reviewed for approval by ePoll.

13. Stephan Kehrer, P802.1CBcv editor, led the resolution of comments received on <https://www.ieee802.org/1/files/private/cv-drafts/d2/802-1CBcv-d2-0.pdf>.
Disposition: Final **Disposition:** <https://www.ieee802.org/1/files/private/cv-drafts/d2/802-1CBcv-d2-0-dis-v01.pdf>
14. Christophe Mangin, P802.1CBdb editor, led the resolution of comments received on <https://www.ieee802.org/1/files/private/db-drafts/d2/802-1CBdb-d2-0.pdf>.
Disposition: Final **Disposition:** <https://www.ieee802.org/1/files/private/db-drafts/d2/802-1CBdb-d2-0-dis-v01.pdf>
15. Roger Marks, P802.1CQ editor, led the resolution of comments received on <https://www.ieee802.org/1/files/private/cq-drafts/d0/802-1CQ-d0-7.pdf>.
Disposition: Partial disposition as documented in <https://www.ieee802.org/1/files/private/cq-drafts/d0/802-1CQ-d0-7-dis.pdf>.

16:00 ET recess

Call to order Sep 21, 2021 at 09:00 ET by János Farkas, IEEE 802.1 TSN TG Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

16. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.
The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
17. Don Pannell led the review of the draft PAR <https://www.ieee802.org/1/files/public/docs2021/new-pannell-AS-support-10BASET1S-draft-PAR-0921-v01.pdf> and CSD <https://www.ieee802.org/1/files/public/docs2021/new-pannell-AS-support-10BASET1S-draft-CSD-0921-v01.pdf>.
Disposition: Updated PAR: <https://www.ieee802.org/1/files/public/docs2021/ds-draft-PAR-0921-v01.pdf>. Updated CSD: <https://www.ieee802.org/1/files/public/docs2021/ds-draft-CSD-0921-v01.pdf>

10:54 ET recess

Call to order Sep 22, 2021 at 09:00 ET by Craig Gunther, IEEE 802.1 TSN TG Vice-Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

18. The TSN TG Vice-Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.
The TSN TG Vice-Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
19. Alon Regev presented "802.1 maintenance item 0319: Race condition in 802.1Q-2018 between List Config state machine (clause 8.6.9.3) and Cycle Timer state machine (clause 8.6.9.1)" <https://www.ieee802.org/1/files/public/docs2021/maint-regev-scheduled-traffic-race-condition-0921-v01.pdf>.
Disposition: Presentation discussed.
20. Marc Holness, P802f editor, led the resolution of comments received on <https://www.ieee802.org/1/files/private/802-f-drafts/d1/802f-d1-0.pdf>.
Disposition: Partial disposition. Comments 28, 42, 5, 25, 7, 8 discussed and resolved as documented in <https://www.ieee802.org/1/files/private/802-f-drafts/d1/802f-d1-0-dis-v01.pdf>.

11:03 ET recess

Call to order Sep 22, 2021 at 11:30 ET by János Farkas, IEEE 802.1 TSN TG Chair. Abdul Jabbar and János Farkas, IEEE P802.1DP/SAE AS6675 joint project co-Chairs, presided. Marina Gutiérrez, IEEE P802.1DP/SAE AS6675 Secretary, wrote the minutes.

21. János Farkas, IEEE 802.1DP/SAE AS6675 co-Chair, announced that the meeting remains subject to the Policies mentioned in agenda item 1.

János Farkas, IEEE 802.1DP/SAE AS6675 co-Chair, asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

22. Approval of agenda. János Farkas, IEEE 802.1DP/SAE AS6675 co-Chair, presented the agenda in https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN_8211_P8021DPAS6675.

Disposition: The agenda was reviewed, discussed and agreed (informally, none dissenting) as presented.

23. Brent Nelson presented "Redundant Frames Without Elimination"

<https://www.ieee802.org/1/files/public/docs2021/dp-Nelson-Redundant-Frames-Without-Elimination-0922-v01.pdf>.

Disposition: Presentation was discussed.

24. Johannes Specht presented "On ATS"

<https://www.ieee802.org/1/files/public/docs2021/new-specht-onats-0921-v01.pdf>.

Disposition: Presentation was cut short due to lack of time. It will be continued in a further IEEE 802.1DP/SAE AS6675 electronic meeting.

13:37 ET recess

Call to order Sep 22, 2021 at 14:00 ET by Janos Farkas, IEEE 802.1 TSN TG Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

25. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.

The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

26. Roger Marks, P802.1CQ editor, continued leading the resolution of comments received on <https://www.ieee802.org/1/files/private/cq-drafts/d0/802-1CQ-d0-7.pdf>.

Disposition: Final **Disposition:** <https://www.ieee802.org/1/files/private/cq-drafts/d0/802-1CQ-d0-7-dis.pdf>

27. Stephan Kehrer, P802.1Qdj editor, shared his anticipation of the project's next step.

Disposition: For information.

28. Rodrigo Coelho presented "UNI Requirements from Industrial Automation (IA)"

<https://www.ieee802.org/1/files/public/docs2021/dj-Coelho-CNC-Requirements-0921-v01.pdf>.

Disposition: Presentation discussed. More discussion needed.

16:40 ET recess

Call to order Sep 23, 2021 at 09:00 ET by Janos Farkas, IEEE 802.1 TSN TG Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

29. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.

The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

30. Geoffrey Garner, P802.1ASdm editor, presented “P802.1ASdm-Rev/D0.2 Editor’s Report” <https://www.ieee802.org/1/files/public/docs2021/dm-garner-d0-3-tg-ballot-editors-report-0921-v00.pdf> and led the resolution of comments received on <https://www.ieee802.org/1/files/private/asdm-drafts/d0/802-1ASdm-d0-3.pdf>.
Disposition: Partial disposition. Comments 13, 14, 20, 26, 58, 59, 8, 9, 24, 82, 83, 86, 5, 108, 116, 4, 19, 25, 34, 6, 100, 15 discussed and resolved as documented in <https://www.ieee802.org/1/files/private/asdm-drafts/d0/802-1ASdm-d0-3-pdis-v02.pdf>.

11:15 ET recess

Call to order Sep 24, 2021 at 09:00 ET by Craig Gunther, IEEE 802.1 TSN TG Vice-Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

31. The TSN TG Vice-Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.
The TSN TG Vice-Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
32. Marc Holness, P802f editor, led the resolution of comments received on <https://www.ieee802.org/1/files/private/802-f-drafts/d1/802f-d1-0.pdf>.
Disposition: Partial disposition. Comments 33, 43 discussed and resolved as documented in <https://www.ieee802.org/1/files/private/802-f-drafts/d1/802f-d1-0-dis-v01.pdf>.
33. Satoko Itaya presented “Text Contribution for P802.1Qdq” <https://www.ieee802.org/1/files/public/docs2021/dq-itaya-text-contribution-0921-v01.pdf>.
Disposition: For information.
34. Hiroki Nakano, P802.1Qdq editor, shared his anticipation of the project’s next step.
Disposition: For information.
35. Paul Congdon presented “PFC Headroom and Enhancements Project Proposal” <https://www.ieee802.org/1/files/public/docs2021/new-congdon-PFC-Headroom-and-Enhancements-0921-v01.pdf>.
Disposition: Presentation discussed.

11:05 ET recess

Call to order Sep 24, 2021 at 11:30 ET by Janos Farkas, IEEE 802.1 TSN TG Chair, who presided. Christian Boiger, IEEE 802.1 TSN TG Secretary, wrote the minutes.

36. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1.
The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
37. Feng Chen, P802.1Qdd editor, presented “IEEE P802.1Qdd Resource Allocation Protocol (RAP) Editor’s Report for D0.5 Ballot Comment Resolution” <https://www.ieee802.org/1/files/public/docs2021/dd-chen-d0-5-editors-report-0921-v01.pdf> and led the resolution of comments received on <https://www.ieee802.org/1/files/private/dd-drafts/d0/802-1Qdd-d0-5.pdf>.

Disposition: Partial disposition. Comments 16, 21, 22, 42 discussed and resolved as documented in <https://www.ieee802.org/1/files/private/dd-drafts/d0/802-1Qdd-d0-5-pdis-v02.pdf>.

38. Stephan Kehrer, P802.1CBcv editor, continued leading the resolution of comments received on <https://www.ieee802.org/1/files/private/cv-drafts/d2/802-1CBcv-d2-0.pdf> to revise resolution of comment 4.

Disposition: Final disposition updated. Comment 4 discussed and resolved as documented in <https://www.ieee802.org/1/files/private/cv-drafts/d2/802-1CBcv-d2-0-dis-v02.pdf>.

39. Johannes Specht presented “Cut-Through Forwarding (CTF): Towards an IEEE 802.1 Standard” <https://mentor.ieee.org/802.1/dcn/21/1-21-0051-02-ICne-ctf-discussing-next-steps.pdf>.

Disposition: Presentation discussed.

13:52 ET adjournment

5.1 IEC/IEEE 60802 Joint Project

Between this session and the preceding session, the IEC/IEEE 60802 Joint Project held electronic meetings whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the IEC/IEEE 60802 Joint Project meeting held 2021-07-26 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=383167>
- Minutes of the IEC/IEEE 60802 Joint Project meeting held 2021-08-02 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=282283>
- Minutes of the IEC/IEEE 60802 Joint Project meeting held 2021-08-09 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=384136>
- Minutes of the IEC/IEEE 60802 Joint Project meeting held 2021-08-30 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=358866>
- Minutes of the IEC/IEEE 60802 Joint Project meeting held 2021-09-13 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=379511>

Between this session and the preceding session, the IEC/IEEE 60802 Joint Project System Specification ad hoc (System ad hoc) held the following electronic meetings:

- Minutes of the IEC/IEEE 60802 Joint Project System Specification ad hoc meeting held 2021-07-30 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=391288>
- Minutes of the IEC/IEEE 60802 Joint Project System Specification ad hoc meeting held 2021-08-06 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=317456>
- Minutes of the IEC/IEEE 60802 Joint Project System Specification ad hoc meeting held 2021-09-03 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=392239>
- Minutes of the IEC/IEEE 60802 Joint Project System Specification ad hoc meeting held 2021-09-17 9:00 - 11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&O=A&P=393190>

The table in section 1 reflects the attendance and affiliation of all participants in all 802.1 WG and subgroup meetings held in this session.

Call to order Sep 20, 2021 at 09:00 ET by Ludwig Winkel, IEC 65C/WG18 Convenor and IEC/IEEE 60802 Joint Project Chair (60802 Chair), who presided with János Farkas, IEEE 802.1 TSN TG Chair (TSN TG Chair). Josef Dorr, IEC/IEEE 60802 Joint Project Secretary (60802 Secretary), wrote the minutes.

Agenda items and dispositions:

1. Meeting introduction and other administrative items. The IEEE SA slides on IEEE Patent Policy and IEEE SA Copyright and Participation Policies were provided beforehand as part of "MEETING INTRODUCTION" <http://www.ieee802.org/1/files/public/templates/admin-TG-intro-0721-v01.pdf>.

The TSN TG Chair showed this presentation advising that the following, provided beforehand, applies:

- IEEE's Patent Policy is described in Clause 6 of the IEEE SA Standards Board Bylaws;
- Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
- There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.

The TSN TG Chair made the Call for Potentially Essential Patents thereby providing an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard: there were no responses to this Call prior to the end of the session.

The TSN TG Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

The TSN TG Chair explained that the IEC/IEEE 60802 Joint Project also follows the usual IEC patent https://www.iec.ch/members_experts/tools/patents/patent_policy.htm and copyright https://www.iec.ch/standardsdev/resources/draftingpublications/overview/rules_requirements/copyright.htm policies.

2. Approval of agenda. The 60802 Chair presented the agenda in https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN_8211_IECIEEE_60802.

Disposition: The agenda was reviewed, discussed, and agreed (informally, none dissenting) as presented.

3. Update on the IEC 61802 conformity assessment project. The 60802 Chair gave a verbal update on the IEC 61802 conformity assessment project. The negotiations to sponsor IEC 61802 development between five involved consortia are still progressing.

Disposition: For information.

4. Update on System Ad Hoc. Mark Hantel, IEC/IEEE 60802 Joint Project System Specification ad hoc Chair (System ad hoc Chair), gave a verbal report of the System ad hoc's work and status. Some substantial topics, which have been discussed in the System ad hoc, have been integrated into IEC/IEEE 60802 (60802) draft 1.3 (<https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3.pdf>), but further topics are still on the System ad hoc's agenda.

Disposition: For information.

5. Editor's report. Jordon Woods, IEC/IEEE 60802 Joint Project Editor (60802 Editor), presented "Editor's Report 60802 Draft 1.3"
<https://www.ieee802.org/1/files/public/docs2021/60802-woods-D1-3-update-0921-v02.pdf>.
Disposition: For information.
6. D1.3 TG ballot comment resolution. The IEC/IEEE 60802 Editor started the resolution of comments received on <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3.pdf>.
Disposition: Partial disposition. Ballot comments 155, 294 were resolved. The comment dispositions are documented in <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3-pdis-v03.pdf>.
7. Review of minutes. The minutes were reviewed under the lead of the 60802 Secretary.

11:00 ET recess

Call to order Sep 21, 2021 at 11:30 ET, by Ludwig Winkel, 60802 Chair, who presided with János Farkas, TSN TG Chair. Josef Dorr, 60802 Secretary, wrote the minutes.

8. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1. The 60802 Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
9. Approval of agenda. The 60802 Chair presented the agenda in https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN_8211_IECIEEE_60802-2.
Disposition: The agenda was reviewed, discussed, and agreed (informally, none dissenting) as presented.
10. The 60802 challenge of meeting time accuracy goals across long daisy-chains using 802.1AS-2020 -- An analysis and a proposed path forward. Kevin Stanton introduced and David McCall presented "The 60802 challenge of meeting time accuracy goals across long daisy-chains using 802.1AS™-2020 / An analysis and a proposed path forward"
<https://www.ieee802.org/1/files/public/docs2021/60802-McCall-et-al-Time-Sync-Error-Model-0921-v01.pdf>. Kevin Stanton led the discussion of this contribution. The analytic approach described in the contribution was appreciated during the discussion.
Disposition: An updated revision of the contribution is intended. More discussion is needed. Anticipated next steps are:
 - Complete the model.
 - Validate the model using existing simulation(s) from Geoffrey Garner.
 - Report back with a specific proposal containing 802.1AS parameters (e.g. rates etc.) and other recommendations that would meet the time accuracy goals for IEC/IEEE 60802 review.
11. D1.3 TG ballot comment resolution. The IEC/IEEE 60802 Editor continued the resolution of comments received on <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3.pdf>.
Disposition: Partial disposition. Ballot comments 295, 82, 156, 296, 83, 297 were resolved. The comment dispositions are documented in <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3-pdis-v03.pdf>.
12. Review of minutes. The minutes were reviewed under the lead of the 60802 Secretary.

13:30 ET recess

Call to order Sep 22, 2021 at 9:00 ET, by Ludwig Winkel, 60802 Chair, who presided with János Farkas, TSN TG Chair. Josef Dorr, 60802 Secretary, wrote the minutes.

13. The 60802 Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1. The 60802 Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker and asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
14. Approval of agenda. The 60802 Chair presented the agenda in https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN_8211_IECIEEE_60802-3.
Disposition: The agenda was reviewed, discussed, and agreed (informally, none dissenting) as presented.
15. D1.3 TG ballot comment resolution. The IEC/IEEE 60802 Editor continued the resolution of comments received on <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3.pdf>.
Disposition: Partial disposition. Ballot comments 117, 237, 112, 113, 238, 158, 506, 122, 507, 239, 508, 240 were resolved. The comment dispositions are documented in <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3-pdis-v03.pdf>.
16. Review of minutes. The minutes were reviewed under the lead of the 60802 Secretary.

11:00 ET recess

Call to order Sep 23, 2021 at 11:30 ET by Ludwig Winkel, 60802 Chair, who presided. Josef Dorr, 60802 Secretary, wrote the minutes.

17. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1. The 60802 Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
18. Approval of agenda. The 60802 Chair presented the agenda in https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN_8211_IECIEEE_60802-4.
Disposition: The agenda was reviewed, discussed, and agreed (informally, none dissenting) as presented.
19. D1.3 TG ballot comment resolution. The IEC/IEEE 60802 Editor continued the resolution of comments received on <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3.pdf>.
Disposition: Partial disposition. Ballot comments 179, 538, 404, 20, 217, 157, 218, 411 were resolved. The comment dispositions are documented in <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3-pdis-v03.pdf>.
20. CTF forwarding timing in Industrial Automation. Johannes Specht presented and led the discussion on <https://mentor.ieee.org/802.1/dcn/21/1-21-0058-01-ICne-ctf-forwarding-timing-in-industrial-automation.pdf>.
Disposition: For information. A continuation of the CTF discussion is expected in the Sep 24, 2021 TSN TG meeting.
21. Review of minutes. This agenda item was skipped by lack of time.

13:35 ET recess

Call to order Sep 24, 2021 at 09:00 ET by János Farkas, TSN TG Chair, who presided with Ludwig Winkel, 60802 Chair. Josef Dorr, 60802 Secretary, wrote the minutes.

22. The TSN TG Chair announced that the meeting remains subject to the Policies mentioned in agenda item 1 and asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

23. Approval of agenda. The 60802 Chair presented the agenda in [https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN 8211 IECIEEE 60802-5](https://1.ieee802.org/2021-09-interim-tsn-agenda/#TSN_8211_IECIEEE_60802-5).

Disposition: The agenda was reviewed, discussed, and updated as recorded by these minutes.

24. D1.3 TG ballot comment resolution.

- The IEC/IEEE 60802 Editor provided an updated “Editor’s Report 60802 Draft 1.3” <https://www.ieee802.org/1/files/public/docs2021/60802-woods-D1-3-update-0921-v03.pdf> after an additional ballot response was received.
- The IEC/IEEE 60802 Editor continued the resolution of comments received on <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3.pdf>.

Disposition: Partial disposition. Ballot comments 402, 298, 160, 299, 161, 172, 534, 301, 302, 87, 173, 303, 89 were resolved. The comment dispositions are documented in <https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-d1-3-pdis-v03.pdf>.

25. Updates on Time Sync Error model presentation. David McCall provided an overview of the changes integrated in revision v03 of “The 60802 challenge of meeting time accuracy goals across long daisy-chains using 802.1AS™-2020 / An analysis and a proposed path forward” <https://www.ieee802.org/1/files/public/docs2021/60802-McCall-et-al-Time-Sync-Error-Model-0921-v03.pdf>, whose v01 was presented on the Sep 21, 2021 meeting of IEC/IEEE 60802.

Disposition: For information.

26. Review of minutes. The minutes were reviewed under the lead of the 60802 Secretary.

11:05 ET adjournment

6 Nendica

Between this session and the preceding session, the IEEE 802 “Network Enhancements for the Next Decade” Industry Connections Activity (Nendica) held electronic meetings whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the Nendica meeting held 2021-07-22 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;6f64aba4.21>
- Minutes of the Nendica meeting held 2021-07-29 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;8306a9e2.21>
- Minutes of the Nendica meeting held 2021-08-05 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;2c0772b7.21>
- Minutes of the Nendica meeting held 2021-08-12 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;93ae21c.21>
- Minutes of the Nendica meeting held 2021-08-19 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;da33352d.21>
- Minutes of the Nendica meeting held 2021-08-26 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;b5de1106.21>
- Minutes of the Nendica meeting held 2021-09-02 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;6af0f31f.21>
- Minutes of the Nendica meeting held 2021-09-09 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;1f35abdb.21>
- Minutes of the Nendica meeting held 2021-09-16 09:00-11:00 ET <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES;e47f1b56.21>

The table in section 1 reflects the attendance and affiliation of all participants in all 802.1 WG

and subgroup meetings held in this session.

Call to order Sep 23, 2021 at 09:00 ET by Roger Marks, Nendica Chair, who presided and wrote the minutes.

Agenda items and dispositions:

1. Meeting introduction and other administrative items.
The IEEE SA slides on IEEE Patent Policy and IEEE SA Copyright and Participation Policies were provided beforehand as part of "MEETING INTRODUCTION" "<http://www.ieee802.org/1/files/public/templates/admin-prePAR-intro-0721-v01.pdf>". The Nendica Chair showed this presentation advising that the following, provided beforehand, applies:
 - IEEE SA's copyright policy is described in Clause 7 of the IEEE SA Standards Board Bylaws and Clause 6.1 of the IEEE SA Standards Board Operations Manual;
 - Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy.The Nendica Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.
2. Approval of agenda. The Nendica Chair presented the draft agenda.
Disposition: **Disposition:** The agenda was reviewed and agreed (informally, none dissenting) as <https://1.ieee802.org/802-nendica-agenda-2021-09-23/>.
3. Minutes. The Nendica Chair reviewed the draft "Minutes of the Nendica meeting held 2021-09-16 09:00-11:00 ET (revised)" <https://listserv.ieee.org/cgi-bin/wa?A2=STDS-802-1-MINUTES:e47f1b56.21>.
Disposition: It was agreed (informally, none dissenting) to approve the minutes as presented.
4. Nendica organization. The Nendica Chair noted that the Nendica ICAID renewal request has been formally approved by IEEE SA on September 20, 2021, authorizing Nendica activity through September 2023. The ICAID IC17-001-03 is posted as <https://mentor.ieee.org/802.1/dcn/21/1-21-0057-00.pdf>.
5. Update. The Nendica Chair noted that the Nendica web site had been updated to indicate the ICAID renewal. He observed that the four new documents available at the Nendica mentor server are all on this Sep 23, 2021 Nendica meeting agenda.
Disposition: The Nendica Chair agreed to replace the ICAID link with a link to the ICAID as posted by ICom, once available.
6. CTF Study Item. Johannes Specht presented "CTF Forwarding Timing in Industrial Automation" <https://mentor.ieee.org/802.1/dcn/21/1-21-0058-00.pdf>. Discussion followed.
Disposition: Further discussion is anticipated when this presentation is made to the 802.1 TSN Task Group later on Sep 23, 2021.
7. ELLA Study Item. Roger Marks presented "ELLA: What is the IEEE 802 Link Layer Service?" <https://mentor.ieee.org/802.1/dcn/21/1-21-0045-02-ICne.pdf>. Discussion noted the significance of such issues in increasingly converged networking environments and the need for functionality to enable such an LLC service.
Disposition: For information.
8. New 802.1 topics. Norman Finn presented "Input Synchronization for Cyclic Queueing and Forwarding" <https://mentor.ieee.org/802.1/dcn/21/1-21-0056-00.pdf>. Discussion followed.
Disposition: Future contributions are expected in this series on the CQF topic.
9. Future Meetings. The next Nendica meeting is scheduled for Sep 30, 2021, 09:00-11:00 ET, subject to cancellation one day before in the absence of expected contributions. The

tentative agenda for that meeting at <https://1.ieee802.org/802-nendica-agenda-2021-09-30/> was discussed. Three participants indicated that they anticipated a contribution and would inform the Nendica Chair within a day.

Disposition: The Nendica Chair indicated that he would wait a day before circulating the draft agenda.

10. Any Other Business. No other business was discussed by Nendica in this meeting.

11:20 ET adjournment

7 YANGsters

Between this session and the preceding session, YANGsters held electronic meetings whose minutes are incorporated to these session minutes by reference as follows:

- Minutes of the YANGsters meeting held 2021-07-27 10:01 – 11:06 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=315618>
- Minutes of the YANGsters meeting held 2021-08-03 10:00 – 11:02 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=324245>
- Minutes of the YANGsters meeting held 2021-08-10 10:00 – 10:45 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=325191>
- Minutes of the YANGsters meeting held 2021-08-17 10:00 – 11:15 ET (revised)
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=369393>
- Minutes of the YANGsters meeting held 2021-08-24 10:01 – 11:01 ET (revised)
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=370351>
- Minutes of the YANGsters meeting held 2021-08-31 10:00 – 11:15 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=356662>
- Minutes of the YANGsters meeting held 2021-09-07 10:00 – 10:58 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=368448>
- Minutes of the YANGsters meeting held 2021-09-14 10:01 – 11:00 ET
<https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=378564>

The table in section 1 reflects the attendance and affiliation of all participants in all 802.1 WG and subgroup meetings held in this session.

Agenda items and dispositions:

1. Meeting introduction. The IEEE SA slides on IEEE Patent Policy and IEEE SA Copyright and Participation Policies were provided beforehand as part of “MEETING INTRODUCTION” <http://www.ieee802.org/1/files/public/templates/admin-prePAR-intro-0721-v01.pdf>.

The YANGsters Chair showed this presentation advising that the following, provided beforehand, applies:

- IEEE SA’s copyright policy is described in Clause 7 of the IEEE SA Standards Board Bylaws and Clause 6.1 of the IEEE SA Standards Board Operations Manual;
- Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy.

The YANGsters Chair asked participants to record their attendance in IMAT and, if they are unable to do so, to promptly provide their affiliation to the minute taker.

2. Approval of agenda. The YANGsters Chair presented the agenda in <https://1.ieee802.org/september-2021-interim-session-electronic-yangsters-agenda/>.

Disposition: The agenda was reviewed, discussed, and updated as recorded by these minutes.

3. Introduction to YANGsters. The YANGsters Chair introduced YANGsters by presenting “YANGsters Introduction and Status” <https://www.ieee802.org/1/files/public/docs2021/yangsters-smansfield-tsn-update-0921-v02.pdf>.

- The available YANGsters resources were presented.
- A status update of YANG projects that are currently ongoing was provided.
- An overview of the achievements since the July 2021 plenary session was provided along with information on where to find the minutes for the YANGsters meetings that were held since the July 2021 plenary session.

Disposition: For information.

4. Inclusive Terminology Impact on YANG. Rodney Cummings presented and led the discussion of “Master / Slave Terminology in P1588e and P802.1ASdn” <https://www.ieee802.org/1/files/public/docs2021/dn-cummings-master-slave-0921-v01.pdf>.

- P802.1ASdn aims to specify a YANG data model for IEEE Std 802.1AS by augmenting the YANG for IEEE Std 1588 that is being developed in IEEE P1588e.
- This could potentially cause problems since IEEE Std 1588 is currently not aiming to replace non-inclusive terminology but rather to make suggestion for alternatives that can be used by other documents.
- This could result in non-inclusive terminology appearing e.g. in variable names in the YANG modules originating in IEEE 1588. Renaming these in P802.1ASdn can cause technical issues.
- At the moment this does not seem to be an issue because currently only very few occurrences of non-inclusive terms exist in the experimental YANG module for P802.1ASdn and all of them are in descriptions.
- Different options for how the issue could be approached from an IEEE 802.1 perspective were presented.
- An open question currently is how the decisions in IEEE P1588e would impact the progress of P802.1ASdn and potential amendments in the IEEE 802 standardization process. This needs to be clarified within IEEE 802.
- It would be helpful to have a follow up presentation that takes the YANG trees from IEEE Std 802.1AS and IEEE 1588 to see where non-inclusive terminology is present.
- The YANG trees should not only show leaf names but also types and identities.

Disposition: Agreed (informally, none dissenting) that further discussion on the topic is needed.

5. Instances and Tooling. The YANGsters Chair presented the topic showing “YANG Validation Examples” <https://www.ieee802.org/1/files/public/docs2021/yangsters-smansfield-yanglint-0921-v02.pdf>.

- An overview of different ways to validate YANG was provided.
- A basic workflow for using yanglint was presented.
- If XML is used as input and output format it is possible to test a module against itself.
- The question was raised if there is tool support available for handling instance data in XML or JSON. This would lower the bar for making use of instance data for validation with yanglint.

Disposition: Agreed (informally, none dissenting) that the topic needs further examination to make the use of yanglint for validation easier for IEEE 802.1 editors.

6. Maintenance Discussion: Finish review of the following for “low-hanging fruits” and actions. The YANGsters Chair introduced the topic and led the discussion.

- Maintenance Item 0242 (<https://www.802-1.org/items/357>) contains a collection of maintenance issues for the IEEE 802.1 YANG Bridge model.

- Some of the issues in this maintenance item can be considered “low-hanging fruits” that could be easily addressed in currently open P802.1Q-Rev.
- The topic has been progressed in several YANGsters meetings. See <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=369393>, <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=370351>, and <https://listserv.ieee.org/cgi-bin/wa?A2=ind21&L=STDS-802-1-MINUTES&P=356662>.
- The suggested fixes that are documented in these minutes were reviewed together with the P802.1Q-Rev editor.
- The following items found in <https://www.ieee802.org/1/files/public/docs2021/maint-specht-yang-comments-0121-v02.pdf> are considered to be described with sufficient clarity so they can be submitted as ballot comments in the initial SA ballot for P802.1Q-REV:
 - 1)a)
 - 1)b)
 - 4)

Disposition: Agreed (informally, none dissenting) that the identified items should be submitted as ballot comments in the SA ballot on P802.1Q-Rev/D1.0.

7. Tutorials/Guideline Updates. Discussion was deferred by lack of time.
8. New: YANG notifications was brought up as a new topic but deferred by lack of time. The topic is currently planned to be addressed during the YANGsters meeting on Oct 5, 2021.
9. New: YANG issues from IEC/IEEE 60802 were brought up as a new topic but deferred by lack of time.
 - YANG language versions and how to handle modules done in different versions.
 - Parallel candidate datastores.The topic is currently planned to be addressed during the YANGsters meeting on Sep 28, 2021.
10. Open Discussion. Discussion was deferred by lack of time.
11. Weekly Call Agenda Requests. See agenda items 8 and 9.
12. Any Other Business. No other business was discussed by YANGsters in this session.

16:08 ET adjournment

8 Next Session

Nov 8-16, 2021 electronic plenary session.