INTERNATIONAL STANDARD

ISO/IEC/ IEEE 8802-11

Second edition 2018-05-01 **AMENDMENT 1** 2019-02

Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements —

iTeh ST Part 11: Wireless LAN medium access control (st (MAC) and physical layer (PHY) ISO/ Specifications 2019

https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804AMENDMENT8-IndFast initial link setup

> Technologies de l'information — Télécommunications et échange d'information entre systèmes — Réseaux locaux et métropolitains — Exigences spécifiques —

> Partie 11: Spécifications du contrôle d'accès du milieu sans fil (MAC) et de la couche physique (PHY)

AMENDEMENT 1: Configuration de liaison initiale rapide



Reference number ISO/IEC/IEEE 8802-11:2018/Amd.1:2019(E)

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>ISO/IEC/IEEE 8802-11:2018/Amd 1:2019</u> https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804e3/iso-iec-iece-8802-11-2018-amd-1-2019



COPYRIGHT PROTECTED DOCUMENT

© IEEE 2016

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO or IEEE at the respective address below or ISO's member body in the country of the requester.

ISO copyright office CP 401 • Ch. de Blandonnet 8 CH-1214 Vernier, Geneva Phone: +41 22 749 01 11 Fax: +41 22 749 09 47 Email: copyright@iso.org Website: www.iso.org Published in Switzerland Institute of Electrical and Electronics Engineers, Inc 3 Park Avenue, New York NY 10016-5997, USA

Email: stds.ipr@ieee.org Website: www.ieee.org

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted (see www.iso.org/directives).

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. The IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While the IEEE administers the process and establishes rules to promote fairness in the consensus development process, the IEEE does not independently evaluate, test, or verify the accuracy of any of the information contained in its standards.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any/patent) rights 8 identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents). 5829ab8804e3/iso-iec-iece-8802-11-2018-and-1-2019

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

ISO/IEC/IEEE 8802-11:2018/Amd.1 was prepared by the LAN/MAN of the IEEE Computer Society (as IEEE Std 802.11ai-2016) and drafted in accordance with its editorial rules. It was adopted, under the "fast-track procedure" defined in the Partner Standards Development Organization cooperation agreement between ISO and IEEE, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC6, *Telecommunications and information exchange between systems*.

A list of all parts in the ISO/IEC/IEEE 8802 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at <u>www.iso.org/members.html</u>.

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/IEC/IEEE 8802-11:2018/Amd 1:2019 https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804e3/iso-iec-iece-8802-11-2018-amd-1-2019 IEEE Standard for Information technology— Telecommunications and information exchange between systems Local and metropolitan area networks— Specific requirements

Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications

Amendment 1: Fast Initial Link Setup

iTeh STANDARD PREVIEW (standards.iteh.ai)

Sponsor

LAN/MAN Standards Committee ISO/IEC/IEEE 8802-11:2018/Amd 1:2019 of the https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-IEEE Computer Society9ab8804e3/iso-iec-ieec-8802-11-2018-amd-1-2019

Approved 7 December 2016

IEEE-SA Standards Board

ISO/IEC/IEEE 8802-11:2018/Amd.1:2019(E)

Abstract: Mechanisms that provide IEEE Std 802.11 networks with fast initial link setup methods that do not degrade the security offered by Robust Security Network Association (RSNA) already defined in IEEE Std 802.11 are defined in this amendment.

Keywords: amendment, Fast Initial Link setup, FILS, IEEE 802.11ai™

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/IEC/IEEE 8802-11:2018/Amd 1:2019 https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804e3/iso-iec-ieee-8802-11-2018-amd-1-2019

SECOND PRINTING: 14 April 2017. Erratum included in Clause 9-Table 9-46 and Table 9-47.

PDF: ISBN 978-1-5044-3631-1 STD22359 Print: ISBN 978-1-5044-3632-8 STDPD22359

IEEE prohibits discrimination, harassment, and bullying.

utus/whatis/policies/p9-26.html.

For more information, visit <u>http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html</u>. No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

The Institute of Electrical and Electronics Engineers, Inc. 3 Park Avenue, New York, NY 10016-5997, USA

Copyright © 2016 by The Institute of Electrical and Electronics Engineers, Inc. All rights reserved. Published 30 December 2016. Printed in the United States of America.

IEEE and 802 are registered trademarks in the U.S. Patent & Trademark Office, owned by The Institute of Electrical and Electronics Engineers, Incorporated.

Important Notices and Disclaimers Concerning IEEE Standards Documents

IEEE documents are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page, appear in all standards and may be found under the heading "Important Notices and Disclaimers Concerning IEEE Standards Documents." They can also be obtained on request from IEEE or viewed at http://standards.ieee.org/IPR/disclaimers.html.

Notice and Disclaimer of Liability Concerning the Use of IEEE Standards Documents

IEEE Standards documents (standards, recommended practices, and guides), both full-use and trial-use, are developed within IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association ("IEEE-SA") Standards Board. IEEE ("the Institute") develops its standards through a consensus development process, approved by the American National Standards Institute ("ANSI"), which brings together volunteers representing varied viewpoints and interests to achieve the final product. IEEE Standards are documents developed through scientific, academic, and industry-based technical working groups. Volunteers in IEEE working groups are not necessarily members of the Institute and participate without compensation from IEEE. While IEEE administers the process and establishes rules to promote fairness in the consensus development process, IEEE does not independently evaluate, test, or verify the accuracy of any of the information or the soundness of any judgments contained in its standards.

IEEE Standards do not guarantee or ensure safety, security, health, or environmental protection, or ensure against interference with or from other devices or networks. Implementers and users of IEEE Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.

IEEE does not warrant or represent the accuracy or content of the material contained in its standards, and expressly disclaims all warranties (express, implied and statutory) not included in this or any other document relating to the standard, including, but not limited to, the warranties of: merchantability; fitness for a particular purpose; non-infringement; and quality, accuracy, effectiveness, currency, or completeness of material. In addition, IEEE disclaims and all conditions relating to react the source of t

any and all conditions relating to: results? and workmanlike effort. IEEE standards documents are supplied "AS IS" and "WITH ALL FAULTSIPS://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804e3/iso-iec-iece-8802-11-2018-amd-1-2019 Use of an IEEE standard is wholly voluntary. The existence of an IEEE standard does not imply that there are no other

Use of an IEEE standard is wholly voluntary. The existence of an IEEE standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard.

In publishing and making its standards available, IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity nor is IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any IEEE Standards document, should rely upon his or her own independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given IEEE standard.

IN NO EVENT SHALL IEEE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

Translations

The IEEE consensus development process involves the review of documents in English only. In the event that an IEEE standard is translated, only the English version published by IEEE should be considered the approved IEEE standard.

Official statements

A statement, written or oral, that is not processed in accordance with the IEEE-SA Standards Board Operations Manual shall not be considered or inferred to be the official position of IEEE or any of its committees and shall not be considered to be, or be relied upon as, a formal position of IEEE. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position of IEEE.

Comments on standards

Comments for revision of IEEE Standards documents are welcome from any interested party, regardless of membership affiliation with IEEE. However, IEEE does not provide consulting information or advice pertaining to IEEE Standards documents. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since IEEE standards represent a consensus of concerned interests, it is important that any responses to comments and questions also receive the concurrence of a balance of interests. For this reason, IEEE and the members of its societies and Standards Coordinating Committees are not able to provide an instant response to comments or questions except in those cases where the matter has previously been addressed. For the same reason, IEEE does not respond to interpretation requests. Any person who would like to participate in revisions to an IEEE standard is welcome to join the relevant IEEE working group.

Comments on standards should be submitted to the following address:

Secretary, IEEE-SA Standards Board 445 Hoes Lane Piscataway, NJ 08854USANDARD PREVIEW ulations (standards.iteh.ai)

Laws and regulations

Users of IEEE Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any IEEE Standards document does not imply compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

IEEE draft and approved standards are copyrighted by IEEE under U.S. and international copyright laws. They are made available by IEEE and are adopted for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making these documents available for use and adoption by public authorities and private users, IEEE does not waive any rights in copyright to the documents.

Photocopies

Subject to payment of the appropriate fee, IEEE will grant users a limited, non-exclusive license to photocopy portions of any individual standard for company or organizational internal use or individual, non-commercial use only. To arrange for payment of licensing fees, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

Updating of IEEE Standards documents

Users of IEEE Standards documents should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect.

Every IEEE standard is subjected to review at least every ten years. When a document is more than ten years old and has not undergone a revision process, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any IEEE standard.

In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit the IEEE-SA Website at <u>http://ieeexplore.ieee.org</u> or contact IEEE at the address listed previously. For more information about the IEEE SA or IEEE's standards development process, visit the IEEE-SA Website at <u>http://standards.ieee.org</u>.

Errata

Errata, if any, for all IEEE standards can be accessed on the IEEE-SA Website at the following URL: <u>http://standards.ieee.org/findstds/errata/index.html</u>. Users are encouraged to check this URL for errata periodically.

Patents

Attention is called to the possibility that implementation of this standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken by the IEEE with respect to the existence or validity of any patent rights in connection therewith. If a patent holder or patent applicant has filed a statement of assurance via an Accepted Letter of Assurance, then the statement is listed on the IEEE-SA Website at http://standards.ieee.org/about/sasb/patcom/patents.html. Letters of Assurance may indicate whether the Submitter is willing or unwilling to grant licenses under patent rights without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination to applicants desiring to obtain such licenses.

Essential Patent Claims may exist for which a Letter of Assurance has not been received. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims, or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

Participants

At the time this standard was completed, the IEEE 802.11 Working Group had the following membership: Adrian P. Stephens, Chair Jon W. Rosdahl, 1st Vice Chair

Dorothy V. Stanley, 2nd Vice Chair **Stephen McCann**, Secretary

The following were officers of Task Group ai:

Hiroshi Mano, Chair Marc Emmelmann, Vice Chair Hitoshi Morioka, Secretary Lee R. Armstrong, Co-Technical Editor Ping Fang, Co-Technical Editor

Jinsoo Choi Osama S. Aboulmagd Santosh P. Abraham Sangsung Choi Li Chia Chia Choo Roberto Aiello Thomas Alexander Sayantan Choudhury Peiman Amini Liwen Chu Sirikiat Lek Ariyavisitakul Jinyoung Chun John Coffey Yusuke Asai Alex Ashley Kenneth Coop Carlos Cordeiro Kwok Shum Au Teh STA Neiyer Correal Vijay Auluck Subir Das Stefan Aust stanHendricus De Ruijterh. David Bagby Rolf J. de Vegt Eugene Baik Gabor Bajko Yohannes Demessie Raja Banerjea ISO/IEC/IEMichael Denson 18/Amd 1:2019 Phillip Barber Anuj Batra Tuncer Baykas 5829ab8804e3/is Klaus Doppler2-11-2018-amd-1-2019 Roger P. Durand Alan Berkema Nehru Bhandaru Donald E. Eastlake Peter Ecclesine Philippe Boucachard Richard Edgar Andre Bourdoux Amal Ekbal John Buffington Vinko Erceg Lin Cai George Calcev Yonggang Fang Chris Calvert Qin Fei Radhakrishna Canchi Stanislav Filin Norman Finn Laurent Cariou Matthew J. Fischer William Carney George Flammer Jaesun Cha Romana Challans Chittabrata Ghosh James P. K. Gilb Kim Chang Kuor-Hsin Chang Reinhard Gloger Xin Chang Daning Gong Clint F. Chaplin David Goodall Elad Gottlib Bin Chen Jiamin Chen Sudheer A. Grandhi Jixin Chen Stephen Grau Lidong Chen Michael Grigat Qian Chen David Halasz Xi Chen Mark A. Hamilton Minho Cheong Christopher J. Hansen George Cherian Peng Hao Francois Chin Hiroshi Harada Rojan Chitrakar Daniel N. Harkins

Brian D Hart Ahmadreza Hedayat Robert F. Heile Jerome Henry Chin Keong Ho Anh Tuan Hoang Dien Hoang Wei Hong Ying-Chuan Hsiao Jing-Rong Hsieh David Hunter Yasuhiko Inoue Mitsuru Iwaoka Wuncheol Jeong Yangseok Jeong Sunggeun Jin ZhongYi Jin Nihar Jindal V. K. Jones Jari Junell Padam Kafle Carl W. Kain Hyunduk Kang Mika Kasslin Richard H. Kennedy Stuart J. Kerry Eunkyung Kim Jeongki Kim Jinho Kim Joo Young Kim Joonsuk Kim Suhwook Kim Taejoon Kim Youhan Kim Youngsoo Kim Shoichi Kitazawa Jarkko Kneckt Gwangzeen Ko Fumihide Kojima Tom Kolze Timo Koskela Bruce P. Kraemer Jin-Sam Kwak Joseph Kwak Hyoungjin Kwon

ISO/IEC/IEEE 8802-11:2018/Amd.1:2019(E)

Young Hoon Kwon Paul Lambert Zhou Lan Leonardo Lanante James Lansford Jean-Pierre Le Rouzic Anseok Lee Donghun Lee Jae Seung Lee Wookbong Lee Zhongding Lei Wai Kong Leung Joseph Levy Feng Li Huan-Bang Li Liang Li Lingjie Li Yunbo Li Yunzhou Li Zhiqiang Li Erik Lindskog Jianhan Liu Pei Liu Yong Liu Zongru Liu Peter Loc Su Lu Long Luo Yi Luo Zhendong Luo Kaiying Lv Michael Lynch Jouni K. Malinen Simone Merlin James Miller Keiichi Mizutani Apurva Mody Michael Montemurro Kenichi Mori Ronald Murias Andrew Myles Yukimasa Nagai Yuhei Nagao Hiroki Nakano Chiu Ngo Paul Nikolich Hiroyo Ogawa Minseok Oh Min-seok Oh David Olson Satoshi Oyama Michael J. Paljug Santos Ghanshyam Pandey Anna Pantelidou Giwon Park Minyoung Park Seung-Hoon Park Jaya Shankar Pathmasuntharam Sandhya Patil Xiaoming Peng Eldad Perahia James E. Petranovich

Albert Petrick John Petro Xu Ping Juho Pirskanen Khiam Boon Png Vishakan Ponnampalam Ron Porat Henry S. Ptasinski Rethnakaran Pulikkoonattu Chang-Woo Chang Pyo Emily H. Qi Huyu Qu Harish Ramamurthy Jayaram Ramasastry Ivan Reede Edward Reuss Maximilian Riegel Mark Rison Zhigang Rong Jon W. Rosdahl Cheol Ryu Kiseon Ryu Kazuvuki Sakoda Ruben E. Salazar Cardozo Hemanth Sampath Sigurd Schelstraete Jean Schwoerer iTeh STA Jonathan Segev Cristina Seibert Yongho Seok stan_{Kunal Shah} S. iteh.ai) Huairong Shao Zhenhai Shao Stephen J. Shellhammer https://standards.iteh.ai/cataanSherndards/sist/658e2b2b-b37f-4eba-Guang-Qi Yang 5829ab8804e3/isoWei-Shie-8802-11-2018-amd-1-2019 Lin Yang Nobuhiko Shibagaki Shusaku Shimada Chang Sub Shin Thomas M. Siep Michael Sim Dwight Smith Graham Kenneth Smith Myung Sun Song Sudhir Srinivasa Robert Stacey Dorothy V. Stanley Lawrence Stefani Adrian P. Stephens Rene Struik Jung Hoon Suh Chin-sean Sum Bo Sun Chen Sun Sheng Sun Kazuaki Takahashi Mineo Takai Sagar Tamhane Joseph Teo Thomas Tetzlaff Jerry Thrasher Tong Tian

Jens Tingleff Fei Tong Ha Nguyen Tran Kazuyoshi Tsukada Masahiro Umehira Richard D. J. Van Nee Allert Van Zelst Prabodh Varshney Sameer Vermani Dalton T. Victor Gabriel Villardi George A Vlantis Chao Chun Wang Haiguang Wang Haiming Wang James June Wang Lei Wang Lin Wang Qi Wang Xiang Wang Xuehuan Wang Lisa Ward Zou Wei-Xia Lei Wen Menzo M. Wentink Harya Wicaksana Eric Wong Harry R. Worstell Tianyu Wu Zhanji Wu Zhenyu Xiao Dongmei Xu Quanping Xu Xun Yang Yunsong Yang Fan Ye James Yee Peter Yee Wai-Leong Yeow Kaoru Yokoo Su Khiong Khiong Yong Christopher Young Heejung Yu Zhan Yu Tevfik Yucek Guangrong Yue Katsuo D. A. Yunoki Hongyuan Zhang Hui Zhang Junjian Zhang Nianzu Zhang Xin Zhang Mu Zhao Jun Zheng Shoukang Zheng Mingtuo Zhou Yan Zhuang Lan Zhuo

ISO/IEC/IEEE 8802-11:2018/Amd.1:2019(E)

Guido Hiertz

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Tomoko Adachi Werner Hoelzl Thomas Alexander Russell Houslev **Richard Alfvin** Noriyuki Ikeuchi Nobumitsu Amachi Yasuhiko Inoue Carol Ansley Akio Iso Butch Anton Atsushi Ito Yusuke Asai Raj Jain Alfred Asterjadhi Adri Jovin Stefan Aust Naveen Kakani Gabor Bajko Shinkyo Kaku Phillip Barber Hyunjeong Kang Harry Bims Piotr Karocki Gennaro Boggia John Kenney Nancy Bravin Stuart Kerry Jairo Bustos Heredia Youhan Kim William Byrd Patrick Kinney Radhakrishna Canchi Bruce Kraemer Cagatay Capar Yasushi Kudoh William Carney Thomas Kurihara Juan Carreon Paul Lambert Minho Cheong Jeremy Landt Paul Chiuchiolo Hyeong Ho Lee Sayantan Choudhury Zhongding Lei James Lepp Keith Chow i'l'eh STANJoseph Levy Charles Cook Arthur H. Light Subir Das William Lumpkins h.ai Patrick Diamond stan Michael Lynch Yezid Donoso Chris Lyttle Malcolm Dowse Sourav Dutta ISO/IEC/IEEElvis@aculuba 8/Amd 1:2019 Richard Edgar Kazuyoshi Tsukada Marc Emmelmann//standards.iteh.ai/catal.og/standards/sist/658e2b2b-b37f-4eba-9Mark-Rene Uchida 5829ab8804e3/iso-igamies Marin2-11-2018-amd-1-2019 Michael Fischer Avraham Freedman Stephen McCann Devon Gayle Michael McInnis Joel Goergen Filip Mestanov Randall Groves Michael Montemurro Michael Gundlach Jose Morales Gloria Gwynne Ronald Murias Russell Haines Rick Murphy Mark Hamilton Andrew Myles Daniel Harkins Michael Newman Nick S.A Nikjoo Jerome Henry Marco Hernandez John Notor

Robert O'Hara Yoshihiro Ohba Satoshi Oyama Stephen Palm Arumugam Paventhan Venkatesha Prasad Karen Randall Maximilian Riegel Mark Rison Robert Robinson Benjamin Rolfe Jon W. Rosdahl Osman Sakr Shigenobu Sasaki Naotaka Sato Bartien Sayogo Andy Scott Yongho Seok Ian Sherlock Graham Smith Daniel Smolinski Ju-Hyung Son Kapil Sood Thomas Starai Adrian P. Stephens Rene Struik Walter Struppler Michael Swearingen Payam Torab Kazuyoshi Tsukada Lorenzo Vangelista Dmitri Varsanofiev Prabodh Varshney Ganesh Venkatesan George Vlantis Khurram Waheed Haiming Wang James June Wang Lei Wang Xiaofei Wang Hung-Yu Wei James Yee Oren Yuen

Satoshi Obara

When the IEEE-SA Standards Board approved this standard on 7 December 2016, it had the following membership:

Jean-Philippe Faure, Chair Ted Burse, Vice Chair John D. Kulick, Past Chair Konstantinos Karachalios, Secretary

Chuck Adams Masayuki Ariyoshi Stephen Dukes Jianbin Fan J. Travis Griffith Gary Hoffman Ronald W. Hotchkiss Michael Janezic Joseph L. Koepfinger* Hung Ling Kevin Lu Annette D. Reilly Gary Robinson Mehmet Ulema Yingli Wen Howard Wolfman Don Wright Yu Yuan Daidi Zhong

*Member Emeritus

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>ISO/IEC/IEEE 8802-11:2018/Amd 1:2019</u> https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804e3/iso-iec-iece-8802-11-2018-amd-1-2019

Introduction

This introduction is not part of IEEE Std 802.11ai-2016, IEEE Standard for Information technology— Telecommunications and information exchange between systems—Local and metropolitan area networks— Specific requirements—Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications—Amendment 1: Fast Initial Link Setup.

This amendment defines mechanisms that provide IEEE 802.11 networks with fast initial link setup methods that do not degrade the security offered by Robust Security Network Association (RSNA) already defined in IEEE Std 802.11.

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>ISO/IEC/IEEE 8802-11:2018/Amd 1:2019</u> https://standards.iteh.ai/catalog/standards/sist/658e2b2b-b37f-4eba-99cc-5829ab8804e3/iso-iec-iece-8802-11-2018-amd-1-2019

Contents

2.	Normative references				
3.	Definitions, acronyms, and abbreviations				
	31	Definit	tions		20
	3.2 Definitions specific to IEEE Std 802.113.4 Abbreviations and acronyms				
4.	General description				
	4.5	Overvi	ew of the	v of the services	
		4.5.3		that support the distribution service and the PCP service	
			4.5.3.3	Association	
		4.5.4	Access c	ontrol and data confidentiality services	
			4.5.4.2	Authentication	
			4.5.4.3	Deauthentication	
			4.5.4.5	Key management	
			4.5.4.8	Fast BSS transition	
	4.10) IEEE S	Std 802.11	and IEEE Std 802.1X-2010	
		4.10.2	IEEE Std	1 802.11 usage of IEEE Std 802.1X-2010	
		4.10.3	Infrastrue	cture functional model overview	
			4.10.3.6	cture functional model overview AKM operations using FILS authentication	
		4.10.7	PMKSA	caching	
				caching (standards.iteh.ai)	
5.	MAC service definition				
	ISO/IEC/IEEE 8802-11:2018/Amd 1:2019				
	5.2	MAC	lata servic	e specification loovet and and viet /658p-2h-2h-h-37f-4eba-99co-	
		5.2.3	MA-UN	TDATA indication. 22/2008/04-5/160-160-1600-8802-11-2018-amd-1-2019 When generated	
			5.2.3.3	When generated	
6.	Layer management				
	6.3	MLMF	IE SAP interface		28
		6.3.3			
			6.3.3.2	MLME-SCAN.request	
			6.3.3.3	MLME-SCAN.confirm	
			6.3.3.4	MLME-SCAN-STOP.request	
		6.3.5	Authenti	cate	
			6.3.5.2	MLME-AUTHENTICATE.request	
			6.3.5.3	MLME-AUTHENTICATE.confirm	
			6.3.5.4	MLME-AUTHENTICATE.indication	
			6.3.5.5	MLME-AUTHENTICATE.response	
		6.3.7	Associate	- -	
			6.3.7.2	MLME-ASSOCIATE.request	
			6.3.7.3	MLME-ASSOCIATE.confirm	
			6.3.7.4	MLME-ASSOCIATE.indication	
			6.3.7.5	MLME-ASSOCIATE.response	
		6.3.8	Reassoci	ate	
			6.3.8.2	MLME-REASSOCIATE.request	
			6.3.8.3	MLME-REASSOCIATE.confirm	
			6.3.8.4	MLME-REASSOCIATE.indication	