IEEE SA
STANDARDS ASSOCIATION

IEEE Standard for
Local and metropolitan area networks—

Media Access Control (MAC) Security

Corrigendum 1: Tag Control Information Figure

IEEE Computer Society

Developed by the
LAN/MAN Standards Committee

IEEE Std 802.1AE™-2018/Cor 1-2020
(Corrigendum to IEEE Std 802.1AE-2018)

IEEE

IEEE Std 802.1AE™-2018/Cor 1-2020
(Corrigendum to IEEE Std 802.1AE-2018)

IEEE Standard for
Local and metropolitan area networks—

Media Access Control (MAC) Security

Corrigendum 1: Tag Control Information Figure

Developed by the
LAN/MAN Standards Committee
of the
IEEE Computer Society

Approved 4 June 2020
IEEE SA Standards Board

Abstract: How all or part of a network can be secured transparently to peer protocol entities that use the MAC Service provided by IEEE 802® LANs to communicate is specified in this standard. MAC security (MACsec) provides connectionless user data confidentiality, data frame integrity, and data origin authenticity.

Keywords: authorized port, confidentiality, corrigendum, data origin authenticity, IEEE 802.1AE™, integrity, LANs, local area networks, MAC Bridges, MAC security, MAC Service, MANs, metropolitan area networks, port-based network access control, secure association, security, transparent bridging

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

PDF: ISBN 978-1-5044-6822-0 STD24249

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 https://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 any and all conditions relating to: results; and workmanlike effort. IEEE standards documents are supplied "AS IS" and "WITH ALL FAULTS."

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 08854 USA

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 US 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 10 years. When a document is more than 10 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 IEEE Xplore at https://ieeexplore.ieee.org/ 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 https://standards.ieee.org.

Errata

Errata, if any, for IEEE standards can be accessed via https://standards.ieee.org/standard/index.html. Search for standard number and year of approval to access the web page of the published standard. Errata links are located under the Additional Resources Details section. Errata are also available in IEEE Xplore: https://ieeexplore.ieee.org/browse/standards/collection/ieee/. Users are encouraged to periodically check for errata.

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 https://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 corrigendum was submitted to the IEEE SA Standards Board for approval, the IEEE 802.1 Working Group had the following membership:

Glenn Parsons, *Chair*
John Messenger, *Vice Chair*
Mick Seaman, *Security Task Group Chair* and *Editor*

Astrit Ademaj
Ralf Assmann
Jens Bierschenk
Christian Boiger
Paul Bottorff
Radhakrishna Canchi
Feng Chen
Weiying Cheng
Paul Congdon
Rodney Cummings
Josef Dorr
Hesham Elbakoury
Thomas Enzinger
János Farkas
Donald Fedyk
Norman Finn
Geoffrey Garner
Craig Gunther
Marina Gutierrez
Stephen Haddock
Mark Hantel
Marc Holness
Satoko Itaya
Yoshihiro Ito
Michael Karl
Stephan Kehrer
Randy Kelsey
Hajime Koto
James Lawlis
Christophe Mangin
Scott Mansfield
Kenichi Maruhashi
David McCall
Larry McMillan
Tero Mustala
Roy Myers
Hiroki Nakano
Bob Noseworthy
Tomoki Ohsawa
Hiroshi Ohue
Donald R. Pannell
Michael Potts
Dieter Proell
Wei Qiu
Karen Randall
Maximilian Riegel
Jessy V. Rouyer
Atsushi Sato
Frank Schewe
Maik Seewald
Johannes Specht
Marius Stanica
Guenter Steindl
Karim Traore
Xinyuan Wang
Tongtong Wang
Hao Wang
Karl Weber
Brian Weis
Ludwig Winkel
Jordon Woods
Takahiro Yamaura
Nader Zein
William Zhao
Helge Zinner
Harald Zweck

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

Butch Anton
Harry Bims
Christian Boiger
Nancy Bravin
Demetrio Bucaneg
William Byrd
Paul Cardinal
Pin Chang
Charles Cook
Donald Fedyk
Avraham Freedman
Matthias Fritsche
Devon Gayle
Tim Godfrey
Randall Groves
Craig Gunther
Stephen Haddock
Marek Hajduczenia
Marco Hernandez
Werner Hoelzl
Oliver Holland
Russell Housley
Atsushi Ito
Raj Jain
Pranav Jha
Sangkwon Jeong
Lokesh Kabra
Piotr Karocki
Stephan Kehrer
Randy Kelsey
Stuart Kerry
Evgeny Khorov
Yongbum Kim
Hyeong Ho Lee
Kang Lee
Jon Lewis
Michael Maytum
Stephen McCann
Brett McClellan
Jonathon McClendon
John Messenger
Michael Montemurro
Nick S. A. Nikjoo
Satoshi Obara
Glenn Parsons
Bansi Patel
Arumugam Paventhan
Brian Petry
David Piehler
Walter Pienciak
Clinton Powell
Karen Randall
R. K. Rannow
Robert Robinson
Benjamin Rolfe
Jessy V. Rouyer
Frank Schewe
Mick Seaman
Maik Seewald
Thomas Starai
Walter Struppler
Mark-Rene Uchida
George Vlantis
Hung-Yu Wei
Brian Weis
Scott Willy
Andreas Wolf
Yu Yuan
Oren Yuen

When the IEEE SA Standards Board approved this corrigendum on 4 June 2020, it had the following membership:

Gary Hoffman, *Chair*
Jon Walter Rosdahl, *Vice-Chair*
Jean-Philippe Faure, *Past Chair*
Konstantinos Karachalios, *Secretary*

Ted Burse
J. Travis Griffith
Grace Gu
Guido R. Hiertz
Joseph L. Koepfinger*
John D. Kulick
David J. Law
Howard Li
Dong Liu
Kevin Lu
Paul Nikolich
Damir Novosel
Dorothy Stanley
Mehmet Ulema
Lei Wang
Sha Wei
Philip B. Winston
Daidi Zhong
Jingyi Zhou

*Member Emeritus

Introduction

This introduction is not part of IEEE Std 802.1AE-2018/Cor 1-2020, IEEE Standard for Local and metropolitan area networks—Media Access Control (MAC) Security—Corrigendum 1: Tag Control Information Figure.

This corrigendum to IEEE Std 802.1AE-2018 replaces Figure 9-4 with the Figure 9-4 from IEEE Std 802.1AE-2006. (In developing the 2018 version of this standard, the figure was inadvertently replaced with a figure from an early draft of the 2006 version.)

Contents

Figures