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Telecommunications and exchange between information technology systems — Requirements for local and metropolitan area networks —

Part 1AE: Media access control (MAC) security

Télécommunications et échange entre systèmes informatiques — Exigences pour les réseaux locaux et métropolitains —

Partie 1AE: Sécurité du contrôle d'accès aux supports (MAC)

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This second edition cancels and replaces the first edition (ISO/IEC/IEEE 8802-1AE:2013), which has been technically revised. It also incorporates ISO/IEC/IEEE 8802-1AE:2013/Amd 1:2015; ISO/IEC/IEEE 8802-1AE:2013/Amd 2:2015 and ISO/IEC/IEEE 8802-1AE:2013/Amd 3:2018.

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IEEE Std 802.1AE™-2018
(Revision of IEEE Std 802.1AE-2006)

IEEE Standard for
Local and metropolitan area networks—

Media Access Control (MAC) Security

Sponsor

LAN/MAN Standards Committee
of the
IEEE Computer Society

Approved 27 September 2018

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, frame data integrity, and data origin authenticity.

Keywords: authorized port, confidentiality, data origin authenticity, IEEE 802.1AE™, IEEE 802.1AEbn™, IEEE 802.1AEbw™, IEEE 802.1AEcg™, 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

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Introduction

This introduction is not part of IEEE Std 802.1AE-2018, IEEE Standard for Local and metropolitan area networks—Media Access Control (MAC) Security.

The first edition of IEEE Std 802.1AE was published in 2006. The first amendment, IEEE Std 802.1AEbn™-2011, added the option of using the GCM-AES-256 Cipher Suite. The second, IEEE Std 802.1AEbw™-2013, added the GCM-AES-XPN-128 and GCM-AES-XPN-256 Cipher Suites. These extended packet numbering Cipher Suites allow more than 2^{32} frames to be protected with a single Secure Association Key (SAK) and so ease the timeliness requirements on key agreement protocols for very high speed (100 Gb/s plus) operation. The third amendment, IEEE Std 802.1AEcg™-2017, specified Ethernet Data Encryption devices (EDEs) that provide transparent secure connectivity while supporting provider network service selection and provider backbone network selection as specified in IEEE Std 802.1Q™.

This revision, IEEE Std 802.1AE-2018, incorporates the text of IEEE Std 802.1AE-2006 and amendments IEEE Std 802.1AEbn-2011, IEEE Std 802.1AEbw-2013, and IEEE Std 802.1AEcg-2017.

Relationship between IEEE Std 802.1AE and other IEEE 802® standards

IEEE Std 802.1X™-2010 specifies Port-based Network Access Control, provides a means of authenticating and authorizing devices attached to a Local Area Network (LAN), and includes the MACsec Key Agreement protocol (MKA) necessary to make use of IEEE Std 802.1AE.

IEEE Std 802.1AE is not intended for use with IEEE Std 802.11™. That standard also uses IEEE Std 802.1X, thus facilitating the use of a common authentication and authorization framework for LAN media to which this standard applies and for Wireless LANs.

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