INTERNATIONAL STANDARD

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AMENDMENT 6
2006-12-15

IEEE STD 802.11i-2004
(Amendment to
IEEE Std 802.11-1999)

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 6: Medium Access Control (MAC) Security Enhancements

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

Partie 11: Spécifications pour le contrôle d'accès au support et la couche physique

AMENDEMENT 6: Perfectionnements de la sécurité de moyens de contrôle d'accès (MAC)

Reference number
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(Amendment to IEEE Std 802.11-1999)

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IEEE Std 802.11i™-2004
[Amendment to IEEE Std 802.11™, 1999 Edition (Reaff 2003)
as amended by
IEEE Stds 802.11a™-1999, 802.11b™-1999,
802.11b™-1999/Cor 1-2001, 802.11d™-2001,
802.11g™-2003, and 802.11h™-2003]

IEEE Standards

802.11i™

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 6: Medium Access Control (MAC) Security Enhancements

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee

This amendment is an approved IEEE Standard. It will be incorporated into the base standard in a future edition.

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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 6: Medium Access Control (MAC) Security Enhancements

Sponsor
LAN/MAN Committee
of the
IEEE Computer Society

Approved 24 June 2004

IEEE-SA Standards Board

Abstract: Security mechanisms for IEEE 802.11 are defined in this amendment, which includes a definition of WEP for backward compatibility with the original standard, IEEE Std 802.11, 1999 Edition. This amendment defines TKIP and CCMP, which provide more robust data protection mechanisms than WEP affords. It introduces the concept of a security association into IEEE 802.11 and defines security association management protocols called the 4-Way Handshake and the Group Key Handshake. Also, it specifies how IEEE 802.1X may be utilized by IEEE 802.11 LANs to effect authentication.
Keywords: AES, authentication, CCM, CCMP, confidentiality, countermeasures, data authenticity, EAPOL-Key, 4-Way Handshake, Group Key Handshake, IEEE 802.1X, key management, key mixing, Michael, RC4, replay protection, robust security network, RSN, security, security association, TKIP, WEP

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Introduction

[This introduction is not part of IEEE Std 802.11i™-2004, IEEE Standard for Information Technology—Telecommunications and Information Exchange Between Systems—Local and Metropolitan Area Networks—Specific Requirements—Part 11: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications—Amendment 6: Medium Access Control (MAC) Security Enhancements.)]

Enhanced security services and mechanisms for the IEEE 802.11 medium access control (MAC) beyond those features and capabilities provided by the wired equivalent privacy (WEP) mechanism of the base standard, IEEE Std 802.11, 1999 Edition, are defined in this amendment. This amendment retains the WEP feature for purposes of backwards compatibility with existing IEEE 802.11 devices, but WEP is deprecated in favor of the new security features provided in this amendment.

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