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

Part 1X: Port-based network access control

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

Partie 1X: Contrôle d'accès au réseau basé sur le port

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ISO/IEC/IEEE 8802 consists of the following parts, under the general title *Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks*:

— *Part 11: Wireless LAN medium access control (MAC) and physical layer (PHY) specifications*

— *Part 1X: Port-based network access control*

— *Part 1AE: Media access control (MAC) security*

— *Part 15-4: Wireless medium access control (MAC) and physical layer (PHY) specifications for low-rate wireless personal area networks (WPANs)*

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IEEE Standard for

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Abstract: Port-based network access control allows a network administrator to restrict the use of IEEE 802® LAN service access points (ports) to secure communication between authenticated and authorized devices. This standard specifies a common architecture, functional elements, and protocols that support mutual authentication between the clients of ports attached to the same LAN and that secure communication between the ports, including the media access method independent protocols that are used to discover and establish the security associations used by IEEE 802.1AE™ MAC Security.

Keywords: access control, authentication, authorization, controlled port, key agreement, LANs, local area networks, MAC security, MAC Service, MANs, metropolitan area networks, port-based network access control, secure association, security, service access point, uncontrolled port

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Introduction

This introduction is not part of IEEE Std 802.1X-2010, IEEE Standard for Local and Metropolitan Area Networks—Port-Based Network Access Control.

Port-based network access control allows a network administrator to restrict the use of IEEE 802 LAN service access points (ports) to secure communication between authenticated and authorized devices. IEEE Std 802.1X specifies an architecture, functional elements, and protocols that support mutual authentication between the clients of ports attached to the same LAN and secure communication between the ports.

The first edition of IEEE Std 802.1X was published in 2001. The second edition, IEEE Std 802.1X-2004, clarified areas related to mutual authentication and the interface between IEEE 802.1X specified state machine, and those specified by the Extensible Authentication Protocol (EAP), and by IEEE Std 802.11™ in support of IEEE Std 802.1X.

Work on this edition, IEEE Std 802.1X-2010, began as IEEE P802.1af™—an amendment to specify authenticated key agreement in support of IEEE 802.1AE MAC Security. Part of that work clarified and generalized the relationship between the common architecture specified for port-based network access control, and the functional elements and protocols that support that architecture as specified in IEEE Std 802.1X, other IEEE 802 Standards, and in IETF RFCs. The extent of the changes necessary to IEEE Std 802.1X-2004 made it appropriate to revise IEEE Std 802.1X as a whole. Further changes updated the standard to reflect best current practice, insisting, for example, upon mutual authentication methods and using such methods in examples. A greater emphasis is placed on the security of systems accessing the network, as well as upon the security of the network accessed, and some prior provisions, such as the 'controlled directions' parameters, have been removed and replaced with a more comprehensive treatment of segregating and limiting connectivity to unauthenticated systems.

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This edition, IEEE Std 802.1X-2010, describes applications of port-based network access that use IEEE 802.1AE MAC Security (MACsec) and/or MKA (MACsec Key Agreement protocol) as well as those previously supported. The specification of the use of EAP for authentication has been updated, enforcing a stricter separation between the port access control protocol (PACP), local to the Supplicant and Authenticator, and the EAP state machines proper. Details of particular EAP methods are no longer interpreted by the PACP machines. The existing EAPOL (EAP over LANs) PDU formats have not been modified, but additional EAPOL PDUs have been added to support MKA and the specification of EAPOL improved. The bibliography, previously Annex F, has been moved to Annex B. The discussions previously in Annex B and Annex C have been updated and integrated into the main body of the standard. The state machine diagram and language conventions, now used by a number of clauses in the standard, have been moved to a new Annex C.

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