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IEEE Standard for
Local and metropolitan area networks—

Port-Based Network Access Control

Amendment 2: YANG Data Model

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee

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New York, NY 10016-5997
USA

IEEE Std 802.1Xck™-2018
(Amendment to IEEE Std 802.1X™-2010
as amended by IEEE Std 802.1Xbx™-2014)

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Approved 27 September 2018

IEEE-SA Standards Board

Abstract: The YANG data model specified in this amendment to IEEE Std 802.1X™-2010 allows configuration and status reporting for port-based network access control, in the scenarios described in Clause 7 of this standard and Clause 11 of IEEE Std 802.1AE™-2018, using the information model previously specified in this standard.

Keywords: amendment, authorized port, confidentiality, data model, data origin authenticity, IEEE 802.1X™, IEEE 802.1Xck™, information model, 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, YANG

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Introduction

This introduction is not part of IEEE Std 802.1Xck-2018, IEEE Standard for Local and metropolitan area networks—Port-Based Network Access Control—Amendment 2: YANG Data Model.

This second amendment to IEEE Std 802.1X™-2010 specifies a YANG data model that allows configuration and status reporting for port-based network access control, in the scenarios described in Clause 7 of this standard and Clause 11 of IEEE Std 802.1AE™-2018, using the information model previously specified in this standard.

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 the IEEE 802.1X state machine and state machines specified by the Extensible Authentication Protocol (EAP) and by IEEE Std 802.11™ in support of IEEE Std 802.1X.

The third edition, IEEE Std 802.1X-2010, adds authenticated key agreement in support of IEEE 802.1AE™ MAC Security (MACsec) and clarifies and generalizes 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 IETF RFCs. Further changes update the standard to reflect best current practice, insisting, for example, on 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 on the security of the network accessed, and some prior provisions, with a more comprehensive treatment of segregating and limiting connectivity to unauthenticated systems. Applications of port-based network access that use MACsec and/or MACsec Key Agreement protocol (MKA) are described.

Every effort was made to ensure that systems conformant to IEEE Std 802.1X-2010 will interoperate, without prior configuration, with implementations conforming to IEEE Std 802.1X-2004 and IEEE Std 802.1X-2001. However, it is anticipated that claims of conformance with respect to some existing implementations, not needing to support IEEE Std 802.1AE and already conforming to best current practice as of 2010, will continue to refer to IEEE Std 802.1X-2004. IEEE Std 802.1X-2010 includes a number of improvements to the specification of the port access control protocol (PACP) state machines and their relationship to EAP methods and state machines.

IEEE Std 802.1Xbx-2014 is the first amendment to IEEE Std 802.1X-2010. Its MKA extensions make additional security and manageability capabilities possible based on the changes made by IEEE Std 802.1AEbw™-2013 that added extended packet numbering Cipher Suites to IEEE Std 802.1AE-2006. Secure connectivity association (CA) members can temporarily suspend MKA operation without causing protocol timeouts that would disrupt secure data transfer; thus, in-service control plane software can be upgraded.

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