

ANSI/IEEE Std 802.11, 1999 Edition (R2003)

**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

Sponsor

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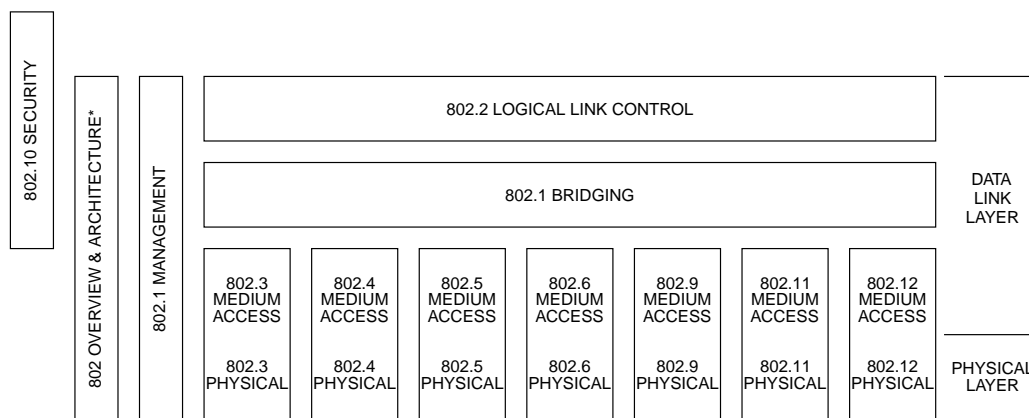
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Introduction to ANSI/IEEE Std 802.11, 1999 Edition

(This introduction is not a part of ANSI/IEEE Std 802.11, 1999 Edition or of ISO/IEC 8802-11: 1999, but is included for information purpose only.)

This standard is part of a family of standards for local and metropolitan area networks. The relationship between the standard and other members of the family is shown below. (The numbers in the figure refer to IEEE standard numbers.)



* Formerly IEEE Std 802.1A.

This family of standards deals with the Physical and Data Link layers as defined by the International Organization for Standardization (ISO) Open Systems Interconnection (OSI) Basic Reference Model (ISO/IEC 7498-1: 1994). The access standards define seven types of medium access technologies and associated physical media, each appropriate for particular applications or system objectives. Other types are under investigation.

The standards defining the access technologies are as follows:

- IEEE Std 802 *Overview and Architecture.* This standard provides an overview to the family of IEEE 802 Standards.
- ANSI/IEEE Std 802.1B and 802.1k [ISO/IEC 15802-2] *LAN/MAN Management.* Defines an OSI management-compatible architecture, and services and protocol elements for use in a LAN/MAN environment for performing remote management.
- ANSI/IEEE Std 802.1D [ISO/IEC 15802-3] *Media Access Control (MAC) Bridges.* Specifies an architecture and protocol for the interconnection of IEEE 802 LANs below the MAC service boundary.
- ANSI/IEEE Std 802.1E [ISO/IEC 15802-4] *System Load Protocol.* Specifies a set of services and protocol for those aspects of management concerned with the loading of systems on IEEE 802 LANs.
- IEEE Std 802.1F *Common Definitions and Procedures for IEEE 802 Management Information*
- ANSI/IEEE Std 802.1G [ISO/IEC 15802-5] *Remote Media Access Control (MAC) Bridging.* Specifies extensions for the interconnection, using non-LAN communication technologies, of geographically separated IEEE 802 LANs below the level of the logical link control protocol.
- ANSI/IEEE Std 802.2 [ISO/IEC 8802-2] *Logical Link Control*

- ANSI/IEEE Std 802.3 [ISO/IEC 8802-3] *CSMA/CD Access Method and Physical Layer Specifications*
- ANSI/IEEE Std 802.4 [ISO/IEC 8802-4] *Token Passing Bus Access Method and Physical Layer Specifications*
- ANSI/IEEE Std 802.5 [ISO/IEC 8802-5] *Token Ring Access Method and Physical Layer Specifications*
- ANSI/IEEE Std 802.6 [ISO/IEC 8802-6] *Distributed Queue Dual Bus Access Method and Physical Layer Specifications*
- ANSI/IEEE Std 802.9 [ISO/IEC 8802-9] *Integrated Services (IS) LAN Interface at the Medium Access Control (MAC) and Physical (PHY) Layers*
- ANSI/IEEE Std 802.10 *Interoperable LAN/MAN Security*
- IEEE Std 802.11 [ISO/IEC DIS 8802-11] *Wireless LAN Medium Access Control (MAC) and Physical Layer Specifications*
- ANSI/IEEE Std 802.12 [ISO/IEC DIS 8802-12] *Demand Priority Access Method, Physical Layer and Repeater Specifications*

In addition to the family of standards, the following is a recommended practice for a common Physical Layer technology:

- IEEE Std 802.7 *IEEE Recommended Practice for Broadband Local Area Networks*

The following additional working group has authorized standards projects under development:

- IEEE 802.14 *Standard Protocol for Cable-TV Based Broadband Communication Network*

Conformance test methodology

An additional standards series, identified by the number 1802, has been established to identify the conformance test methodology documents for the 802 family of standards. Thus the conformance test documents for 802.3 are numbered 1802.3.

ANSI/IEEE Std 802.11, 1999 Edition [ISO/IEC 8802-11: 1999]

This standard is a revision of IEEE Std 802.11-1997. The Management Information Base according to OSI rules has been removed, many redundant management items have been removed, and Annex D has been completed with the Management Information Base according to SNMP. Minor changes have been made throughout the document.

This standard defines the protocol and compatible interconnection of data communication equipment via the “air”, radio or infrared, in a local area network (LAN) using the carrier sense multiple access protocol with collision avoidance (CSMA/CA) medium sharing mechanism. The medium access control (MAC) supports operation under control of an access point as well as between independent stations. The protocol includes authentication, association, and reassociation services, an optional encryption/decryption procedure, power management to reduce power consumption in mobile stations, and a point coordination function for time-bounded transfer of data. The standard includes the definition of the management information base (MIB) using Abstract Syntax Notation 1 (ASN.1) and specifies the MAC protocol in a formal way, using the Speci-

fication and Description Language (SDL). Both ASN.1 and SDL source code have been added on a floppy diskette.

The infrared implementation of the PHY supports 1 Mbit/s data rate with an optional 2 Mbit/s extension. The radio implementations of the PHY specify either a frequency-hopping spread spectrum (FHSS) supporting 1 Mbit/s and an optional 2 Mbit/s data rate or a direct sequence spread spectrum (DSSS) supporting both 1 and 2 Mbit/s data rates.

This standard contains state-of-the-art material. The area covered by this standard is undergoing evolution. Revisions are anticipated to this standard within the next few years to clarify existing material, to correct possible errors, and to incorporate new related material. Information on the current revision state of this and other IEEE 802 standards may be obtained from

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Participants

At the time the draft of the 1999 version of this standard was sent to sponsor ballot, the IEEE 802.11 working group had the following voting members:

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Bob O'Hara, 802.11rev Task Group Chair and Technical Editor
George Fishel, Secretary

David Bagby, Mac Group Chair **Dean Kawaguchi, PHY Group and FH Chair**
Jan Boer, Direct Sequence Chair
Michael Fischer and Allen Heberling, State Diagram Editors

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