INTERNATIONAL STANDARD

ISO/IEC 15802-2

ANSI/IEEE Std 802.1B

First edition
1995-03-10

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

Part 2:
LAN/MAN management

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

Partie 2: Gestion de LAN/MAN

Reference number
ISO/IEC 15802-2:1995(E)
ANSI/IEEE
Std 802.1B, 1995 edition

Abstract: Services and protocol elements that permit the exchange of management information between stations attached to ISO/IEC standard local and metropolitan area networks are defined. The standard includes the specification of managed objects that permit the operation of the protocol elements to be remotely managed. In addition, an architecture for station discovery and the dynamic control of event forwarding is defined. Services and protocols that support station discovery and the dynamic control of event forwarding are defined.
Keywords: event forwarding; local area networks, management; metropolitan area networks, management

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The Institute of Electrical and Electronics Engineers, Inc.
345 East 47th Street, New York, NY 10017-2394, USA

ISBN 1-55937-501-9

March 10, 1995 *SH94259*

International Standard ISO/IEC 15802-2 : 1995
ANSI/IEEE Std 802.1B, 1995 edition
(Incorporating ANSI/IEEE Stds 802.1B-1992 and 802.1k-1993)

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

Part 2: LAN/MAN management

Sponsor

Technical Committee on Computer Communications of the IEEE Computer Society

Adopted as an International Standard by the International Organization for Standardization and by the International Electrotechnical Commission

Published by The Institute of Electrical and Electronics Engineers, Inc.

International Standard ISO/IEC 15802-2:1995

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In 1994, ANSI/IEEE Std 802.1B-1992 was adopted by ISO/IEC JTC 1, as draft International Standard ISO/IEC DIS 15802-2. A further revision was subsequently approved by ISO/IEC JTC 1 in the form of this new edition, which is published as International Standard ISO/IEC 15802-2:1995.

International Organization for Standardization/International Electrotechnical Commission
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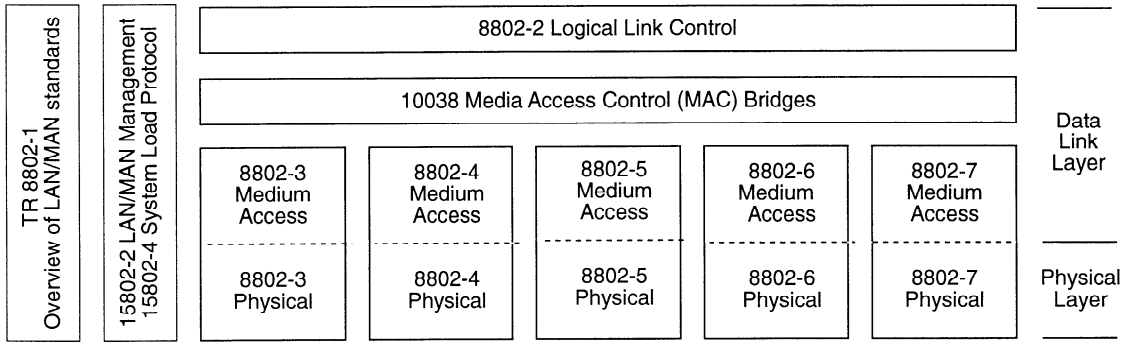
Foreword to International Standard ISO/IEC 15802-2 : 1995

This International Standard is part of a family of International Standards for Local and Metropolitan Area Networks. The relationship between this International Standard and the other members of the family is shown below. (The numbers in the figure refer to ISO Standard numbers.)



This family of International Standards deals with the Physical and Data Link layers as defined by the ISO Open Systems Interconnection Basic Reference Model (ISO 7498 : 1984). The access standards define five types of medium access technologies and associated physical media, each appropriate for particular applications or system objectives. Other types are under investigation.

The International Standards defining the access technologies are as follows:

a) ISO/IEC 8802-3 [ANSI/IEEE Std 802.3, 1993 Edition], a bus utilizing CSMA/CD as the access method.

b) ISO/IEC 8802-4 [ANSI/IEEE Std 802.4-1990], a bus utilizing token passing as the access method.

c) ISO/IEC 8802-5 [ANSI/IEEE Std 802.5-1992], a ring utilizing token passing as the access method.

d) ISO/IEC 8802-6 [ANSI/IEEE Std 802.6, 1994 Edition], a dual bus utilizing distributed queuing as the access method.

e) ISO 8802-7, a ring utilizing slotted ring as the access method.

ISO/IEC TR 8802-1 provides an overview of the LAN/MAN standards, along with details of their document numbering.

ISO/IEC 8802-2 [ANSI/IEEE Std 802.2, 1994 Edition], *Logical Link Control*, is used in conjunction with the medium access standards to provide the data link layer service to network layer protocols.

ISO/IEC 10038 [ANSI/IEEE Std 802.1D, 1993 Edition], *Media Access Control (MAC) bridges*, specifies an architecture and protocol for the interconnection of IEEE 802 LANs below the level of the logical link control protocol.

ISO/IEC 15802-2 [ANSI/IEEE Std 802.1B, 1995 Edition], *LAN/MAN Management*, defines an Open Systems Interconnection (OSI) management-compatible architecture, and services and protocol elements for use in a LAN/MAN environment for performing remote management.

ISO/IEC 15802-4 [ANSI/IEEE Std 802.1E, 1994 Edition], *System Load Protocol*, specifies a set of services and protocol for those aspects of management concerned with the loading of systems in ISO/IEC LAN/MAN environments.

The main body of the International Standard serves for both the ISO/IEC 15802-2 : 1994 and IEEE Std 802.1B, 1995 Edition standards. ISO and IEEE each have a unique foreword.

ANSI/IEEE Std 802.1B, 1995 Edition

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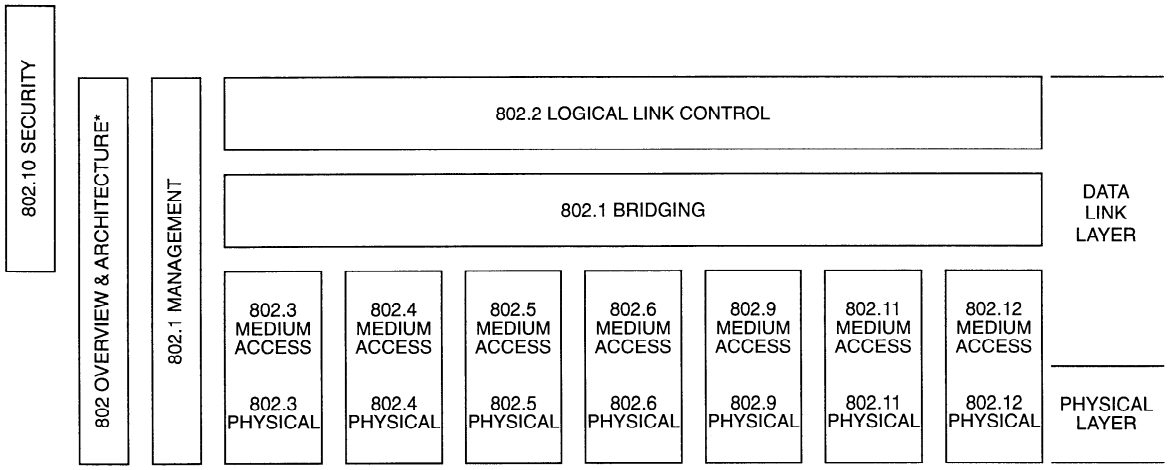
Foreword to ANSI/IEEE Std 802.1B, 1995 Edition

(This foreword is not a part of ANSI/IEEE Std 802.1B, 1995 Edition.)

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 Basic Reference Model (ISO 7498 : 1984). The access standards define several 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 technologies noted above are as follows:

- IEEE Std 802[1]: Overview and Architecture. This standard provides an overview to the family of IEEE 802 Standards. This document forms part of the 802.1 scope of work.
- ANSI/IEEE Std 802.1B [ISO/IEC 15802-2]: LAN/MAN Management. Defines an Open Systems Interconnection (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 10038]: MAC Bridging. 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.

[1]The 802 Architecture and Overview standard, originally known as IEEE Std 802.1A, has been renumbered as IEEE Std 802. This has been done to accommodate recognition of the base standard in a family of standards. References to IEEE Std 802.1A should be considered as references to IEEE Std 802.

- 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 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
- IEEE Std 802.9: Integrated Services (IS) LAN Interface at the Medium Access Control (MAC) and Physical (PHY) Layers
- IEEE Std 802.10: Interoperable LAN/MAN Security, *Currently approved:* Secure Data Exchange (SDE)

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 groups have authorized standards projects under development:

- IEEE 802.11: Wireless LAN Medium Access Control (MAC) Sublayer and Physical Layer Specifications
- IEEE 802.12: Demand Priority Access Method/Physical Layer Specifications

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, the conformance test documents for 802.5 will be 1802.5, and so on. Similarly, ISO will use 18802 to number conformance test standards for 8802 standards.

ANSI/IEEE Std 15802-2 : 1995 Edition

This document defines services and protocol elements that permit the exchange of management information between stations attached to IEEE 802 local and metropolitan area networks. The standard includes the specification of managed objects that permit the operation of the protocol elements to be remotely managed.

The reader of this standard is urged to become familiar with the complete family of standards.

This standard contains state-of-the-art material. The area covered by this standard is undergoing evolution. Revisions are anticipated 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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IEEE Std 802.1B-1992 was approved by the American National Standards Institute on February 23, 1993.
IEEE Std 802.1k-1993 was approved by the American National Standards Institute on January 4, 1994.

Contents

Information technology—
Telecommunications and information exchange between systems—
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Part 2: LAN/MAN management

1. Scope

This International Standard defines an Open Systems Interconnection (OSI) management-compatible architecture, and service and protocol elements for use in a LAN/MAN environment for the purpose of performing remote management of LAN-based or MAN-based devices. The protocol described is a connectionless-mode management protocol that makes use of Logical Link Control (LLC) Type 1 procedures as a means of conveying management information between stations in a LAN/MAN environment, thus providing for interworking of ISO/IEC standard LAN/MAN devices for management purposes. The management information is conveyed using the protocol data unit (PDU) formats defined in ISO/IEC 9596-1 : 1991.[1] To this end, this International Standard

a) Describes the services required for the transfer of management information between management processes in LAN/MAN stations.

b) Defines the protocol and PDUs for conducting management information exchanges that support the provision of those services. This protocol is defined as an (N)-layer management protocol specific to the management of layers 1 and 2 in a LAN/MAN environment.

c) Defines a convergence protocol and PDUs used for the exchange of management PDUs.

d) Describes the underlying services required for transfer of management PDUs between peer-management entities by means of the convergence protocol.

e) Defines an access control mechanism and an event report forwarding mechanism that operate in conjunction with the management protocol.

f) Defines managed object classes that relate to the operation of the management protocol and the convergence protocol.

This International Standard provides the PICS proforma for the System Load Protocol in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-2 : 1991.

NOTES

1—This International Standard provides only a set of management tools. The management operations that are specified by this International Standard are only meaningful in conjunction with the managed object definitions contained in the appropriate layer standards.

2—This International Standard defines an (N)-layer management protocol for the management of stations attached to ISO/IEC standard LAN or MAN subnetworks, in accordance with the terminology contained in the OSI Management Framework, ISO/IEC 7498-4 : 1989 and the OSI Systems Management Overview, ISO/IEC 10040 : 1992. The service and protocol described in this International Standard are based upon the OSI Common Management Information Service and Protocol standards (ISO/IEC 9595 : 1991 and ISO/IEC 9596-1 : 1991), and are therefore designed to be used in conjunction with managed objects defined in accordance with the Guidelines for the definition of managed objects (ISO/IEC 10165-4 : 1992). As such, this International Standard is intended to be complementary to the functionality of the OSI Management standards being developed in ISO/IEC JTC1 SC21/WG4.

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[1] Information on references can be found in clause 2.