INTERNATIONAL STANDARD

ISO/IEC 8802-5

IEEE Std 802.5

First edition
1992-06-12

Information technology — Local and metropolitan area networks —

Part 5:
Token ring access method and physical layer specifications

Technologies de l'information — Réseaux locaux et urbains —

Partie 5: Méthode d'accès par anneau à jeton et spécifications pour la couche physique

Reference number
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IEEE Std 802.5-1992

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International Standard ISO/IEC 8802-5 : 1992
IEEE Std 802.5-1992

(Revision of ANSI/IEEE Std 802.5-1989)

Information technology— Local and metropolitan area networks—

Part 5: Token ring access method and physical layer specifications

Sponsor

Technical Committee on Computer Communications of the IEEE Computer Society

Approved March 19, 1992

IEEE Standards Board

Abstract: This Local and Metropolitan Area Network standard, ISO/IEC 8802-5 : 1992, is part of a family of local area network (LAN) standards dealing with the physical and data link layers as defined by the ISO Open System Interconnection Reference Model. Its purpose is to provide compatible interconnection of data processing equipment by means of a local area network using the token-passing ring access method. The frame format, including delimiters, addressing, and frame-check sequence, are defined, and medium access control (MAC) frames, timers, and priority stacks are defined. The MAC protocol is defined. The finite-state machine and state tables are supplemented with a prose description of the algorithms. The physical layer (PHY) functions of symbol encoding and decoding, symbol time, and latency buffering are defined. The services provided by the MAC to the station management (SMT) and the services provided by the PHY to SMT and the MAC are described. These services are defined in terms of service primitives and associated parameters. The 4 and 16 Mb/s, shielded twisted pair attachment of the station to the medium, including the medium interface connector (MIC) are also defined. The applications environment for the LAN is intended to be commercial and light industrial. The use of token ring LANs in home and heavy industrial environments, while not precluded, has not been considered in the development of the standard. A Protocol Implementation Conformance Statement (PICS) proforma is provided as an annex to the standard.

Keywords: data processing interconnection, local area network (LAN), medium access control (MAC), token ring

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

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International Standard ISO/IEC 8802-5 : 1992

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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 1985, ANSI/IEEE Std 802.5-1985 was adopted by ISO Technical Committee 97, *Information processing systems*, as draft International Standard ISO/DIS 8802-5. 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 8802-5 : 1992.

For the purpose of assigning global addresses, the Institute of Electrical and Electronics Engineers, Inc., USA, has been designated by the ISO Council as the Registration Authority. Communications on this subject should be addressed to

Registration Authority for ISO/IEC 8802-5
c/o The Institute of Electrical and Electronics Engineers, Inc.
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
USA

During the preparation of this International Standard, information was gathered on patents upon which application of the standard might depend. Relevant patents were identified as belonging to Willemijn Holding BV. However, ISO cannot give authoritative or comprehensive information about evidence, validity or scope of patent and like rights. The patent-holder has stated that licences will be granted under reasonable terms and conditions and communcations on this subject should be addressed to

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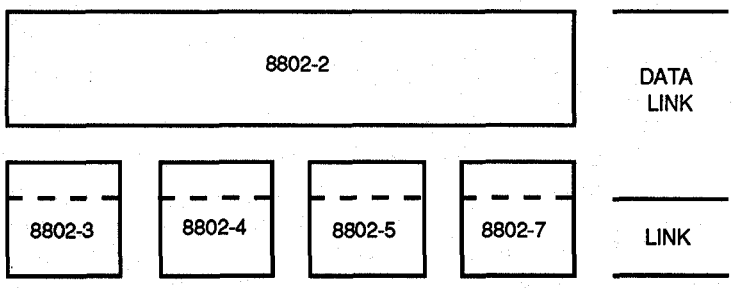
Case postale 56 • CH-1211 Genève 20 • Switzerland

Foreword to International Standard ISO/IEC 8802-5 : 1992

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



This family of 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 four 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 these technologies are as follows:

(1) ISO/IEC 8802-3 [ANSI/IEEE Std 802.3, 1992 Edition], a bus utilizing CSMA/CD as the access method,
(2) ISO/IEC 8802-4 [ANSI/IEEE Std 802.4-1990], a bus utilizing token passing as the access method,
(3) ISO/IEC 8802-5 [IEEE Std 802.5-1992], a ring utilizing token passing as the access method,
(4) ISO 8802-7, a ring utilizing slotted ring as the access method.

ISO 8802-2 [ANSI/IEEE Std 802.2-1989], Logical Link Control protocol, is used in conjunction with the medium access standards.

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

IEEE Std 802.5-1992

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Comments on standards and requests for interpretations should be addressed to:

Secretary, IEEE Standards Board
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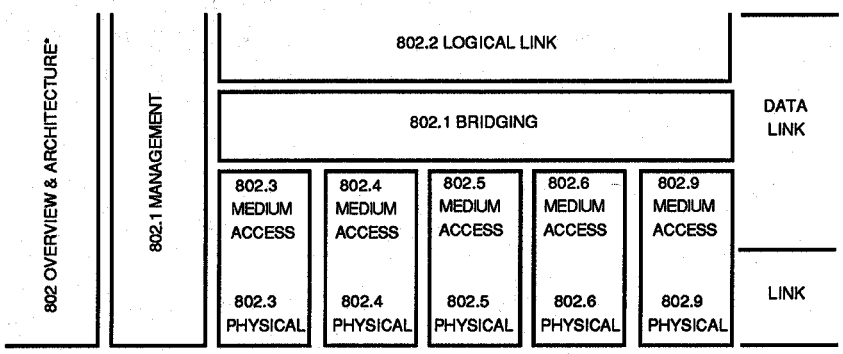
Foreword to IEEE Std 802.5-1992

(This Foreword is not a part of this International Standard or of IEEE 802.5-1992.)

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 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 these technologies are as follows:

- IEEE Std 802† : 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.
- IEEE Std 802.1D: MAC Bridging. Specifies an architecture and protocol for the interconnection of IEEE 802 LANs below the MAC service boundary.

† The 802 Architecture and Overview Specification, 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.

• IEEE Std 802.1E:	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.
• ISO 8802-2 [ANSI/IEEE Std 802.2]:	Logical Link Control
• ISO/IEC 8802-3 [ANSI/IEEE Std 802.3]:	CSMA/CD Access Method and Physical Layer Specifications
• ISO/IEC 8802-4 [ANSI/IEEE Std 802.4]:	Token Bus Access Method and Physical Layer Specifications
• ISO/IEC 8802-5 [IEEE Std 802.5]:	Token Ring Access Method and Physical Layer Specifications
• IEEE Std 802.6:	Metropolitan Area Network Access Method and Physical Layer Specifications

In addition to the family of standards are technical advisory groups as follows:

• IEEE Std 802.7:	Broadband Technical Advisory and Physical Layer Topics and Recommended Practices
• P802.8:	Fiber Optic Technical Advisory and Physical Layer Topics

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

Conformance Test Methodology

A new standards series, identified by the number 1802, has been established to identify the conformance test methodology documents for the 802 family of standards. This makes the correspondence between the various 802 standards and their applicable conformance test requirements readily apparent. 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 ~~11802~~ 18802 to number conformance test standards for 8802 standards.

ISO/IEC 8802-5 : 1992 (IEEE Std 802.5-1992)‡

This standard specifies that each octet of the information field shall be transmitted most significant bit (MSB) first. This convention is reversed from that used in the CSMA/CD and Token Bus standards, which are least significant bit (LSB) first transmission. While the transmission of MSB first is used for token ring, this does not imply that MSB transmission is preferable

‡ This standard contains the following supplements: IEEE Std 802.5d-1992 (Interconnected Token Ring LANs) and IEEE Std 802.5g-1992 (Conformance Testing).

for any other local are network. Anyone considering interconnecting the token ring with other standard IEEE networks should keep in mind the need to perform bit reordering in the gateway between networks.

The following are now or have been voting members of the Token Ring Access Method Working Group (P802.5). Those individuals who have served as rapporteurs or editors are indicated by an asterisk next to their name:

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H. A. Zannini
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The following persons were on the balloting committee that approved IEEE Std 802.5-1992, IEEE Std 802.5d-1992 (Interconnected Token Ring LANs), and IEEE Std 802.5g-1992 (Conformance Testing) for submission to the IEEE Standards Board:

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*Member Emeritus

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