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U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards



LOCAL AREA NETWORKS:  
BASEBAND CARRIER SENSE  
MULTIPLE ACCESS WITH COLLISION  
DETECTION ACCESS METHOD AND  
PHYSICAL LAYER SPECIFICATIONS  
AND LINK LAYER PROTOCOL

FIPS PUB 107

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**U.S. DEPARTMENT OF COMMERCE, Malcolm Baldrige, *Secretary***  
**NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director***

## **Foreword**

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Federal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving the utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance, and coordination of Government efforts in the development of guidelines and standards in these areas.

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James H. Burrows, *Director*  
Institute for Computer Sciences and Technology

## **Abstract**

FIPS 107 is the first of a family of local area network standards that allow different manufacturer's equipment and devices to interconnect through networks. It specifies a network access technique used in office automation applications.

The standard provides the mechanical, electrical, functional and procedural specifications and link protocol required to establish physical connections, to transmit bits and to send data link frames between nodes.

Key words: baseband; CSMA/CD; Federal Information Processing Standard; local networks; office automation; standards.

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**Federal Information  
Processing Standard Publication 107**

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**Announcing the Standard for**



**LOCAL AREA NETWORKS:  
BASEBAND CARRIER SENSE MULTIPLE ACCESS WITH COLLISION DETECTION  
ACCESS METHOD AND PHYSICAL LAYER SPECIFICATIONS  
AND LINK LAYER PROTOCOL**

Federal Information Processing Standard Publications are issued by the National Bureau of Standards pursuant to section 111(f)(2) of the Federal Property and Administrative Services Act of 1949, as amended, Public Law 89-306 (79 Stat. 1127), Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 Code of Federal Regulations (CFR).

**Name of Standard.** Local Area Networks: Baseband Carrier Sense Multiple Access with Collision Detection Access Method and Physical Layer Specifications and Link Layer Protocol (FIPS PUB 107).

**Category of Standard.** Software and Hardware Standard; Subcategory: Computer Network Protocols.

**Explanation.** This standard provides the mechanical, electrical, functional and procedural specifications and the link protocol required to establish physical connections, to transmit bits and to send data link frames between nodes. The local area network spans a local area with a baseband coaxial cable of up to 2500 meters in length, transmitting at 10 megabits per second. This is one of a family of local area network standards that will make possible computer to computer and terminal to computer communications. This standard is based on national consensus. In particular, it adopts The Institute of Electrical and Electronics Engineers (IEEE) standard 802.2 Logical Link Control type 1 class 1 service, and standard 802.3, CSMA/CD Access Method and Physical Layer Specifications. To make this standard less restrictive, the implementation and transmission of XID and TEST in type 1 class 1 service is optional.

**Approving Authority.** Secretary of Commerce.

**Maintenance Agency.** U.S. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).

**Cross Index.** IEEE Standard 802.2, Logical Link Control. IEEE Standard 802.3, CSMA/CD Access Method and Physical Layer Specifications.

**Related Documents.** None.

**Applicability.** This standard is made available to Federal departments and agencies which require compatibility with voluntary industry standards, which are evolving nationally and internationally according to the architecture of the ISO Reference Model for Open Systems Interconnection.

**Implementation Schedule.** This standard becomes effective October 31, 1984. Use by Federal agencies is encouraged when such use contributes to operational benefits, efficiency, or economy.

**Specifications.** This standard adopts the Type 1, Class 1, Logical Link Control procedures of IEEE standard 802.2, Logical Link Control, and all of IEEE standard 802.3, CSMA/CD Access Method and Physical Layer Specifications. The implementation and transmission of XID and TEST in type 1 class 1 is optional. Note that the specifications adopted by this standard appear in two volumes.

**Where to Obtain Copies of the Standard.** Copies of this publication are for sale by National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. (Sale of the included technical specifications is by arrangement with The Institute of Electrical and Electronics Engineers, Incorporated.) When ordering, refer to Federal Information Processing Standards Publication 107 (FIPSPUB107), and title. Payment may be made by check, money order, or deposit account.