

IEEE Std 802.17a™- 2004
(Amendment to IEEE Std 802.1D™-2004)

IEEE Standards

802.17a™

**IEEE Standard for
Local and metropolitan area networks**

Media Access Control (MAC) Bridges

Amendment 1: Bridging of IEEE 802.17™

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee



3 Park Avenue, New York, NY 10016-5997, USA

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IEEE Standard for Local and Metropolitan Area Networks: Media Access Control (MAC) Bridges

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Abstract: This amendment to IEEE Std 802.1D-2004 defines support of the internal sublayer service by the IEEE 802.17 MAC.

Keywords: bridging, IEEE 802.1D, IEEE 802.17, internal sublayer service, media access control bridges, resilient packet ring (RPR)

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Introduction

(This introduction is not part of IEEE Std 802.17a-2004, IEEE Standard for Local and Metropolitan Area Networks—Media Access Control (MAC) Bridges—Amendment 1: Bridging of IEEE 802.17.)

This standard is part of a family of standards for local and metropolitan area networks. 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 different types of medium access technologies and associated physical media, each appropriate for particular applications or system objectives.

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IEEE Standard for Local and Metropolitan Area Networks: Media Access Control (MAC) Bridges

Amendment 1: Bridging of IEEE 802.17™

EDITOR'S NOTE—The editing instructions contained in this amendment define how to merge the material contained herein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in *bold italic*. Four editing instructions are used: change, delete, insert, and replace. *Change* is used to make small corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed either by using ~~strike through~~ (to remove old material) or underscore (to add new material). *Delete* removes existing material. *Insert* adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instructions. *Replace* is used to make large changes in existing text, subclauses, tables, or figures by removing existing material and replacing it with new material. Editorial notes will not be carried over into future editions.

Insert 6.5.5 after 6.5.4, and insert the following material into 6.5.5.

6.5.5 Support by IEEE Std 802.17TM-2004 (RPR)¹

The RPR MAC access method is specified in IEEE Std 802.17. Clause 6 of that standard specifies the MAC service interface and reference model. Clause 7 specifies the MAC transmission and reception procedures. Clause 9 specifies the MAC frame structure.

On receipt of a `M_UNITDATA.request` primitive, the local MAC entity performs transmit data encapsulation, which assembles a MAC frame (IEEE Std 802.17, Clause 9) with the parameters supplied as specified in the paragraphs that follow.

On receipt of a valid MAC frame (IEEE Std 802.17, Clause 9), a `M_UNITDATA.indication` primitive is generated, with parameter values derived from the frame fields as specified in the paragraphs that follow.

The **frame_type** parameter takes only the value `user_data_frame` and is encoded in the frame type (*ft*) field of the *baseControl* field (IEEE Std 802.17, 9.6.3).

The **mac_action** parameter takes only the value `request_with_no_response` and is not explicitly encoded in MAC frames.

The **destination_address** parameter is encoded in the *da* field of the MAC frame (IEEE Std 802.17, 9.2.2.3). For frames transmitted by a MAC client (e.g., bridge relay entity) where the `source_address` parameter does not equal the MAC's address, the `destination_address` parameter is encoded in both the *da* and the *daExtended* fields of the MAC frame (IEEE Std 802.17, 9.2.2.8).

The **source_address** parameter is encoded in the *sa* field of the MAC frame (IEEE Std 802.17, 9.2.2.4) when supplied by a MAC client, and when the `source_address` is equal to the MAC's address. When the `source_address` is supplied by a MAC client (e.g., bridge relay entity), and when the `source_address` is not equal to the MAC's address, then the `source_address` is encoded in the *saExtended* field of the MAC frame (IEEE Std 802.17, 9.2.2.9).

The **mac_service_data_unit** parameter is the service user data that includes the protocol type and is encoded in the *protocolType* and *serviceDataUnit* fields of the MAC frame (IEEE Std 802.17, 9.2.2.10, 9.2.2.11).

Whenever the `access_priority` parameter is not provided, the **user_priority** parameter provided in the data request primitive is encoded into the service class (*sc*) subfield of the *baseControl* field (IEEE Std 802.17, 9.6.4) of the MAC frame. This encoding is done in accordance with the `user_priority` to `access_priority` mapping of Table 7-4, plus the `access_priority` to MAC service class mapping of Table 6-2. Table 7-4 is first used to convert the `user_priority` to an `access_priority`, and Table 6-2 is then applied to convert the `access_priority` to an actual MAC service class.

In the case of the indication primitive, the `user_priority` parameter is directly derived from the *sc* subfield of the *baseControl* field of the MAC frame. The mapping between the service class and the `user_priority` parameter of the indication primitive is provided in Table 6-1.

¹IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA (<http://standards.ieee.org/>).

Table 6-1—MAC service class to user priority indication mapping

MAC service class	user_priority
classC	0
classB	4
classA	6

The **access_priority** parameter found in the data request primitive is encoded in the *sc* field of the MAC frame (IEEE Std 802.17, 9.6.4). The association between *access_priority* and the service class is illustrated in Table 6-2. If the *access_priority* parameter is supplied by the client, the *access_priority* to service class mapping takes precedence over the mapping of *user_priority* to service class.

Table 6-2—Access priority to MAC service class mapping

access_priority	MAC service class
0	classC
1	classC
2	classC
3	classC
4	classB
5	classB
6	classA
7	classA

The **frame_check_sequence** parameter found in the data request primitive is encoded in the *fcs* field of the MAC frame (IEEE Std 802.17, 9.2.2.12). The *fcs* is calculated as a 32-bit CRC starting from the first byte following the header checksum field (*hec*) (IEEE Std 802.17, 9.2.2.7) to the end of the payload (IEEE Std 802.17, 9.2.2.11) in accordance with IEEE Std 802.17, E.2. If a M_UNITDATA.request primitive is not accompanied by this parameter, it is calculated in accordance with IEEE Std 802.17, E.2.

No special action, above that specified in IEEE Std 802.17, is required for the support of the MAC Internal Sublayer Service by the RPR access method.

The 802.17 MAC service interface supports a number of optional parameters that are specific to the 802.17 MAC. These parameters take on default values in M_UNITDATA.request primitive during transmission, and they are ignored by the bridge relay on reception. The default values and procedures for handling RPR specific parameters are defined in 6.4.1, Clause 7, and F.3.1 of IEEE Std 802.17.

7.7.5 Priority mapping

Insert the following column with heading entitled “IEEE 802.17” to the right of column entitled “FDDI” in Table 7-4.

Table 7-4—Outbound access priorities

user_priority	Outbound Access Priority per MAC type
	IEEE 802.17
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7