



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

Amendment 5: Bridging of IEEE 802.16™

IEEE Computer Society
and the
IEEE Microwave Theory and Techniques Society

Sponsored by the
LAN/MAN Standards Committee

802.16k™

IEEE
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IEEE Std 802.16k™-2007
(Amendment to
IEEE Std 802.1D™-2004)

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Abstract: This document amends IEEE Std 802.1D, as previously amended by IEEE Std 802.17a™-2004, to support the bridging of the IEEE 802.16 medium access control.

Keywords: local area networks, LANs, MAC Bridges, transparent bridging, VLANs, wireless metropolitan area networks, WMAN

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Introduction

This introduction is not part of IEEE Std 802.16k-2007, IEEE Standard for Local and Metropolitan Area Networks: Media Access Control (MAC) Bridges—Amendment 5: Bridging of IEEE Std 802.16.

This document amends IEEE Std 802.1D to support bridging of the IEEE 802.16 medium access control. As of the approval date, the current applicable version of IEEE Std 802.1D is IEEE Std 802.1D-2004, as amended by IEEE 802.17a-2004 and IEEE 802.16k-2007.

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[This document amends IEEE Std 802.1D™-2004.]

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

Text shown in bold italics in this amendment defines the editing instructions necessary to changes to this base text. Three editing instructions are used: *change*, *delete*, and *insert*. *Change* is used to make a change to existing material. The editing instruction specifies the location of the change and describes what is being changed. Changes to existing text may be clarified using ~~strikeout~~ markings to indicate removal of old material, and underline markings to indicate addition of new material). *Delete* removes existing material. *Insert* adds new material without changing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. Editorial notes will not be carried over into future editions of IEEE Std 802.1D.

2. Normative references

Insert reference to 802.16 into Clause 2.

IEEE Std 802.16™, IEEE Std for Local and Metropolitan Area Networks Part 16: Air Interface for Fixed and Mobile Broadband Wireless Systems

4. Abbreviations

Insert the following abbreviations into Clause 4 in their appropriate collating sequence.

CPS	Common Part Sublayer
CS	Convergence Sublayer
WMAN	Wireless Metropolitan Area Network

6. Support of the MAC Service

6.5 Support of the Internal Sublayer Service by specific MAC procedures

Insert the following as new Subclause 6.5.5, renumbering the existing Subclause 6.5.5 as 6.5.6.

6.5.5 Support by IEEE Std 802.16 (WMAN)

The Wireless Metropolitan Area Network (WMAN) MAC access method is specified in IEEE Std 802.16. Clause 5 of that standard specifies the Service Specific Convergence Sublayers (CS) that implement the 802.16 MAC service. Subclause 5.2.4 (802.3 Packet CS) describes the mode of the Packet CS that supports the Internal Sublayer Service.

Subclauses 5.1 (ATM CS), 5.2.5 (IEEE Std 802.1Q™-2003 virtual local area network (VLAN) specific part) and 5.2.6 (Packet CS IP specific part) shall not support the Internal Sublayer Service.

Multiple encapsulation methods are provided in the MAC CS in Clause 5. However the bridging function depends on the correct modeling of the Ethernet transport by the Ethernet CS only, and is indifferent to any additional encapsulation.

Clause 6 specifies the MAC Common Part Sublayer (MAC CPS) transmission and reception procedures and Annex C describes the MAC CPS service definition.

IEEE Std 802.16 includes no explicit definition of the MAC service definition for the 802.3 Packet CS. The 802.3 Packet CS MAC service is defined in IEEE Std 802.3 Clause 2.

The 802.16 MAC CPS presents a connection-oriented MAC service. The 802.3 packet CS utilizes this service to present the 802.3 service. A pair of communicating peer CS entities between an 802.16 BS and an 802.16 SS create a point-to-point LAN as defined in 6.4.3.

Since the 802.3 specific part of the packet CS does not forward the `frame_check_sequence` parameter of the `M_UNITDATA.indication`, then

- 1) Any service flow using this MAC CS shall enable the 802.16 MAC CRC.

- 2) PHS validation shall not be turned off for this service flow (since 802.16 MAC CRC cannot protect suppressed MAC header fields).

6.5.5.1 Support for Internal Sublayer Service under IEEE Std 802.16 and IEEE Std 802.3 Packet CS

The **frame_type**, **destination_address**, **source_address**, **mac_service_data_unit** and **user_priority** parameters of the M_UNITDATA primitive are encoded as described in 6.5.1.

The value of operPointToPointMAC (6.4.3) shall be TRUE.

The value of MAC_Enabled shall be determined by the procedure described in 6.5.1.

After the 802.16 SS has registered with the BS, authenticated, and performed capabilities negotiation, and after the 802.3 Packet CS has established the active MAC CPS service flows necessary to carry 802 frames, then the value of the MAC_Operational parameter shall be determined by the procedure described in 6.5.1. Beforehand, the value of MAC_Operational shall be FALSE.

Frame size limits are determined by IEEE Std 802.3™.

Annex A

(normative)

PICS Proforma

Change the first row of Table A.6 (Media Access Control Methods), by adding a line for 802.16 and 802.17, as follows:

A.6 Media Access Control Methods

Item	Feature	Status	Reference	Support
	Which Media Access Control methods are implemented in accordance with the relevant MAC standards?		6.4, 6.5	
MAC-802.3	CSMA/CD, IEEE Std 802.3	O.1		Yes <input type="checkbox"/> No <input type="checkbox"/>
MAC-802.5	Token Ring, IEEE Std 802.5™	O.1		Yes <input type="checkbox"/> No <input type="checkbox"/>
MAC-9314-2	FDDI, ISO 9314-2	O.1		Yes <input type="checkbox"/> No <input type="checkbox"/>
MAC-802.11	Wireless LAN, IEEE Std 802.11™	O.1		Yes <input type="checkbox"/> No <input type="checkbox"/>
<u>MAC-802.16</u>	<u>Wireless MAN, IEEE Std 802.16</u>	<u>O.1</u>		<u>Yes <input type="checkbox"/> No <input type="checkbox"/></u>
<u>MAC-802.17</u>	<u>Resilient Packet Ring, IEEE Std 802.17™</u>	<u>O.1</u>		<u>Yes <input type="checkbox"/> No <input type="checkbox"/></u>