

Annex F

(normative)

Bridging Conformance

Editors' Notes: To be removed prior to final publication.

References:
None.

Definitions:
None.

Abbreviations:
None.

Revision History:
Draft 0.1, February 2002 Initial draft document for RPR WG review.

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There are a large number of references to the "802.17 MAC" and "802.17" in this annex. This is inconsistent with normal 802 editorial practice. These references should be changed to "RPR MAC" and "this standard", respectively.

F.1 Bridging Overview

This section of the draft is not intended to define a new Bridging specification, but simply to extend the 802.17 MAC definition to demonstrate conformance to Transparent and VLAN Bridging, as defined in the IEEE 802.1D and 802.1Q standards respectively.

The MAC Bridging reference model for 802.17 is shown in Figure 1-1. The stations on the Ring act as the MAC Bridge, while the Ring acts as the shared media. Stations acting as Bridges are configured to do so through the appropriate Layer Management function.

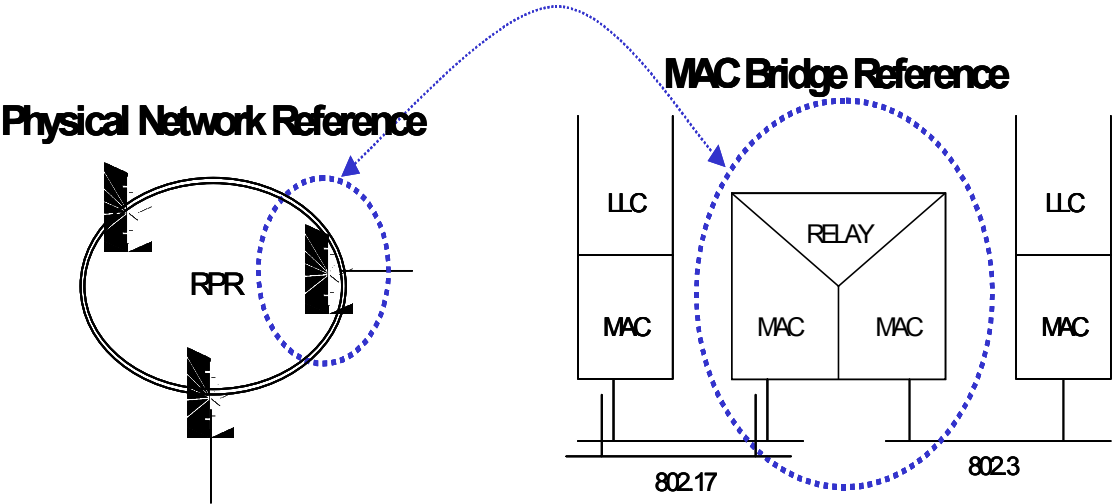


Figure C1—Bridge Architecture Reference

The 802.17 MAC conformance to the aforementioned Bridging standards¹ can be achieved with the following 802.17 MAC capabilities:

- 1) The 802.17 MAC must provide an Internal Sub-Layer Service (ISS), which is used to interface with the Bridging Relay Entity. The ISS will conform to Section 6.4 of the IEEE Std 802.1D and Section 7.1 of the IEEE Std 802.1Q, when appropriate.
- 2) The 802.17 MAC must be able to communicate with the Bridge Protocol Entity via the LLC sub-layer, in conformance with the Bridging specifications.
- 3) The 802.17 MAC must be able to receives frames from the Ring (i.e., shared media) and determine whether they need to be bridged or not.
- 4) The 802.17 MAC must be able to transmit bridged frames appropriately over the 802.17 shared media. This includes handling of unknown unicast, broadcast, and multicast frames.

F.2 802.17 MAC Internal Sub-Layer Service

The ISS is provided by a MAC Entity to communicate with the MAC Relay Entity. The interface for this sub-layer is predefined in the 802.1D and 802.1Q specifications. The 802.17 MAC will adhere to these specifications.

Editors' Notes: To be removed prior to final publication.

Need more formal definition of above references. Also, it is not clear how this Annex can mandate behavior that is also covered by the MAC clause.

F.2.1 802.17 MAC Support of Internal Sub-Layer Service

¹ IEEE 802.1D and 802.1Q Standards.

The 802.17 MAC access method is specified in the draft. Clause X specifies the MAC frame structure, and Clause Y specifies the MAC method.

On receipt of a MA_UNITDATA.request primitive, the local 802.17 MAC Entity performs Transmit Data Encapsulation, assembling a frame using the parameters supplied as specified below.

On receipt of an 802.17 MAC frame by Receive Media Access Management, the MAC frame is passed to the Reconciliation sub-layer which disassembles the frame into parameters, as specified below, that are supplied with the MA_UNITDATA.indication primitive.

The **frame_type** parameter takes only the value *user_data_frame* and is not explicitly encoded in MAC frames.

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 either the address of an individual MAC entity or a group of MAC entities.

The **source_address** parameter is the individual address of the source MAC entity.

The **mac_service_data_unit** parameter is the service user data.

The **user_priority** parameter provided in a data request primitive is not encoded in the 802.17 MAC frame. The user_priority parameter provided in a data indication primitive takes the value of the Default User Priority parameter for the Port through which the MAC frame was received.

The **access_priority** parameter provided in a data request primitive is derived by a fixed 802.17 hsd mapping. The fixed mapping is depicted in Table , “The access_priority parameter provided in a data request primitive is derived by a fixed 802.17 hsd mapping. The fixed mapping is depicted in . The values shown are not modifiable my management or other means.” on page 229. The values shown are not modifiable my management or other means.

User Priority	Outbound Access Priority per MAC method									
	802.3	802.17	8802-4	8802-5 (default)	8802-5 (alternate)	8802-6	802.9a	8802.11	8802-12	FDD I
0	0	0	0	0	4	0	0	0	0	0
1	0	1	1	1	4	1	0	0	0	1
2	0	2	2	2	4	2	0	0	0	2
3	0	3	3	3	4	3	0	0	0	3
4	0	4	4	4	4	4	0	0	4	4
5	0	5	5	5	5	5	0	0	4	5
6	0	6	6	6	6	6	0	0	4	6
7	0	7	7	6	6	7	0	0	4	6

The **frame_check_sequence** parameter is encoded in the FCS field of the MAC frame. The FCS is computed as a function of the destination address, source address, length, RPR Header, and data fields. If a MA_UNITDATA.request primitive is not accompanied by this parameter, it is calculated in accordance with Clause Z of this draft.

Figure C2 below shows the mapping of the MA-UNITDATA.request primitive parameters to the 802.17 MAC frame fields, and the mapping of the 802.17 MAC frame fields to the MA-UNITDATA.indication primitive parameters.

Table C1—Outbound Access Priorities

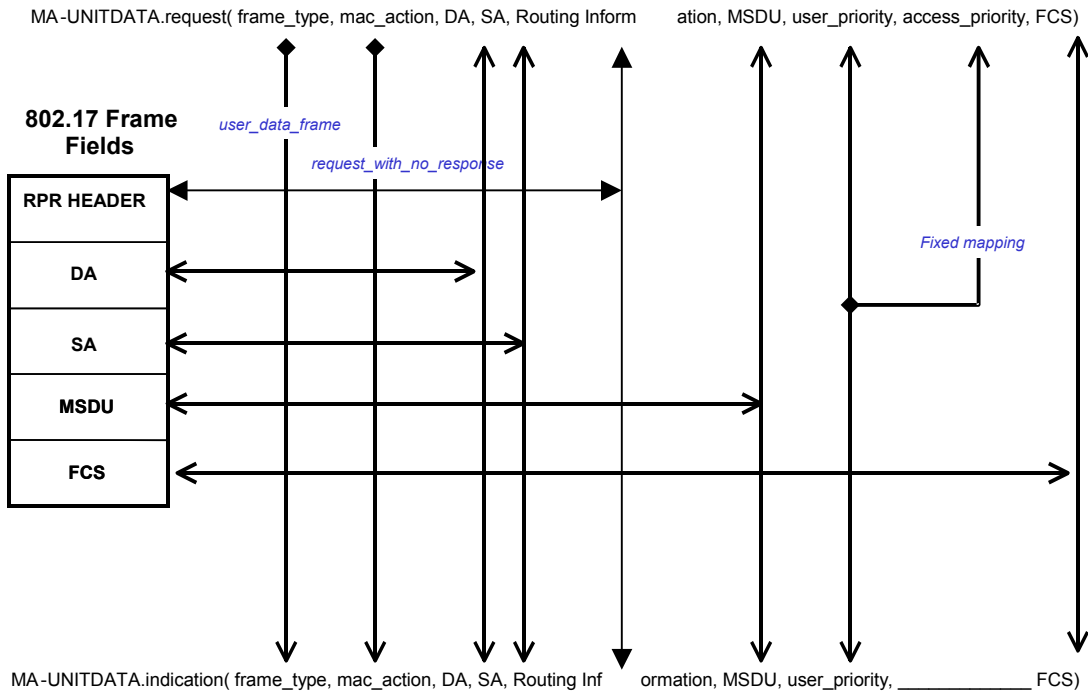


Figure C2—Mapping of MAC Service Primitives

F.2.2 802.17 MAC Support of Enhanced Internal Sub-Layer Service

An Enhanced Internal Sub-Layer Service (E-ISS) is derived from the Internal Sub-Layer Service (ISS, defined in ISO/IEC 15802-3, 6.4) by augmenting that specification with elements necessary to the operation of the tagging and un-tagging functions of the MAC Bridge. The E-ISS provided by the 802.17 MAC will conform to Section 7.1 of IEEE 802.1Q Std.

Figure C3 below shows the mapping of the EM-UNITDATA.request primitive parameters to the 802.17 MAC frame fields, and the mapping of the 802.17 MAC frame fields to the EM-UNITDATA.indication primitive parameters.

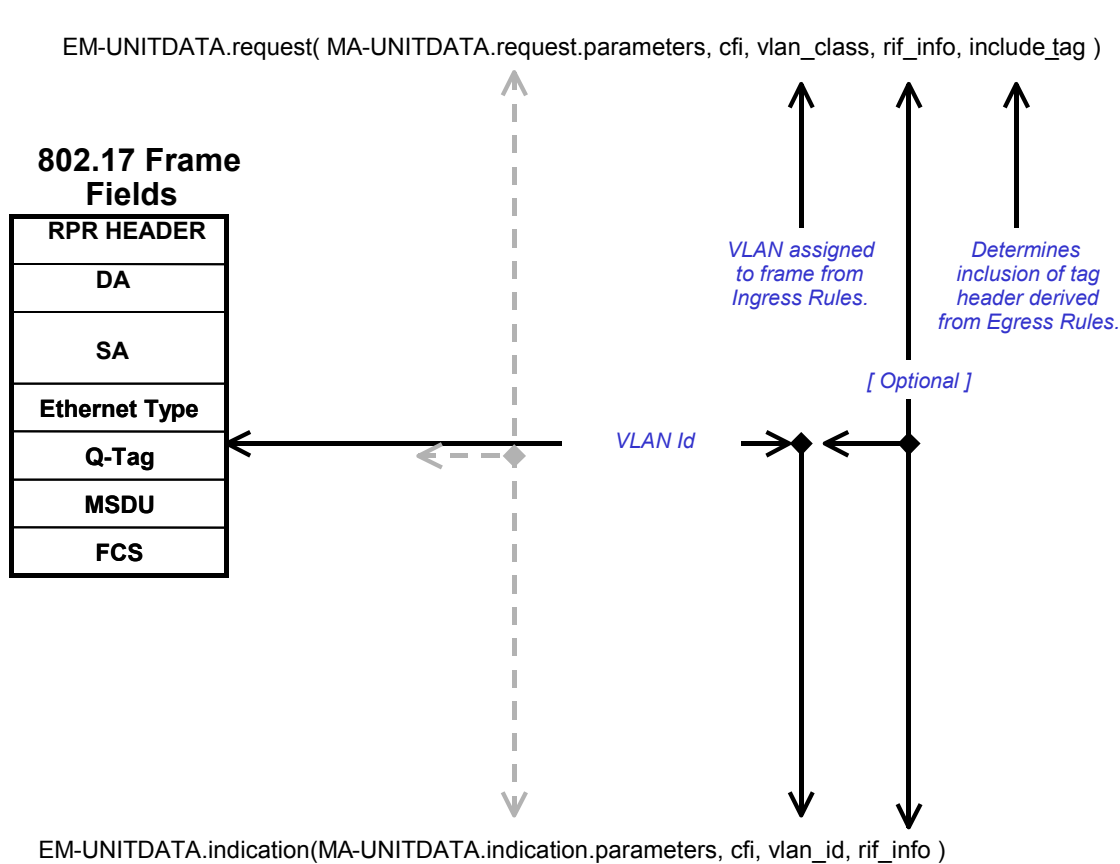


Figure C3—Mapping of Enhanced MAC Service Primitives

F.3 Bridge Protocol Entity Interactions

The 802.17 MAC will provide a MAC sub-layer that will conform to Section 2.2.2 of IEEE 802.2 Std.

F.4 802.17 MAC Handling of Frames to be Bridged

The 802.17 MAC transit data path needs to incorporate logic to determine whether the received frame should be:

- Dropped. The frame is stripped from the Ring and passed to a MAC client.
- Discarded. The frame is stripped from the Ring and not passed to any MAC client. The frame is discarded.
- Passed Through. The frame is passed to the tandem buffer and dispatched to the outgoing Ringlet.
- Replicated. The frame is replicated prior to the transit path drop point. One copy of the frame is Passed Through, and the other copy is Dropped.

Editors' Notes: To be removed prior to final publication.

The above should be a lettered or numbered list.

Figure C4 depicts a simplified depiction of the 802.17 MAC transit data path. Refer to Clause W of the 802.17 Draft for a complete description of the 802.17 MAC transit path.

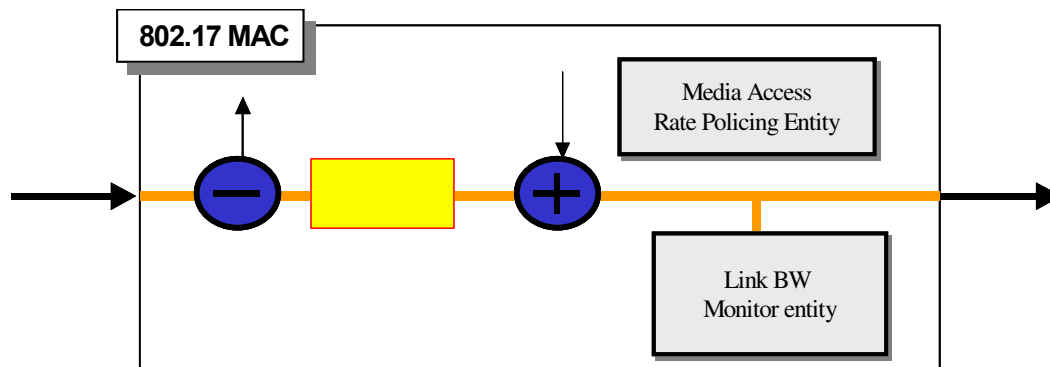


Figure C4—Simplified 802.17 MAC Transit Path

When Bridging is provision on the RPR station, the Layer Management Element sets a state used by the 802.17 MAC transit path to indicate that Bridging is configured. The Drop/Discard point in the 802.17 MAC transit path needs to incorporate the following logic:

- a) If the Destination Address (DA) associated with the received frame is that of the RPR Station, and Bridging is configured on the Station, the frame is Dropped and passed to the MAC Relay Entity.
- b) If the DA of the received frame is not that of the RPR Station, and Bridging is configured on the Station, the frame is Replicated.

The aforementioned logic is an extension of the RPR MAC reception rules outlined in Clause W of the 802.17 Draft.

F.5 802.17 MAC Transmission of Bridged Frames

Bridge relayed frames are submitted for transmission by the Bridging Forwarding Process. The Service request primitive associated with such a frame conveys the values of the source and destination address fields received in the Service indication primitive. Refer to Figure 1-2 and Figure 1-3 for the mappings.

Bridged frames with a Multicast and Broadcast destination address are broadcast around the RPR.

Bridged frames with a destination address of a station on the RPR (i.e., a known destination address) is forwarded to the station using internal 802.17 MAC topology and steering tables.

Bridged frames with an unknown destination address (e.g., a destination address not matching a RPR station address) are flooded over the RPR.

F.5.1 Flooding Packet over 802.17

An 802.17 MAC floods a packet of the 802.17 shared media, by replicating and dispatching the packet(s) over both directions of the Ring. The TTL field, found in the RPR header, is set such that each station on the Ring only sees the packet once. Figure 1-5 below illustrates the operation of flooding a packet over the RPR.

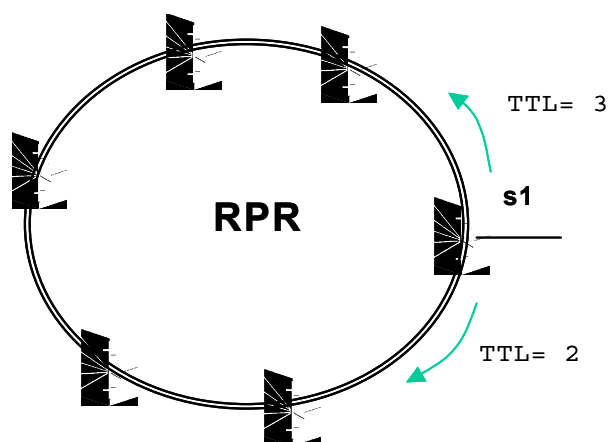


Figure C5—Flooding Packets over RPR