Encapsulation Bridging[1][2]

A.1 Introduction

An important application of Resilient Packet Rings is to provide a LAN service over a public network. Resiliency features of RPR rings make 802.17 frames an attractive choice for transporting frames over shared public networks. The frames originate and terminate on an 802.3 LAN that are authorized to communicate with each other.

This annex details the operations of an Ethernet over RPR Encapsulation internal service (ERPR-IS) sub layer. This internal service sub layer that can be implemented by stations that implement an overlay model of transport of 802.3 frames encapsulated within 802.17 frames. The layer resides between an 802.1p VLAN bridge instance and an 802.17 or Native Bridge RPR Re-encapsulation Internal Services sub layer (RPR-RE-ISS) entity. The RPR-RE-ISS is described in Section ??. The ERPR-IS sub layer comprises of one logical functional entities.. This entity is a forwarding and filtering entity that maintains a database mapping between 802.3 MAC address and the directly attached 802.17 station MAC address. Stations that implement this sublayer will interwork to provide a service over a public RPR network that behaves transparently like a LAN.

[1] Comments to ajay.sahai@fnc.fujitsu.com or post to the 802.17 working group reflector.

[2]This Appendix is intended for informative purposes. Any requirements that stem from this application will be addressed in the main body of the 802.17 MAC standard.

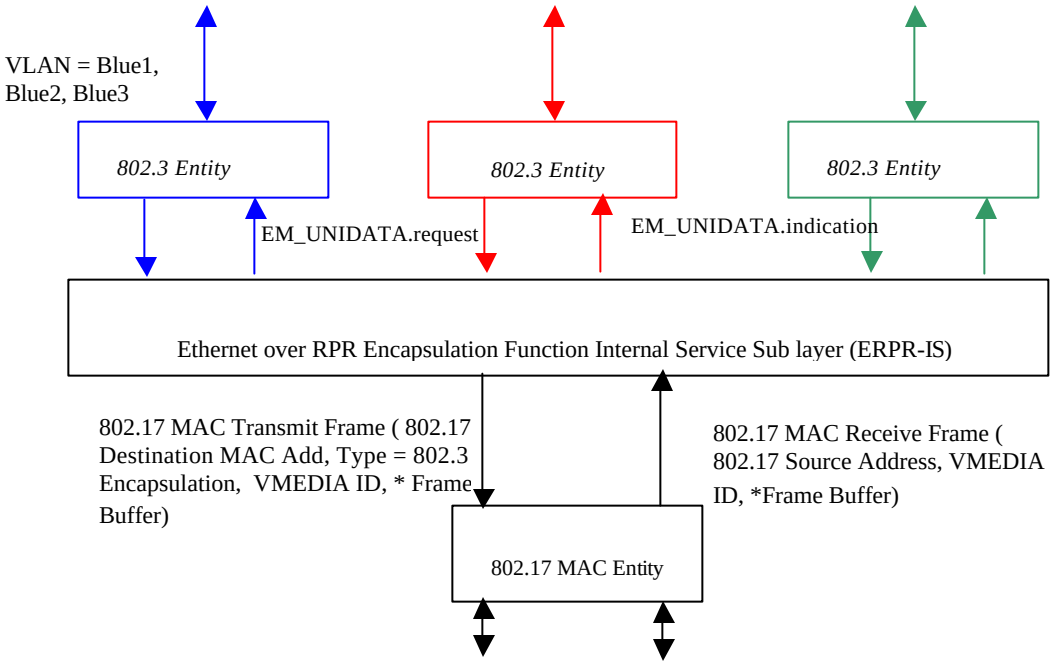

Figure A.1: Layering for Ethernet over RPR Solution at a Source/Destination station

A.2 Ethernet over RPR Encapsulation internal service sublayer operation (ERPR-IS operation)

An 802.3 entity that wants to use the services of the E-RPR-IS has to register with the ERPR-IS sub layer. Each one of the registered 802.3 entities is configured to be a member of a given V-Medium Identifier [3]. Each configured V-Medium Identifier corresponds to a logically distinct VLAN aware bridge (LDVLAN Bridge) implemented above the ERPR-IS sublayer. This bridge has two types of interfaces, one physical and the other logical. The physical interfaces are attached to the 802.3 MAC entities and the logical interface connects towards the RPR ring. A LDVLAN bridge implements functionality as specified in IEEE 802.1Q. The advantages of this approach are:

1. Logical Interfaces to the 802.3 MAC Entity are maintained by the LDVLAN.

2. 802.3 frames delivered by a 802.17 MAC entity can be directed by the ERPR0IS to the LDVLAN bridge corresponding to the V-Medium identifier specified in the received 802.17 frame. This precludes the need to maintain any port numbers in the RPR header.

[3] This ID is unique across customers but is the same across all the ports under the administrative control of a single (business) customer across a service provider's Layer 2 only RPR network domain. This ID will be assigned under the administrative control of the RPR network administrator.

The main function of the ERPRIS is providing a forwarding and filtering entity (FFE) that maintains a mapping between 802.3 station addresses and the directly attached 802.17 station address. The database entries are learnt whenever a new 802.3 address is seen in the source address of a frame received from the 802.17 entity. These learning and aging of the FFE database entries correspond with those of the logical interface of the LDVLAN bridge.

When the forwarding entity forwards a frame to the ERPR-IS sub layer the FFE entity checks the 802.3 destination address in its database. If the corresponding for a directly attached 802.17 station entry is found the frame is passed to lower layers like the 802.17 entity. This will be done using the Send 802.17 Frame Indication with the appropriate parameters. If a corresponding entry is not available or the 802.3 frame is a broadcast, the resulting 802.17 frame is a broadcast. The 802.17 or the RPR-RE-IS entity deliver frames to the ERPR-IS if the Type of the 802.17 frame indicates 802.3 Encapsulation using its. The FFE filters frames that do not have a V-Medium ID that matches with the V-Medium ID of the LDVLAN bridges on this instance of the sublayer.

A.3 Ethernet over RPR Encapsulation Sub layer interfaces

The ERPR-IS interacts with the 802.17 or RPR-RE-IS entity with the appropriate primitives. These are:

802.17 MAC Transmit Frame (

802.17 Destination MAC Add,

Type = 802.3 Encapsulation,

VMEDIA ID,

Frame Buffer)

The 802.17 Destination station address is added by ERPR-IS after retrieval from the FFE database. The frame buffer actually contains the frame to be transmitted. The type indicates that the payload is an encapsulated 802.3 frame. At the destination station frames with this type of payload are delivered to the ERPR-IS. The primitive indicates arrival of a frame to the ERPR-IS is:

802.17 MAC Receive Frame

(802.17 Source Address,

VMEDIA ID,

*Frame Buffer)

The 802.17 Address is needed for possible entry into the FFE database. The VMEDIA ID is used to filter the frame at the FFE if appropriate and forward it to the corresponding LDVLAN bridge.