IEEE 802.17 Maintenance Request 0083

Standard 802.17-2004 **Page** 624 **Subclause** _____ F **Figure** _____ **Table** _____

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Perceived Problem [If more space is needed, please provide an additional file, preferably as plain text.]

The problems of cross RPR bridge ring reliability and rapid switchover.
When two RPR bridge rings intersect, usually two or more stations are deployed for exchanging packets between the rings to ensure the reliability. Since they are in the same broadcast domain, a broadcast storm will be generated if no restriction is made on the intersecting stations. In such a case, we can resort to the Layer 2 Spanning Tree Protocols, such as STP and RSTP for solution. Since the protocols are limited by the algorithm, the convergence speed is slow.

Proposed Remedy [If more space is needed, please provide an additional file, preferably as plain text.]

To solve this problem, we can use a mechanism where one from the intersecting stations is selected as the main node to exchange traffic between two rings while the other stations are backup and do not exchange traffic. If a fault comes out at the main station, the function of traffic exchange will soon be switched to the backup stations within 50ms through the new protocol and RPR topology monitoring, ensuring the reliability and rapid switchover between rings. The detail is just as following:
1. Group the intersecting stations, and set the respective station ID, group ID and station priority.
2. Add a kind of control packet on the RPR. Advertise the information on each station in the group through the two RPRs in a multicast or broadcast manner. The station with highest priority acts as the main station, responsible for forwarding packets that cross rings, while others are backup stations.
3. backup stations need to store the MAC address of the current main station in the two rings. If the RPR topology changes, the backup station needs to check for its interconnection with the main station in both rings. If yes, no processing will be done. If not, a control packet will be sent out for selecting a station with the
highest priority as the main station from the backup stations that are interconnected with the two rings.
4. Add a new control packet and send it out periodically. The main station sends out a control packet whenever the topology changes. It should quit from the main station mode when one main station receives control packets from the station with higher priority in the two RPRs.
5. Through the packet exchange and the application of topology, the rapid switchover between the main station and the backup station can be implemented.

Rationale For Remedy [If more space is needed, please provide an additional file, preferably as plain text.]

1. Solve the problems of cross RPR bridge ring reliability and rapid switchover.
2. Mitigate slow convergence of STP and RSTP.

Remedy's Effect On Existing Equipment [If more space is needed, provide an additional file, preferably as plain text.]

Add a new protocol on RPR to complete the information advertising as well as negotiation on the switchover between the main and backup stations.

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