عنوان مقاله:
Throughput Improvement in Resilient Packet Rings with Total Rate Control

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خلاصه مقاله:
Resilient Packet Ring (RPR) technology known as IEEE 802.17 is a new MAC layer for ring networks devised to achieve objectives, such as spatial reuse, fault tolerance and bandwidth efficiency, not available by current technologies. High throughput in the periods of high demand and in particular when RPR is used on low speed technologies such as wireless rings is an essential requirement. Fairness algorithms such as RPR Fairness Algorithm, DVSR and VQ that are used to maintain fair bandwidth allocation among nodes demonstrate oscillatory behavior in a dynamically changing traffic environment that results in ring throughput degradation. This could reach as high as 25% loss in bandwidth utilization. We propose a Total Rate Control (TRC) algorithm in order to eliminate this throughput degradation. We show that TRC can work with local rate control fairness algorithms in a complementary fashion, that is TRC does not interfere with fairness algorithms. The combined scheme is shown to achieve zero loss in bandwidth and is superior in terms of fairness in bandwidth allocation. Mitigating rate oscillations, TRC enhances fairness and improves convergence.

کلمات کلیدی:
Resilient Packet Rings, Total Rate Control, Fairness