On the Use of Analytical Performance Models to Design a High-Performance Active Queue Management Scheme

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Abstract : One of the open issues in Random Early Detection (RED) algorithm is how to set its parameters to reach high performance for the dynamic conditions of the network. Although original RED uses fixed values for its parameters, this paper follows a model-based approach to upgrade performance of the RED algorithm. It models the routers queue behavior by using the Markov model and uses this model to predict future conditions of the queue. This prediction helps the proposed algorithm to make some tunings over RED's parameters and provide efficiency and better performance. Widespread packet level simulations confirm that the proposed algorithm, called Markov-RED, outperforms RED and FARED in terms of queue stability, bottleneck utilization and dropped packets count.
Keywords : active queue management, RED, Markov model, random early detection algorithm
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