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A packet scheduling scheme for improving real-time applications performance in downlink LTE-advanced (Article)

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Abstract

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Quality of Service based packet scheduling is a key-feature of LTE-A mandating selection and transmission of individual user packets based on their priority. HARQ Aware Scheduling, Retransmission Aware Proportional Fair, Chase Combining Based Max C/I Scheduling and Maximum-Largest Weighted First (M-LWDF) are popular Packet Scheduling Algorithms (PSAs) developed to meet QoS requirements. In highly erroneous LTE-A channel, M-LWDF is considered to be one of best PSA. To validate the performance of M-LWDF for the LTE-A channel, Mean User Throughput, and Fairness performance measures were evaluated for 3 different PSAs designed based on M-LWDF algorithm in this paper. A C++ based simulation results indicate the superiority of the PSA3 algorithm within the threshold of the performance measures against benchmarks. It has shown more efficiency and the performance of RTA traffic was enhanced. Results show that PSA3 is superior to its benchmark PSA2 by 12% in Mean User Throughput and 11% in Fairness. PSA2 performed the worst because it prioritizes new users and it allocated all available RBs to the scheduled user leaving the rest to wait in the buffer. PSA3 maintains good Mean User Throughput and fairness due to scheduling each user on its RB which leads to multi-user diversity. © 2018 Institute of Advanced Engineering and Science. All rights reserved.

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