Buffer allocation in WiMAX maximizes the throughput of system and minimizes the power consumption. Hence, an adaptive buffer allocation strategy is required to increase the goodput of the system. In this paper, we propose an adaptive buffer allocation technique based on traffic classes in WiMAX networks. Initially buffer is allocated to the flow requests based on buffer allocation factor. This factor is estimated using fuzzy logic. The parameters namely number of user requests, flow rate, queue length and received signal strength are taken as inputs. The originally allocated buffer is verified periodically by buffer reallocation technique. It computes two different satisfaction factors for real time and non real time flows. Delay is considered as a metric for real time flows and minimum reserved data rate is for non real time flows.
flows. Based on estimated satisfaction factor, flow rate is adjusted for real time traffic using PID controller and additional buffer is allocated for non real time flows. Through simulation results, we show the performance of our proposed technique.

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