

Abstract

In this paper, we study the performance of radio resource allocation for cellular networks where real-time (RT) and non-real-time (NRT) data traffic are considered in addition to voice traffic. To guarantee the performance of voice traffic, preemptive priority is used so that voice calls can preempt data packets and RT data traffic preempts NRT data traffic. By reserving channels specifically for RT data, the packet loss probability and mean queueing delay can be reduced, meanwhile, the performance of NRT data can also be improved. This is achieved at the expense of increasing voice blocking probability. Thus, the number of reserved channels can be adjusted to control the voice blocking probability while improving the performance of data traffic. Besides, the packet loss probability of RT traffic is smaller for smaller RT traffic ratio. On the contrary, the smaller the RT traffic ratio, the larger the queueing delay.