

Abstract--General Packet Radio Service (GPRS) is a packet switched access mode for GSM system to efficiently utilize the radio resources. In this paper, we analyzed the performance of radio resource allocation in GSM/GPRS networks. To guarantee the QoS of voice service not being affected by the introduction of GPRS, preemptive priority is applied for voice calls to preempt GPRS data packets. Three cases of radio resource allocation are considered: no-buffer; buffer-only-for-preempted-GPRS-packets; and bufferfor-GPRS-packets. The results show that employing buffer for GPRS packets can greatly reduce its blocking probability even under the condition of voice preemption. For real-time data applications, the mechanism of buffer-only-for-preempted-GPRSpackets will be suitable since the queueing delay is relatively small.