

Abstract. GPRS is a packet switched access mode for GSM system to improve wireless access to the Internet. In this paper, we study the design of radio resource allocation for GPRS and GSM services by allowing guard channels to be temporarily allocated to GPRS users to increase channel utilization. The call admission controller and channel allocation controller are employed to achieve good channel utilization and preserve the QoS of GSM services. Simulation results show that at low voice traffic load, there is no need to apply admission control to GPRS connections. While at high voice traffic load, applying call admission control to GPRS connections can guarantee the performance of voice service, but result in high GPRS connection blocking and low channel utilization. Furthermore, the QoS of voice service not being affected by the introduction of GPRS can be obtained by allowing voice arrivals to preempt the ongoing GPRS connections.