

## ABSTRACT

The introduction of GPRS services into GSM networks creates new challenges to network planning engineers. One critical challenge comes from the requirement for providing a certain quality of service for GPRS traffic without significantly degrading the performance of existing GSM services. In a GSM/GPRS integrated network, it becomes necessary to reserve exclusive channels for GPRS in order to provide base-line QoS for GPRS users. On the other hand, the exclusive reservation obviously reduces the capacity of GSM traffic so that has significant impact on the performance of GSM traffic (especially GSM handover traffic).

In this paper, we primarily evaluate the performance degradation of GSM handover traffic due to the introduction of GPRS in a GSM/GPRS network when sub-rating channel(s) assignment priority scheme for handover traffic over new call traffic is applied.

The effect of an increasing GPRS penetration factor on the performance of existing GSM services is also studied. Our key results show that the performance of GSM handover traffic can be significantly degraded by the capacity reduction resulting from the introduction of GPRS but can be amended by using priority scheme, which in this paper we using sub-rating channel assignment scheme.

*Keywords: GSM/ GPRS, channel allocation, GoS, handover handling*