

APPLICATION OF SPSS MECHANISM ON A GPRS RADIO RESOURCE ALLOCATION

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ABSTRACT

The first and second generation telecommunication systems such as the Total Access Communication System (TACS) and Global System for Mobile Communication (GSM) were primarily developed to carry voice services alone. The increase in the demand for multimedia services supported by Internet Protocol (IP) and General Packet Radio Service (GPRS) has led to the sharing of scarce radio resource that was available to the existing GSM. The separate allocation of static bandwidth for voice and data, projected by the Third Generation Partnership Project (3GPP), has not achieved its purpose in solving network congestion problems. Therefore, a congestion avoidance radio resource allocation scheme known as a Static parallel sharing scheme SPSS is proposed for the typical GPRS system. Further, the model was analyzed using the Microsoft Excel spreadsheet. It was observed that the SPSS reduces drastically the blocking probability, delay and fluctuation in delay. The blocking and the delay probability of the parallel queue increase with increase in the utilization factor, for specified values of parallel queues (M). However, the parallel blocking probability decreases with an increase in the utilization factor with specific queue lengths while the delay and the fluctuation in delay decreases with an increase in the number of parallel buffers. A comparison between the SPSS and the Single Buffer Sharing Scheme (SBSS) - the existing best threshold buffer scheme, was also carried out. The result of the experimental analysis shows that the SPSS performed better than the SBSS.

KEYWORDS: GPRS, Resources, SPSS