

Modelling issues of integrating services in Next Generation Networks.

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Abstract:

A main issue in engineering next generation of multi-user, multi-service networks is to guarantee the Quality-of-Service (QoS) and, in particular for wireless systems, to obtain a high utilization. In general a high degree of sharing is efficient, but requires service protection mechanisms to guarantee the QoS for all services. We describe the basic principles and strategies for obtaining the maximum utilisation, and at the same time ensuring the QoS. Two applications are considered.

First we consider Multi-protocol Label Switching (MPLS) inter-networking where flow of packets can be considered as traffic flow in connection-oriented networks.

The second application deals with 3G cellular systems. We study the effect of cell breathing and cell overlapping, and systems with hierarchical cells. By call packing we may obtain a very high utilisation. We also present an approach for calculating the capacity of multi-service CDMA networks with soft blocking using general traffic models. Case studies are presented.