

An Alternative LP Formulation of the Admission Control Problem in Multi-Class Networks

Abstract— Next generation communication networks are characterized by the definition of an increasing number of services; thus, a single network infrastructure is expected to support lots of Classes of Service (CoS), and the admission control problem becomes critical. The admission control strategy can be effectively planned within the Markov Decision Process (MDP) framework; a popular methodology is the use of the linear programming (LP) formulation of the MDP problem, which allows one to explicitly control class level requirements, such as the CoS blocking probabilities. Scalability problems with respect to the number C of classes supported by the network arise with the standard LP formulation, since the LP size grows with 2^C . This paper proposes an alternative LP formulation of the admission control problem, which does not introduce any approximation but is much more scalable, since the LP size grows with $(C+1)^2$.