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PERFORMANCE EVALUATION OF A NEW END-POINT ADMISSION CONTROL ALGORITHM IN NGN WITH IMPROVED NETWORK UTILIZATION

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Abstract. *DiffServ is considered as a scalable solution for service differentiation in the Internet. It applies differentiated behaviors on data packets for different quality levels on a per hop basis (PHB). However, DiffServ cannot guarantee end to end service quality all alone as it does not have any control on the traffic entering then etwork and the paths which are traversed by data packets. A combination of an admission control and a route selection mechanism joint with the DiffServ can provide necessary bullets and nuts to provide controlled QoS. This topic has been extensively visited in the literature and various solutions have been proposed. In this paper, a new approach is studied which is aimed at improving the network utilization while keeping the service quality under control. This involves a distributed end-point admission control algorithm to engineer the traffic entering the network in which users are allowed to use lower service levels in the routers that do not have sufficient capacity in the requested service level. This local degradation preserves the end-to-end service quality in the acceptable level. In this way, we can increase data throughput and also the percentage of admitted calls, which result in higher network utilization.*

Keywords: DiffServ, Quality of service, Traffic engineering, Distributed call admission control

1. **Introduction.** Originally, the Internet was designed for the connectivity of the best effort traffic. As the Internet tries to support various types of services, such as voice, video, etc., it becomes necessary to provide better quality of service (QoS). The Internet is considered as a foundation and backbone for the next generation network (NGN) which is evolving towards a packet-based network supporting both real time and non-real time traffic. Therefore, QoS becomes one of the main concerns in the Internet. Existing packet-based networks lack an efficient mechanism for end-to-end QoS [18]. In order to extend the Internet service model so that QoS can be better supported, two fundamental frameworks have been proposed, namely, integrated services (IntServ) and differentiated services (DiffServ). Every node requires maintaining the flow state in integrated services [6], so the scalability problem will occur. Unlike the IntServ, the differentiated services framework (DiffServ) [5] is designed for the scalability of the Internet. The nodes in DiffServ do not need to keep any flow state information. Traffic with similar requirements is classified into the same class and each node provides class-based differentiated services by applying different per hop behaviors. However, DiffServ has a basic problem: