A PREEMPTION PACKET RESERVATION MULTIPLE ACCESS (P-PRMA) PROTOCOL FOR MULTIMEDIA INTEGRATED ACCESS IN WIRELESS SYSTEM

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ABSTRACT

In this paper, we explore, via an extensive simulation study the design and performance evaluation of P-PRMA protocol that multiplexes voice traffic at the talkspurt level to efficiently integrate voice, rt-VBR video and data traffics in third generation picocellular wireless networks. We show the effect of preemption on PRMA by comparing two versions of the protocol one with preemption and the other without preemption. We focus on both MPEG-4 and H.263 coded movies with different encoding qualities. The design objectives include maximizing the system capacity (by finding the optimum permission probabilities of sending contending voice, data, and video) and to provide some guaranteed quality of service (QoS) to each user based on the traffic type. Two particular elements of QoS are considered here, which are the packet dropping probability, and the maximum transmission delay suffered by each packet. Results obtained show that the performance of P-PRMA is superior when compared to the normal PRMA, especially in case of MPEG-4 and HQ H.263 video streams.

Keywords— Multiple-access system, Packet reservation multiple access, Multimedia communications, MPEG-4 and H.263 video.