

Providing latency guarantees for the bursty traffic in multiple queues by fast switching method with bandwidth non-dividing

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Abstract

The Internet Engineering Task Force (IETF) has proposed a Guaranteed Service (GS) for integrated services with delay and bandwidth guarantees. This paper develops a virtual model which satisfies the performance requirements for both bandwidth reducing and delay guarantees for bursty traffic in multiple input queues. The present study reveals that the delay can be controlled by choosing appropriate values of the selection probability. Selection probability is defined as the probability of the first packet in a particular queue being selected successfully for transmissions. Using this approach, the delay can be controlled such that it falls within a tolerable range without the need for bandwidth division. The present study focuses both on the delay guarantee and less bandwidth exhausting. It is found that there is excellent agreement between the numerical simulation results and the mathematical analysis. The approach developed in this paper can be applied to any high-speed network as a means of obtaining performance improvements.

Keywords : Latency, multiple queues, bursty traffic, quality of service.

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