

Batch Scheduled Admission Control for
Service Stability of Computer and Network Systems

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ABSTRACT

As computer applications become more sophisticated, their reliance on the underlying system infrastructure increases. This makes Quality of Service (QoS) imperative. Timeliness is an important attribute of QoS that dependable infrastructures should provide. A significant aspect of timeliness is the stability of job waiting times in a system. In the context of a computer network system, applications or processes can be considered jobs competing for allocation of shared resources. Examples of such resources are web or file servers, and network routers. Current computer infrastructures aim to achieve better throughput or utilization, without focusing on the stability of job waiting times. Waiting time stability can be controlled by two factors: admission control and job scheduling. In this paper, we examine waiting time stability through admission control techniques. We propose a new admission control technique called *batch scheduled admission control*, which aims to provide stability by minimizing the variance of job waiting times. We compare the performance of our technique with a system where no admission control is used under a variety of scheduling rules. Our results show that the stability of job waiting times increases significantly when batch scheduled admission control is used.

KEYWORDS: Quality of Service, Timeliness, Service Stability and Admission Control