Chapter 1 : Polling system - Wikipedia

Gated time-limited polling systems. _ ISSN applied to the analysis of a system operating under the time-limited gated discipline and having either preemptive.

Sufficient stability condition for the standard token passing ring is "known" since the seminal paper of Kuehn in However, this condition was derived without formal proof, and the proof seems to be of considerable interest to research community. In fact, Watson observed that in the p Our intention is to fill this gap, and provide a formal proof of the sufficient and necessary stability condition for the token passing ring. In this paper we present the case when the arrival process to each queue is Poisson but service times and switchover times are generally distributed. We also indicate that the basic steps of our technique can be used to study the stability of some other multiqueue systems. Keywords and Phrases Token passing rings, stability, substability, ergodicity, Markov chains, L Show Context Citation Context In fact, no formal proof of the sta A novel approach to queue stability analysis of polling models, Perform by Rocky K. Chang, Sum Lam - Eval. J , " Previous work in the stability analysis of polling models concentrated mainly on stability of the whole system. This system stability analysis, however, fails to model many real-world systems for which some queues may continue to operate under an unstable system. In this paper we address this proble In this paper we address this problem by considering queue stability problem that concerns stability of an individual queue in a polling model. The polling model under consideration employs an m-limited service policy, with or without prior service reservation; moreover, it admits state-dependent set-up time and walk time. Our stability results generalize many previous results of system stability. In Corollary 5 we obtain the well-known stability condition for a class of queues employing unlimited service policies. Because those unlimited queues are as stable as one another, the stability con While we study this system as an important application, the technique can be applied almost without modification to a class of monotonic and contractive policies cf Theorem 2. Our approach to the stability of token passing rings follows the idea discussed in our paper [3], and differs from the standard methodology of the Lyapunov test function cf. For other than test function approaches see also [2], [11] [14, 15]. Our method is based on a simple idea of stochastic dominance technique, and application of Loynes [9] stability criteria for an isolated queue. We note that this approach is not restricted to token passing rings, and stability of several other distributed systems can be assessed by this methodology cf. We now summarize our main results. We refer such class of systems to as Rate Stability RS multiqueue systems. The RS-multiqueue system i The RS-multiqueue system is general enough to admit different stability definitions and different models. We will present two sets of new results for the RS-multiqueue systems. These results extend many previous results on the stability analysis of multiqueue systems. In the first part, we report that the RS-multiqueue systems can be classified into three classes. In each class, any pair of queues exhibits different interaction properties in three aspects: In the second part, we present a relative stability analysis of two RS-multiqueue models: Moreover, the analysis facilities the absolute stability analysis of the models. Keywords rate-stability multiqueue systems, degree of stability, relative stability, absolute stability, polling models, ALOHA system 1. Moreover, recently a few results of stability rank [13] or stability ordering [14, 15] have been reported. However, to the best of our knowledge, no general analysis on the relative stability issues Performance analysis of non-uniform switches in networks on chips by Jacques Resingz , " Packet switches have been studied extensively as part of ATM and LAN networks under the assumption that the number of input ports N tends to inity. In networks on chips, N is usually 4 or 5 and asymptotic models lead to inaccurate results. A new approximation of the mean sojourn time has recently b A new approximation of the mean sojourn time has recently been introduced for uniform switches i. In particular we focus on approximations of throughput, stability conditions, and mean waiting times. Their results were later rigorously proved by Van Houtum , " A state-dependent polling model with k-limited service

Chapter 2 : CiteSeerX â€" Citation Query Stability conditions for multiqueue systems with cyclic service[J

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