

Contact Centers with a Call-Back Option and Real-Time Delay Information

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Abstract

Motivated by practices in customer contact centers, we consider a system that offers two modes of service: real-time and postponed with a delay guarantee. Customers are informed of anticipated delays and select their preferred option of service. The resulting system is a multi-class, multi-server queueing system with state-dependent arrival rates. We propose an estimation scheme for the anticipated real-time delay that is asymptotically correct, and a routing policy that is asymptotically optimal in the sense that it minimizes real-time delay subject to the deadline of the postponed service mode. We also show that our proposed state-dependent scheme performs better than a system in which customers make decisions based on steady-state waiting time information. Our results are derived using an asymptotic analysis based on “many-server” limits for systems with state-dependent parameters.