

ROUTING TO MINIMIZE WAITING AND CALLBACKS IN LARGE CALL CENTERS

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In a call center, agents may handle calls at different speeds, and also may be more or less successful at resolving customers' inquiries, even when only considering customers calling with similar requests. One common measure of successful call resolution is whether or not the call results in the customer calling back. This presents a natural trade-off between speed and quality, where quality is defined by the percentage of the agent's calls that result in callbacks. The relevant control is the routing; that is, the decision concerning which agent should handle an arriving call when more than one agent is available. In an inverted-V model setting, we formulate an optimization problem with the dual performance objective of minimizing customer wait time and minimizing the callback rate. We solve this optimization problem asymptotically in the Halfin-Whitt many-server limit regime, interpret its solution as a routing control for the discrete-event system, and show via simulation that the interpreted routing control is on the efficient frontier. In particular, any routing control that has a lower average wait time (callback rate) must also have a higher callback rate (average wait time).