Price Discovery at Network Edges

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Abstract

Congestion-sensitive pricing for providing better than best effort service has received significant attention in the last decade. In this paper we identify a robust parameter for capturing congestion conditions in an edge-to-edge framework and propose a family of adaptive pricing schemes for premium network services. The parameter is the ratio of two values: *Edge queue* and *estimated edge-to-edge capacity*. By coordination between edge routers, both of the values are available at the ingress point in an edge-to-edge framework. Thus, the pricing schemes deployable. Based on the identified parameter, we propose a new adaptive pricing framework, Price Discovery. Based on the Price Discovery framework and the identified pricing parameter, we develop and analyze four pricing schemes. We compare the pricing schemes, and select the best one in performance. We identify stability conditions for the best scheme. This is followed by evaluation of the best pricing scheme with extensive simulations of various scenarios.

Keywords—Network Pricing, Congestion Pricing, QoS, Optimization