

OPTIMAL RESOURCE CAPACITY MANAGEMENT IN STOCHASTIC NETWORKS

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We develop a general framework for determining the optimal resource capacity for each station comprising a stochastic network, motivated by applications arising in computer capacity planning and business process management. The problem is mathematically intractable in general and therefore one typically resorts to either overly simplistic analytical approximations or very time-consuming simulations in conjunction with metaheuristics. In this talk we propose an iterative methodology that relies only on the capability of observing the queue lengths at all network stations for a given resource capacity allocation. We theoretically investigate the proposed methodology for single-class Brownian tree networks, and further illustrate the use of our methodology and the quality of its results through extensive numerical experiments.