This book provides an introduction to heavy-traffic stochastic-process limits for queues, with special emphasis on nonstandard scaling and nonstandard limit processes. In addition to limit processes related to Brownian motion, the book discusses limit processes related to stable Lévy motion and fractional Brownian motion, which appear with heavy-tailed probability distributions and strong dependence.

To set the stage, the first four chapters present an informal introduction to stochastic-process limits. These chapters convey the unifying power of stochastic-process limits without sinking into the mathematical details. Simulation is used to help build intuition. Throughout, the book emphasizes the applied significance as well as the underlying mathematics. Hence, the book should appeal to a wide audience, including researchers and graduate students in operations research, industrial engineering, electrical engineering, computer science, business, economics and statistics, as well as specialists in probability theory.

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