



Performance Modeling and Design of Computer Systems: Queueing Theory in Action

By Mor Harchol-Balter

Cambridge University Press. Hardcover. Book Condition: New. Hardcover. 569 pages. Dimensions: 10.1in. x 7.1in. x 1.3in. Computer systems design is full of conundrums: Given a choice between a single machine with speed s , or n machines each with speed s_n , which should we choose? If both the arrival rate and service rate double, will the mean response time stay the same? Should systems really aim to balance load, or is this a convenient myth? If a scheduling policy favors one set of jobs, does it necessarily hurt some other jobs, or are these conservation laws being misinterpreted? Do greedy, shortest-delay, routing strategies make sense in a server farm, or is what's good for the individual disastrous for the system as a whole? How do high job size variability and heavy-tailed workloads affect the choice of a scheduling policy? How should one trade off energy and delay in designing a computer system? If 12 servers are needed to meet delay guarantees when the arrival rate is 9 jobs/sec, will we need 12,000 servers when the arrival rate is 9,000 jobs/sec? Tackling the questions that systems designers care about, this book brings queueing theory decisively back to computer science. The book...



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