1. Record Nr. UNINA9910808768703321

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Titolo	Modeling and analysis of telecommunications networks / / Jeremiah F. Hayes, Thimma V.J. Ganesh Babu
Pubbl/distr/stampa	Hoboken, N.J, : Wiley-Interscience, c2004
ISBN	9786610367979 9781280367977 1280367970 9780470303528 0470303522 9780471643395 0471643394 9780471643500 0471643505
Edizione	[1st ed.]
Descrizione fisica	1 online resource (415 p.)
Altri autori (Persone)	BabuThimma V. J. Ganesh
Disciplina	621.382/1
Soggetti	Telecommunication systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"A Wiley-Interscience Publication."
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	MODELING AND ANALYSIS OF TELECOMMUNICATIONS NETWORKS; CONTENTS; Preface; Retrieving Files from the Wiley FTP and Internet Sites; 1 Performance Evaluation in Telecommunications; 1.1 Introduction: The Telephone Network; 1.1.1 Customer Premises Equipment; 1.1.2 The Local Network; 1.1.3 Long-Haul Network; 1.1.4 Switching; 1.1.5 The Functional Organization of Network Protocols; 1.2 Approaches to Performance Evaluation; 1.3 Queueing Models; 1.3.1 Basic Form; 1.3.2 A Brief Historical Sketch; 1.4 Computational Tools; Further Reading; 2 Probability and Random Processes Review; 2.1 Basic Relations 2.1.1 Set Functions and the Axioms of Probability2.1.2 Conditional Probability and Independence; 2.1.3 The Law of Total Probability and Bayes' Rule; 2.2 Random Variables-Probability Distributions and Densities; 2.2.1 The Cumulative Distribution Function; 2.2.2 Discrete Random Variables; 2.2.3 Continuous Random Variables; 2.3 Joint

Distributions of Random Variables; 2.3.1 Probability Distributions; 2.3.2 Joint Moments; 2.3.3 Autocorrelation and Autocovariance Functions; 2.4 Linear Transformations; 2.4.1 Single Variable; 2.4.2 Sums of Random Variables; 2.5 Transformed Distributions
2.6 Inequalities and Bounds2.7 Markov Chains; 2.7.1 The Memoryless Property; 2.7.2 State Transition Matrix; 2.7.3 Steady-State Distribution; 2.8 Random Processes; 2.8.1 Definition: Ensemble of Functions; 2.8.2 Stationarity and Ergodicity; 2.8.3 Markov Processes; References; Exercises; 3 Application of Birth and Death Processes to Queueing Theory; 3.1 Elements of the Queueing Model; 3.2 Little's Formula; 3.2.1 A Heuristic; 3.2.2 Graphical Proof; 3.2.3 Basic Relationship for the Single-Server Queue; 3.3 The Poisson Process; 3.3.1 Basic Properties
3.3.2 Alternative Characterizations of the Poisson Process3.3.3 Adding and Splitting Poisson Processes; 3.3.4 Pure Birth Processes; 3.3.5 Poisson Arrivals See Time Averages (PASTA); 3.4 Birth and Death Processes: Application to Queueing; 3.4.1 Steady-State Solution; 3.4.2 Queueing Models; 3.4.3 The M/M/1 Queue-Infinite Waiting Room; 3.4.4 The M/M/1/L Queue-Finite Waiting Room; 3.4.5 The M/M/S Queue-Infinite Waiting Room; 3.4.6 The M/M/S/L Queue-Finite Waiting Room; 3.4.7 Finite Sources; 3.5 Method of Stages; 3.5.1 Laplace Transform and Averages; 3.5.2 Insensitivity Property of Erlang B
3.5.3 The Erlang B Blocking Formula: N Lines, Homogeneous TrafficReferences; Exercises; 4 Networks of Queues: Product Form Solution; 4.1 Introduction: Jackson Networks; 4.2 Reversibility: Burke's Theorem; 4.2.1 Reversibility Defined; 4.2.2 Reversibility and Birth and Death Processes; 4.2.3 Departure Process from the M/M/S Queue: Burke's Theorem; 4.3 Feedforward Networks; 4.3.1 A Two-Node Example; 4.3.2 Feedforward Networks: Application of Burke's Theorem; 4.3.3 The Traffic Equation; 4.4 Product Form Solution for Open Networks; 4.4.1 Flows Within Feedback Paths
4.4.2 Detailed Derivation for a Two-Node Network

Sommario/riassunto

This book covers at an advanced level mathematical methods for analysis of telecommunication networks. The book concentrates on various call models used in telecommunications such as quality of service (QoS) in packet-switched Internet Protocol (IP) networks, Asynchronous Transfer Mode (ATM), and Time Division Multiplexing (TDM). Professionals, researchers, and graduate and advanced undergraduate students of telecommunications will benefit from this invaluable guidebook.An Instructor's Manual presenting detailed solutions to all the problems in the book is available online from the Wil