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XNW92M - MCKEE JORDAN

This book is a definitive introduction to models of computation for the design of complex, heterogeneous systems. It has a particular focus on cyber-physical systems, which integrate computing, networking, and physical dynamics. The book captures more than twenty years of experience in the Ptolemy Project at UC Berkeley, which pioneered many design, modeling, and simulation techniques that are now in widespread use. All of the methods covered in the book are realized in the open source Ptolemy II modeling framework and are available for experimentation through links provided in the book. The book is suitable for engineers, scientists, researchers, and managers who wish to understand the rich possibilities offered by modern modeling techniques. The goal of the book is to equip the reader with a breadth of experience that will help in understanding the role that such techniques can play in design.

"This book gives a general coverage of learning management systems followed by a comparative analysis of the particular LMS products, review of technologies supporting different aspect of educational process, and, the best practices and methodologies for LMS-supported course delivery"--Provided by publisher.

This book surveys state-of-the-art optimization modeling for design, analysis, and management of wireless networks, such as cellular and wireless local area networks (LANs), and the services they deliver. The past two decades have seen a tremendous growth in the deployment and use of wireless networks. The current-generation wireless systems can provide mobile users with high-speed data services at rates substantially higher than those of the previous generation. As a result, the demand for mobile information services with high reliability, fast response times, and ubiquitous connectivity continues to increase rapidly. The optimization of system performance has become critically important both in terms of practical utility and commercial viability, and presents a rich area for research. In the editors' previous work on traditional wired networks, we have observed that designing low cost, survivable telecommunication networks involves extremely complicated processes. Commercial products available to help with this task typically have been based on simulation and/or proprietary heuristics. As demonstrated in this book, however, mathematical programming deserves a prominent place in the designer's toolkit. Convenient modeling languages and powerful optimization solvers have greatly facilitated the implementation of mathematical programming theory into the practice of commercial network design. These points are equally relevant and applicable in today's world of wireless network technology and design. But there are new issues as well: many wireless network design decisions, such as routing and facility/element location, must be dealt with in innovative ways that are unique and distinct from wired (fiber optic) networks. The book specifically treats the recent research and the use of modeling languages and network optimization techniques that are playing particularly important and distinctive roles in the wireless domain.

This book constitutes the refereed proceedings of the 8th International Conference on Intelligent Computing, ICIC 2012, held in Huangshan, China, in July 2012. The 85 revised full papers presented were carefully reviewed and selected from 753 submissions. The papers are organized in topical sections on neural networks, evolutionar learning and genetic algorithms, granular computing and rough sets, biology inspired computing and optimization, nature inspired computing and optimization, cognitive science and computational neuroscience, knowledge discovery and data mining, quantum computing, machine learning theory and methods, healthcare informatics theory and methods, biomedical informatics theory and methods, complex systems theory and methods, intelligent computing in signal processing, intelligent computing in image processing, intelligent computing in robotics, intelligent computing in computer vision, intelligent agent and web applications, special session on advances in information security 2012.

For more than 20 years, Network World has been the premier provider of information, intelligence and insight for network and IT executives responsible for the digital nervous systems of large organizations. Readers are responsible for designing, implementing and managing the voice, data and video systems their companies use to support everything from business critical applications to employee collaboration and electronic commerce.

The book, presenting the proceedings of the 2018 Future Technologies Conference (FTC 2018), is a remarkable collection of chapters covering a wide range of topics, including, but not limited to computing, electronics, artificial intelligence, robotics, security and communications and their real-world applications. The conference attracted a total of 503 submissions from pioneering researchers, scientists, industrial engineers, and students from all over the world. After a double-blind peer review process, 173 submissions (including 6 poster papers) have been selected to be included in these proceedings. FTC 2018 successfully brought together technology geniuses in one venue to not only present breakthrough research in future technologies but to also promote practicality and applications and an intra- and inter-field exchange of ideas. In the future, computing technologies will play a very important role in the convergence of computing, communication, and all other computational sciences and applications. And as a result it will also influence the future of science, engineering, industry, business, law, politics, culture, and medicine. Providing state-of-the-art intelligent methods and techniques for solving real-world problems, as well as a vision of the future research, this book is a valuable resource for all those interested in this area.

A comprehensive introduction to all facets of MPLS theory and practice Helps networking professionals choose the suitable MPLS application and design for their network Provides MPLS theory and relates to basic IOS configuration examples The Fundamentals Series from Cisco Press launches the basis to readers for understanding the purpose, application, and management of technologies MPLS has emerged as the new networking layer for service providers throughout the world. For many service providers and enterprises MPLS is a way of delivering new applications on their IP networks,

while consolidating data and voice networks. MPLS has grown to be the new default network layer for service providers and is finding its way into enterprise networks as well. This book focuses on the building blocks of MPLS (architecture, forwarding packets, LDP, MPLS and QoS, CEF, etc.). This book also reviews the different MPLS applications (MPLS VPN, MPLS Traffic Engineering, Carrying IPv6 over MPLS, AToM, VPLS, MPLS OAM etc.). You will get a comprehensive overview of all the aspects of MPLS, including the building blocks, its applications, troubleshooting and a perspective on the future of MPLS.

This book, one of the first of its kind, presents mechanisms, protocols, and system architectures needed to attain end-to-end Quality of Service over heterogeneous wired and wireless networks in the Internet.

An indispensable reference publication for telecommunication and information-industry professionals. Each year, the IEC brings together into one unique resource the most current thinking and practical experience of industry leaders around the world on a variety of topics facing their areas of specialization. This 700+ page reference tool is a must for executives, managers, engineers, analysts, and educators in all sectors of today's changing information industry.

Computer Networks: A Systems Approach, Fifth Edition, explores the key principles of computer networking, with examples drawn from the real world of network and protocol design. Using the Internet as the primary example, this best-selling and classic textbook explains various protocols and networking technologies. The systems-oriented approach encourages students to think about how individual network components fit into a larger, complex system of interactions. This book has a completely updated content with expanded coverage of the topics of utmost importance to networking professionals and students, including P2P, wireless, network security, and network applications such as e-mail and the Web, IP telephony and video streaming, and peer-to-peer file sharing. There is now increased focus on application layer issues where innovative and exciting research and design is currently the center of attention. Other topics include network design and architecture; the ways users can connect to a network; the concepts of switching, routing, and internetworking; end-to-end protocols; congestion control and resource allocation; and end-to-end data. Each chapter includes a problem statement, which introduces issues to be examined; shaded sidebars that elaborate on a topic or introduce a related advanced topic; What's Next? discussions that deal with emerging issues in research, the commercial world, or society; and exercises. This book is written for graduate or upper-division undergraduate classes in computer networking. It will also be useful for industry professionals retraining for network-related assignments, as well as for network practitioners seeking to understand the workings of network protocols and the big picture of networking. Completely updated content with expanded coverage of the topics of utmost importance to networking professionals and students, including P2P, wireless, security, and applications Increased focus on application layer issues where innovative and exciting research and design is currently the center of attention Free downloadable network simulation software and lab experiments manual available

This book comprehensively describes an end-to-end Internet of Things (IoT) architecture that is comprised of devices, network, compute, storage, platform, applications along with management and security components. It is organized into five main parts, comprising of a total of 11 chapters. Part I presents a generic IoT reference model to establish a common vocabulary for IoT solutions. This includes a detailed description of the Internet protocol layers and the Things (sensors and actuators) as well as the key business drivers to realize the IoT vision. Part II focuses on the IoT requirements that impact networking protocols and provides a layer-by-layer walkthrough of the protocol stack with emphasis on industry progress and key gaps. Part III introduces the concept of Fog computing and describes the drivers for the technology, its constituent elements, and how it relates and differs from Cloud computing. Part IV discusses the IoT services platform, the cornerstone of the solution followed by the Security functions and requirements. Finally, Part V provides a treatment of the topic of connected ecosystems in IoT along with practical applications. It then surveys the latest IoT standards and discusses the pivotal role of open source in IoT. "Faculty will find well-crafted questions and answers at the end of each chapter, suitable for review and in classroom discussion topics. In addition, the material in the book can be used by engineers and technical leaders looking to gain a deep technical understanding of IoT, as well as by managers and business leaders looking to gain a competitive edge and understand innovation opportunities for the future." Dr. Jim Spohrer, IBM "This text provides a very compelling study of the IoT space and achieves a very good balance between engineering/technology focus and business context. As such, it is highly-recommended for anyone interested in this rapidly-expanding field and will have broad appeal to a wide cross-section of readers, i.e., including engineering professionals, business analysts, university students, and professors." Professor Nasir Ghani, University of South Florida

For fast, easy modeling, this practical guide provides all the essential information you need to know. A wide range of topics is covered, including custom protocols, programming in C++, External Model Access (EMA) modeling and co-simulation with external systems, giving you the guidance not provided in the OPNET documentation. A set of high-level wrapper APIs is also included to simplify programming custom OPNET models, whether you are a newcomer to OPNET or an experienced user needing to model efficiently. From the basic to the advanced, you will find topics are easy to follow with theory kept to a minimum, many practical tips and answers to frequently asked questions spread throughout the book and numerous step-by-step case studies and real-world network scenarios included.

This book provides the practicing engineer with a concise listing of commercial and open-source modeling and simulation tools currently available including examples of implementing those tools for solving specific Modeling and Simulation examples. Instead of focusing on the underlying theory of

Modeling and Simulation and fundamental building blocks for custom simulations, this book compares platforms used in practice, and gives rules enabling the practicing engineer to utilize available Modeling and Simulation tools. This book will contain insights regarding common pitfalls in network Modeling and Simulation and practical methods for working engineers.

"An excellent book for those who are interested in learning the current status of research and development . . . [and] who want to get a comprehensive overview of the current state-of-the-art." —E-Streams This book provides up-to-date information on research and development in the rapidly growing area of networks based on the multihop ad hoc networking paradigm. It reviews all classes of networks that have successfully adopted this paradigm, pointing out how they penetrated the mass market and sparked breakthrough research. Covering both physical issues and applications, Mobile Ad Hoc Networking: Cutting Edge Directions offers useful tools for professionals and researchers in diverse areas wishing to learn about the latest trends in sensor, actuator, and robot networking, mesh networks, delay tolerant and opportunistic networking, and vehicular networks. Chapter coverage includes: Multihop ad hoc networking Enabling technologies and standards for mobile multihop wireless networking Resource optimization in multiradio multichannel wireless mesh networks QoS in mesh networks Routing and data dissemination in opportunistic networks Task farming in crowd computing Mobility models, topology, and simulations in VANET MAC protocols for VANET Wireless sensor networks with energy harvesting nodes Robot-assisted wireless sensor networks: recent applications and future challenges Advances in underwater acoustic networking Security in wireless ad hoc networks Mobile Ad Hoc Networking will appeal to researchers, developers, and students interested in computer science, electrical engineering, and telecommunications.

Computer Networks, 4E is the only introductory computer networking book written by authors who have had first-hand experience with many of the protocols discussed in the book, who have actually designed some of them as well, and who are still actively designing the computer networks today. This newly revised edition continues to provide an enduring, practical understanding of networks and their building blocks through rich, example-based instruction. The authors' focus is on the why of network design, not just the specifications comprising today's systems but how key technologies and protocols actually work in the real world to solve specific problems. The new edition makes less use of computer code to explain protocols than earlier editions. Moreover, this new edition shifts the focus somewhat higher in the protocol stack where there is generally more innovative and exciting work going on at the application and session layers than at the link and physical layers. * Completely updated with new sidebar discussions that cover the deployment status of protocols described in the book. * Addition of sizeable number of new exercises and solutions. * Downloadable Opnet network simulation software and lab experiments manual. * New and revised instructor support material, including Powerpoint slides, eps version of figures appearing in the text; sample exams; lecture notes; UNIX sockets programming assignments.

With ever-increasing demands on capacity, quality of service, speed, and reliability, current Internet systems are under strain and under review. Combining contributions from experts in the field, this book captures the most recent and innovative designs, architectures, protocols, and mechanisms that will enable researchers to successfully build the next-generation Internet. A broad perspective is provided, with topics including innovations at the physical/transmission layer in wired and wireless media, as well as the support for new switching and routing paradigms at the device and sub-system layer. The proposed alternatives to TCP and UDP at the data transport layer for emerging environments are also covered, as are the novel models and theoretical foundations proposed for understanding network complexity. Finally, new approaches for pricing and network economics are discussed, making this ideal for students, researchers, and practitioners who need to know about designing, constructing, and operating the next-generation Internet.

A Practical Handbook for OSPF Protocol Deployment and Management Discussion of OSPF, including strengths and weaknesses, helps readers make the right growth and design choices New case studies, configuration examples, and other IOS and OSPF reference sections are added to new edition to make OSPF easier to understand Coverage of management, troubleshooting, and technical overviews foster understanding of routing evolution and network design The Open Shortest Path First (OSPF) protocol is a non-proprietary Internet Gateway Protocol (IGP) for the TCP/IP family. It has quickly become the protocol of choice in larger Wide Area Network deployments by providing better performance and greater flexibility than its predecessor, Routing Information Protocol (RIP) provides. This greater flexibility leads to more complexity in configuring and troubleshooting OSPF networks. "OSPF Network Design Solutions, Second Edition," provides a thorough understanding of OSPF functionality can help networking engineers dramatically increase network performance, security, and the ease with which large scale networks are maintained. Expanded and updated, this new edition provides more case studies and configuration examples with a focus on OSPF/BGP integration from the service provider perspective. Also new Cisco IOS and OSPF features have been introduced since the first edition including opaque LSAs, multicasting, and OSPF flood suppression. In addition to the new topics being covered, an acronyms section as well as a complete Cisco IOS 12.0 reference section including show, config, and debug commands is also included. "OSPF Network Design Solutions, Second Edition" presents technology in common terms, enabling readers with varying levels of experience to benefit from it. Thomas M. Thomas II is a Senior Network Consultant for Hired Guns. Prior to his current position, Tom has held positions with Ericsson IP Infrastructure as a Senior Network Consultant, Mentor Technologies as an instructor, and with Cisco Systems as a Course Designer. Tom has also worked for MCI Managed Networks, AT and T Solutions, and the US Air Force. Tom is the Founder of NetCerts.com and author of OSPF Network Design Solutions (Cisco Press), Networking Dictionary (McGraw-Hill), and CCIE Exam Cram (Coriolis).

A comprehensive guide to designing and operating reliable server environments Keep your data center cool, clean, scalable, and secure Learn the five principles of effective data center design Avoid the natural and man-made hazards that can jeopardize a data center site Learn how to lay out key infrastructure objects within the data center for greatest efficiency, from buffer zones to server rows Apply proven installation methods by studying the sample illustrations of both overhead and under-floor systems Extract the best practices and design strategies for both in-room and standby electrical infrastructure Avoid accidental downtime, improve productivity, and ensure user safety Safeguard and streamline your network infrastructure with a well-organized physical hierarchy Understand the special challenges of retrofitting overburdened server environments Implement solutions from a wide array of sample illustrations and examples of essential data center signage Safeguard servers with operations standards for people working in or visiting the data center Download templates used by Cisco to design its data centers, customizable to square footage and geography Avoid excess construction costs by designing a data center that meets your needs today and for many years to come All data centers are unique, but they all share

the same mission: to protect your company's valuable information. Build the Best Data Center Facility for Your Business answers your individual questions in one flexible step-by-step reference guide. Benefit from the author's concise and practical approach to data center design and management. The author distills this complex topic by sharing his first-hand and worldwide experience and expertise. Regardless of your experience level, you can fill your knowledge gaps on how to safeguard your company's valuable equipment and intellectual property. This easy-to-navigate book is divided into two parts: Part I covers data center design and physical infrastructure details, and Part II covers data center management and operations. You can also access supplementary online materials for installation instructions, which include customizable data center design templates, written cabling specifications, and sample drawings. If you need a starting point for designing your first data center, regardless of size; if you need to prepare yourself with comprehensive strategies to retrofit or improve an existing one; or if you need proven methods to manage a data center for maximum productivity--this book is your readily accessible, comprehensive resource for answers and insights. Invest in the best future for your business by learning how to build and manage robust and productive data centers now. This book is part of the Networking Technology Series from Cisco Press, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

Focusing on the physical layer, Networking Fundamentals provides essential information on networking technologies that are used in both wired and wireless networks designed for local area networks (LANs) and wide-area networks (WANs). The book starts with an overview of telecommunications followed by four parts, each including several chapters. Part I explains the principles of design and analysis of information networks at the lowest layers. It concentrates on the characteristics of the transmission media, applied transmission and coding, and medium access control. Parts II and III are devoted to detailed descriptions of important WANs and LANs respectively with Part II describing the wired Ethernet and Internet as well as cellular networks while Part III covers popular wired LANs and wireless LANs (WLANs), as well as wireless personal area network (WPAN) technologies. Part IV concludes by examining security, localization and sensor networking. The partitioned structure of the book allows flexibility in teaching the material, encouraging the reader to grasp the more simple concepts and to build on these foundations when moving onto more complex information. Networking Fundamentals contains numerous illustrations, case studies and tables to supplement the text, as well as exercises with solutions at the end of each chapter. There is also a companion website with password protected solutions manual for instructors along with other useful resources. Provides a unique holistic approach covering wireless communication technologies, wired technologies and networking One of the first textbooks to integrate all aspects of information networks while placing an emphasis on the physical layer and systems engineering aspects Contains numerous illustrations, case studies and tables to supplement the text, as well as exercises with solutions at the end of each chapter Companion website with password protected solutions manual and other useful resources

Wireless sensor networks are penetrating our daily lives, and they are starting to be deployed even in an industrial environment. The research on such industrial wireless sensor networks (IWSNs) considers more stringent requirements of robustness, reliability, and timeliness in each network layer. This Special Issue presents the recent research result on industrial wireless sensor networks. Each paper in this Special Issue has unique contributions in the advancements of industrial wireless sensor network research and we expect each paper to promote the relevant research and the deployment of IWSNs.

"This book offers concepts of the teaching and learning of computer networking and hardware by offering fundamental theoretical concepts illustrated with the use of interactive practical exercises"--Provided by publisher.

The Art of Network Architecture Business-Driven Design The business-centered, business-driven guide to architecting and evolving networks The Art of Network Architecture is the first book that places business needs and capabilities at the center of the process of architecting and evolving networks. Two leading enterprise network architects help you craft solutions that are fully aligned with business strategy, smoothly accommodate change, and maximize future flexibility. Russ White and Denise Donohue guide network designers in asking and answering the crucial questions that lead to elegant, high-value solutions. Carefully blending business and technical concerns, they show how to optimize all network interactions involving flow, time, and people. The authors review important links between business requirements and network design, helping you capture the information you need to design effectively. They introduce today's most useful models and frameworks, fully addressing modularity, resilience, security, and management. Next, they drill down into network structure and topology, covering virtualization, overlays, modern routing choices, and highly complex network environments. In the final section, the authors integrate all these ideas to consider four realistic design challenges: user mobility, cloud services, Software Defined Networking (SDN), and today's radically new data center environments. • Understand how your choices of technologies and design paradigms will impact your business • Customize designs to improve workflows, support BYOD, and ensure business continuity • Use modularity, simplicity, and network management to prepare for rapid change • Build resilience by addressing human factors and redundancy • Design for security, hardening networks without making them brittle • Minimize network management pain, and maximize gain • Compare topologies and their tradeoffs • Consider the implications of network virtualization, and walk through an MPLS-based L3VPN example • Choose routing protocols in the context of business and IT requirements • Maximize mobility via ILNP, LISP, Mobile IP, host routing, MANET, and/or DDNS • Learn about the challenges of removing and changing services hosted in cloud environments • Understand the opportunities and risks presented by SDNs • Effectively design data center control planes and topologies

Network Simulation Experiments Manual, Third Edition, is a practical tool containing detailed, simulation-based experiments to help students and professionals learn about key concepts in computer networking. It allows the networking professional to visualize how computer networks work with the aid of a software tool called OPNET to simulate network function. OPNET provides a virtual environment for modeling, analyzing, and predicting the performance of IT infrastructures, including applications, servers, and networking technologies. It can be downloaded free of charge and is easy to install. The book's simulation approach provides a virtual environment for a wide range of desirable features, such as modeling a network based on specified criteria and analyzing its performance under different scenarios. The experiments include the basics of using OPNET IT Guru Academic Edition; operation of the Ethernet network; partitioning of a physical network into separate logical networks using virtual local area networks (VLANs); and the basics of network design. Also covered are congestion control algorithms implemented by the Transmission Control Protocol (TCP); the effects of various queuing disciplines on packet delivery and delay for different services; and the role of firewalls and virtual private networks (VPNs) in providing se-

curity to shared public networks. Each experiment in this updated edition is accompanied by review questions, a lab report, and exercises. Networking designers and professionals as well as graduate students will find this manual extremely helpful. Updated and expanded by an instructor who has used OPNET simulation tools in his classroom for numerous demonstrations and real-world scenarios. Software download based on an award-winning product made by OPNET Technologies, Inc., whose software is used by thousands of commercial and government organizations worldwide, and by over 500 universities. Useful experimentation for professionals in the workplace who are interested in learning and demonstrating the capability of evaluating different commercial networking products, i.e., Cisco routers. Covers the core networking topologies and includes assignments on Switched LANs, Network Design, CSMA, RIP, TCP, Queuing Disciplines, Web Caching, etc.

This is the first book offering an in-depth and comprehensive IoT network simulation, supported by OPNET tool. Furthermore, the book presents the simulations of IoT in general, not limited by OPNET. The authors provide rich OPNET IoT simulation codes, with detailed explanation regarding the functionalities of the model. These codes can facilitate readers' fast implementation, and the shared model can guide readers through developing their own research. This book addresses various versions of Internet of Things (IoT), including human-centric IoT, green IoT, Narrow band IoT, Smart IoT, IoT-Cloud integration. The introduced OPNET IoT simulation provides a comprehensive platform to simulate above-mentioned IoT systems. Besides, this book introduces OPNET semi-physical simulation in detail. Based on this technology, simulated IoT and practical cloud are seamlessly connected with each other. On top of this "IoT-cloud-integration" semi-physical simulation environment, various smart IoT applications can be realized.

This book constitutes, together with its companion LNCS 2094, the refereed proceedings of the First International Conference on Networking, ICN 2001, held in Colmar, France in June 2001. The 168 papers presented were carefully reviewed and selected from around 300 submissions. The proceedings offers topical sections on third and fourth generation, Internet, traffic control, mobile and wireless IP, differentiated services, GPRS and cellular networks, WDM and optical networks, differentiated and integrated services, wireless ATM multicast, real-time traffic, wireless, routing, traffic analysis, traffic modeling and simulation, user applications, mobility management, TCP analysis, QoS, ad hoc networks, security, MPLS, switches, CORBA, mobile agents, ATM networks, voice over IP, active networks, video communications, and modelization.

Objectives The purpose of Top-Down Network Design, Third Edition, is to help you design networks that meet a customer's business and technical goals. Whether your customer is another department within your own company or an external client, this book provides you with tested processes and tools to help you understand traffic flow, protocol behavior, and internetworking technologies. After completing this book, you will be equipped to design enterprise networks that meet a customer's requirements for functionality, capacity, performance, availability, scalability, affordability, security, and manageability. **Audience** This book is for you if you are an internetworking professional responsible for designing and maintaining medium- to large-sized enterprise networks. If you are a network engineer, architect, or technician who has a working knowledge of network protocols and technologies, this book will provide you with practical advice on applying your knowledge to internetwork design. This book also includes useful information for consultants, systems engineers, and sales engineers who design corporate networks for clients. In the fast-paced presales environment of many systems engineers, it often is difficult to slow down and insist on a top-down, structured systems analysis approach. Wherever possible, this book includes shortcuts and assumptions that can be made to speed up the network design process. Finally, this book is useful for undergraduate and graduate students in computer science and information technology disciplines. Students who have taken one or two courses in networking theory will find Top-Down Network Design, Third Edition, an approachable introduction to the engineering and business issues related to developing real-world networks that solve typical business problems. Changes for the Third Edition Networks have changed in many ways since the second edition was published. Many legacy technologies have disappeared and are no longer covered in the book. In addition, modern networks have become multifaceted, providing support for numerous bandwidth-hungry applications and a variety of devices, ranging from smart phones to tablet PCs to high-end servers. Modern users expect the network to be available all the time, from any device, and to let them securely collaborate with coworkers, friends, and family. Networks today support voice, video, high-definition TV, desktop sharing, virtual meetings, online training, virtual reality, and applications that we can't even imagine that brilliant college students are busily creating in their dorm rooms. As applications rapidly change and put more demand on networks, the need to teach a systematic approach to network design is even more important than ever. With that need in mind, the third edition has been retooled to make it an ideal textbook for college students. The third edition features review questions and design scenarios at the end of each chapter to help students learn top-down network design. To address new demands on modern networks, the third edition of Top-Down Network Design also has updated material on the following topics: ζ Network redundancy ζ Modularity in network designs ζ The Cisco SAFE security reference architecture ζ The Rapid Spanning Tree Protocol (RSTP) ζ Internet Protocol version 6 (IPv6) ζ Ethernet scalability options, including 10-Gbps Ethernet and Metro Ethernet ζ Network design and management tools

Foreword -- Foreword to the First Printing -- Preface -- Chapter 1 -- Introduction -- Chapter 2 -- Message Switching Layer -- Chapter 3 -- Deadlock, Live-lock, and Starvation -- Chapter 4 -- Routing Algorithms -- Chapter 5 -- CollectiveCommunicationSupport -- Chapter 6 -- Fault-Tolerant Routing -- Chapter 7 -- Network Architectures -- Chapter 8 -- Messaging Layer Software -- Chapter 9 -- Performance Evaluation -- Appendix A -- Formal Definitions for Deadlock Avoidance -- Appendix B -- Acronyms -- References -- Index.

The lab exercises contained in the network simulation experiments manual are based on the OPNET simulator (v. 9), a network simulation tool that was originally developed at M.I.T. It provides networking professionals with the option of implementing experiments from their homes or workplaces and the lab manual comes with directions for downloading the free easy-to-install software (special version to this book only--see system requirements below). These labs run through simulations closely tied to the material in the text so that you can visualize the discussions covering core network topologies. Various scenarios are presented within each topology, and review questions and a lab report exercise accompany each lab experiment. The experiments also follows the organization of Computer Networks, Third Edition, by Larry Peterson and Bruce Davie. System requirements

for using the OPNET IT Guru Academic Edition release 9.1: -Intel Pentium III, 4 or compatible (500 MHz or better) -256 MB RAM -400 MB disk space - Display: 1024 x 768 or higher resolution, 256 or more colors -The English language version of the following operating systems are supported: Microsoft Windows NT (Service Pack 3, 5, or 6a) Windows 2000 (Service Pack 1 and 2 are supported but not required) Windows XP (Service Pack 1 is required) *Written by an instructor who has used OPNET simulation tools in his classroom for numerous demonstrations and real-world scenarios. *Software download based on an award-winning product made by OPNET Technologies, Inc., whose software is used by thousands of commercial and government organizations worldwide, and by over 500 universities. *Useful experimentation for professionals in the workplace who are interested in learning & demonstrating the capability of evaluating different commercial networking products, i.e., Cisco routers. *Covers the core networking topologies and includes assignments on the ethernet, token rings, ATM, Switched LANs, Network Design, RIP, TCP, Queuing Disciplines, QoS, etc. *Instructors can download the solutions manual to the exercises in the Network Simulation Experiments Manual by clicking on the "Instructors" resource link in the upper right corner of the screen and searching for author "Aboelela."

This book provides you with a thorough introduction to wireless access and local networks, covers broadband mobile wireless access systems, and details mobile and broadband wireless local area networks. This forward-looking reference focuses on cutting-edge mobile WiMax, WiFi, and WiBro technologies, including in-depth design and implementation guidance.

This two volume set constitutes the refereed post-conference proceedings of the Second International Conference on Machine Learning and Intelligent Communications, MLICOM 2017, held in Weihai, China, in August 2017. The 143 revised full papers were carefully selected from 225 submissions. The papers are organized thematically in machine learning, intelligent positioning and navigation, intelligent multimedia processing and security, intelligent wireless mobile network and security, cognitive radio and intelligent networking, intelligent internet of things, intelligent satellite communications and networking, intelligent remote sensing, visual computing and three-dimensional modeling, green communication and intelligent networking, intelligent ad-hoc and sensor networks, intelligent resource allocation in wireless and cloud networks, intelligent signal processing in wireless and optical communications, intelligent radar signal processing, intelligent cooperative communications and networking.

Using simple language, this text explains the properties of light, its interaction with matter, and how it is used to develop optical components such as filters and multiplexers that have applications in optical communications. The text also introduces the evolving dense wavelength division multiplexing (DWDM) technology and communications systems.

A crucial step during the design and engineering of communication systems is the estimation of their performance and behavior; especially for mathematically complex or highly dynamic systems network simulation is particularly useful. This book focuses on tools, modeling principles and state-of-the-art models for discrete-event based network simulations, the standard method applied today in academia and industry for performance evaluation of new network designs and architectures. The focus of the tools part is on two distinct simulation engines: OmNet++ and ns-3, while it also deals with issues like parallelization, software integration and hardware simulations. The parts dealing with modeling and models for network simulations are split into a wireless section and a section dealing with higher layers. The wireless section covers all essential modeling principles for dealing with physical layer, link layer and wireless channel behavior. In addition, detailed models for prominent wireless systems like IEEE 802.11 and IEEE 802.16 are presented. In the part on higher layers, classical modeling approaches for the network layer, the transport layer and the application layer are presented in addition to modeling approaches for peer-to-peer networks and topologies of networks. The modeling parts are accompanied with catalogues of model implementations for a large set of different simulation engines. The book is aimed at master students and PhD students of computer science and electrical engineering as well as at researchers and practitioners from academia and industry that are dealing with network simulation at any layer of the protocol stack.

Enterprise Network Testing Testing Throughout the Network Lifecycle to Maximize Availability and Performance Andy Sholomon, CCIE® No. 15179 Tom Kunath, CCIE No. 1679 The complete guide to using testing to reduce risk and downtime in advanced enterprise networks Testing has become crucial to meeting enterprise expectations of near-zero network downtime. Enterprise Network Testing is the first comprehensive guide to all facets of enterprise network testing. Cisco enterprise consultants Andy Sholomon and Tom Kunath offer a complete blueprint and best-practice methodologies for testing any new network system, product, solution, or advanced technology. Sholomon and Kunath begin by explaining why it is important to test and how network professionals can leverage structured system testing to meet specific business goals. Then, drawing on their extensive experience with enterprise clients, they present several detailed case studies. Through real-world examples, you learn how to test architectural "proofs of concept," specific network features, network readiness for use, migration processes, security, and more. Enterprise Network Testing contains easy-to-adapt reference test plans for branches, WANs/MANs, data centers, and campuses. The authors also offer specific guidance on testing many key network technologies, including MPLS/VPN, QoS, VoIP, video, IPsec VPNs, advanced routing (OSPF, EIGRP, BGP), and Data Center Fabrics. \S Understand why, when, and how you should test your network \S Use testing to discover critical network design flaws \S Incorporate structured systems testing into enterprise architecture strategy \S Utilize testing to improve decision-making throughout the network lifecycle \S Develop an effective testing organization and lab facility \S Choose and use test services providers \S Scope, plan, and manage network test assignments \S Leverage the best commercial, free, and IOS test tools \S Successfully execute test plans, including crucial low-level details \S Minimize the equipment required to test large-scale networks \S Identify gaps in network readiness \S Validate and refine device configurations \S Certify new hardware, operating systems, and software features \S Test data center performance and scalability \S Leverage test labs for hands-on technology training This book is part of the Networking Technology Series from Cisco Press®, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.