Computer Networks Principles Technologies And Protocols

Communication Networks: Principles and Practice is a simple and jargon-free presentation on the core concepts of networking. The book adopts a novel approach, wherein each chapter first details a particular concept of networking and then explains it using examples from contemporary technologies like TCP/IP, ATM, 3G Networks, etc.Divided in the following three parts, the book covers the important topics of communication, networking, and computer networks:

Master Modern Networking by Understanding and Solving Real Problems Computer Networking Problems and Solutions offers a new approach to understanding networking that not only illuminates current systems but prepares readers for whatever comes next. Its problem-solving approach reveals why modern computer networks and protocols are designed as they are, by explaining the problems any protocol or system must overcome, considering common solutions, and showing how those solutions have been implemented in new and mature protocols. Part I considers data transport (the data plane). Part II covers protocols used to discover and use topology and reachability information (the control plane). Part III considers several common network designs and architectures, including data center fabrics, MPLS cores, and modern Software-Defined Wide Area Networks (SD-WAN). Principles that underlie technologies such as Software Defined Networks (SDNs) are considered throughout, as solutions to problems faced by all networking technologies. This guide is ideal for beginning network engineers, students of computer networking, and experienced engineers seeking a deeper understanding of the technologies they use every day. Whatever your background, this book will help you quickly recognize problems and solutions that constantly recur, and apply this knowledge to new technologies and environments. Coverage Includes · Data and networking transport · Lower- and higher-level transports and interlayer discovery · Packet switching · Quality of Service (QoS) · Virtualized networks and services · Network topology discovery · Unicast loop free routing · Reacting to topology changes · Distance vector control planes, link state, and path vector control · Control plane policies and centralization · Failure domains · Securing networks and transport · Network design patterns · Redundancy and resiliency · Troubleshooting · Network disaggregation · Automating network management · Cloud computing · Networking the Internet of Things (IoT) · Emerging trends and technologies

Included are numerous Challenge Exercises, which allow students to gain hands-on experience with networking related tools and utilities, and Challenge Scenarios.

If a network is not secure, how valuable is it? Introduction to Computer Networks and Cybersecurity takes an integrated approach to networking and cybersecurity, highlighting the interconnections so that you quickly understand the complex design issues in modern networks. This full-color book uses a wealth of examples and illustrations to effective

"This book provides academia and organizations insights into practical and applied solutions, frameworks, technologies, and implementations for situational awareness in computer networks"--Provided by publisher.

This book provides professionals with a fresh and comprehensive survey of the entire field of computer networks and Internet technology—including an up-to-date report of leading-edge technologies. TCP/IP, network security, Internet protocols, integrated and differentiated services, TCP performance, congestion in data networks, network management, and more. For programmers, systems engineers, network designers, and others involved in the design of data communications and networking products; product marketing personnel; and data processing personnel who want up-to-date coverage of a broad survey of topics in networking, Internet technology and protocols, and standards.

This is a comprehensive guide covering both the theory of basic networking technologies as well as practical solutions to networking problems. Networking concepts explained plainly with emphasis on how networks work together Practical solutions backed up with examples and case studies Balance of topics reflects modern environments Instructor and Student book site support including motivational courseware The use of game theoretic techniques is playing an increasingly important role in the network design domain. Understanding the background, concepts, and principles in using game theory approaches is necessary for engineers in network design. Game Theory Applications in Network Design provides the basic idea of game theory and the fundamental understanding of game theoretic interactions among network entities. The material in this book also covers recent advances and open issues, offering game theoretic solutions for specific network design issues. This publication will benefit students, educators, research strategists, scientists, researchers, and engineers in the field of network design.

Appropriate for a first course on computer networking, this textbook describes the architecture and function of the application, transport, network, and link layers of the internet protocol stack, then examines audio and video networking applications, the underpinnings of encryption and network security, and the key issues of network management. Th

This book systematically summarizes the fundamentals and various technologies in both terrestrial radio wireless networks and underwater acoustic networks (UWANs). It addresses the basic issues frequently investigated in terrestrial radio wireless networks and the key technologies suitable for the newly developing research area of UWANs. Starting with a review of our current understanding of wireless networks, it then introduces the principles of the main technologies, including error control, medium access control (MAC) protocols, routing protocols, end-to-end transmission control and mobility issues as well as network security for terrestrial radio wireless networks, and offers detailed surveys of these technologies for UWANs. Providing readers with the basic knowledge of terrestrial radio wireless networking technologies and raising readers' awareness of the developing topic of UWANs in ocean , it is a valuable resource for researchers and practitioners in terrestrial radio wireless networks and UWANs.

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

CD-ROM contains: Example programs and files -- Demonstration version of LanExplorer.

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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

Cryptography is a vital technology that underpins the security of information in computer networks. This book presents a comprehensive introduction to the role that cryptography plays in providing information security for everyday technologies such as the Internet, mobile phones, Wi-Fi networks, payment cards, Tor, and Bitcoin. This book is intended to be introductory, self-contained, and widely accessible. It is suitable as a first read on cryptography. Almost no prior knowledge of mathematics is required since the book deliberately avoids the details of the mathematics techniques underpinning cryptographic mechanisms. Instead our focus will be on what a normal user or practitioner of information security needs to know about cryptography in order to understand the design and use of everyday cryptographic applications. By focusing on the fundamental principles of modern cryptography rather than the technical details of current cryptographic technology, the main part this book is relatively timeless, and illustrates the application of these principles by considering a number of contemporary applications of cryptography. Following the revelations of former NSA contractor Edward Snowden, the book considers the wider societal impact of use of cryptography and strategies for addressing this. A reader of this book will not only be able to understand the everyday use of cryptography, but also be able to interpret future developments in this fascinating and crucially important area of technology.

Today, the internet and computer networking are essential parts of business, learning, and personal communications and entertainment. Virtually all messages or transactions sent over the internet are carried using internet infrastructure- based on advanced internet protocols. Advanced internet protocols ensure that both public and private networks operate with maximum performance, security, and flexibility. This book is intended to provide a comprehensive technical overview and survey of advanced internet protocols, first providing a solid introduction and going on to discuss internetworking technologies, architectures and protocols. The book also shows application of the concepts in next generation networks and discusses protection and restoration, as well as various tunnelling protocols and applications. The book ends with a thorough discussion of emerging topics.

There are many books on computers, networks, and software engineering but none that integrate the three with applications. Integration is important because, increasingly, software dominates the performance, reliability, maintainability, and availability of complex computer and systems. Books on software engineering typically portray software as if it exists in a vacuum with no relationship to the wider system. This is wrong because a system is more than software. It is comprised of people, organizations, processes, hardware, and software. All of these components must be considered in an integrative fashion when designing systems. On the other hand, books on computers and networks do not demonstrate a deep understanding of the intricacies of developing software. In this book you will learn, for example, how to quantitatively analyze the performance, reliability, maintainability, and availability of computers, networks, and software in relation to the total system. Furthermore, you will learn how to evaluate and mitigate the risk of deploying integrated systems. You will learn how to apply many models dealing with the optimization of systems. Numerous quantitative examples are provided to help you understand and interpret model results. This book can be used as a first year graduate course in computer, network, and software engineering; as an on-the-job reference for computer, network, and software engineers; and as a reference for these disciplines.

Network Security and Cryptography introduces the basic concepts in computer networks and the latest trends and technologies in cryptography and network security. The book is a definitive guide to the principles and techniques of cryptography and network security, and introduces basic concepts in computer networks such as classical cipher schemes, public key cryptography, authentication schemes, pretty good privacy, and Internet security. It features the latest material on emerging technologies, related to IoT, cloud computing, SCADA, blockchain, smart grid, big data analytics, and more. Primarily intended as a textbook for courses in computer science and electronics & communication, the book also serves as a basic reference and refresher for professionals in these areas. FEATURES: • Includes the latest material on emerging technologies, related to IoT, cloud computing, smart grid, big data analytics, blockchain, and more • Features separate chapters on the mathematics related to network security and cryptography • Introduces basic concepts in computer networks including classical cipher schemes, public key cryptography, authentication schemes, pretty good privacy, Internet security services, and system security • Includes end of chapter review questions

Everything you need to set up and maintain large or small networks Barrie Sosinsky Networking Bible Create a secure network for home or enterprise Learn basic building blocks and standards Set up for broadcasting, streaming, and more The book you need to succeed! Your A-Z guide to networking essentials Whether you're setting up a global infrastructure or just networking two computers at home, understanding of every part of the process is crucial to the ultimate success of your system. This comprehensive book is your complete, step-by-step guide to networking—from different architectures and hardware to security, diagnostics, Web services, and much more. Packed with practical, professional techniques and the very latest information, this is the go-to resource you need to succeed. Demystify the basics: network stacks, bus architectures, mapping, and bandwidth Get up to speed on servers, interfaces, routers, and other necessary hardware Explore LANs, WANs, Wi-Fi, TCP/IP, and other types of networks Set up domains, directory services, file services, caching, and mail protocols Enable broadcasting, multicasting, and streaming media Deploy VPNs, firewalls, encryption, and other security methods Perform diagnostics and troubleshoot your systems

There are hundreds--if not thousands--of techniques used to compromise both Windows and Unix-based systems. Malicious code and new exploit scripts are released on a daily basis, and each evolution becomes more and more sophisticated. Keeping up with the myriad of systems used by hackers in the wild is a formidable task, and scrambling to patch each potential vulnerability or address each new attack one-by-one is a bit like emptying the Atlantic with paper cup.If you're a network administrator, the pressure is on you to defend your systems from attack. But short of devoting your life to becoming a security expert, what can you

do to ensure the safety of your mission critical systems? Where do you start?Using the steps laid out by professional security analysts and consultants to identify and assess risks, Network Security Assessment offers an efficient testing model that an administrator can adopt, refine, and reuse to create proactive defensive strategies to protect their systems from the threats that are out there, as well as those still being developed.This thorough and insightful guide covers offensive technologies by grouping and analyzing them at a higher level--from both an offensive and defensive standpoint--helping administrators design and deploy networks that are immune to offensive exploits, tools, and scripts. Network administrators who need to develop and implement a security assessment program will find everything they're looking for--a proven, expert-tested methodology on which to base their own comprehensive program--in this time-saving new book.

Addressing the fundamental technologies and theories associated with designing complex communications systems and networks, Principles of Communications Networks and Systems provides models and analytical methods for evaluating their performance. Including both the physical layer (digital transmission and modulation) and networking topics, the quality of service concepts belonging to the different layers of the protocol stack are interrelated to form a comprehensive picture. The book is designed to present the material in an accessible but rigorous manner. It jointly addresses networking and transmission aspects following a unified approach and using a bottom up style of presentation, starting from requirements on transmission links all the way up to the corresponding quality of service at network and application layers. The focus is on presenting the material in an integrated and systematic fashion so that students will have a clear view of all the principal aspects and of how they interconnect with each other. A comprehensive introduction to communications systems and networks, addressing both network and transmission topics Structured for effective learning, with basic principles and technologies being introduced before more advanced ones are explained Features examples of existing systems and recent standards as well as advanced digital modulation techniques such as CDMA and OFDM Contains tools to help the reader in the design and performance analysis of modern communications systems Provides problems at the end of each chapter, with answers on an accompanying website

Leading networking authority Douglas Comer presents a wide-ranging, self-contained tour of the concepts, principles, and technologies that enable today's Internet to support applications ranging from web browsing to telephony and multimedia. Comer begins by illuminating the applications and facilities offered by today's Internet. Next, he systematically introduces the underlying network technologies and protocols that make them possible. With these concepts and technologies established, he introduces several of the most important contemporary issues faced by network implementers and managers, including quality of service, Internet telephony, multimedia, network security, and network management. Comer has carefully designed this book to support both top-down and bottom-up teaching approaches. Students need no background in operating systems, and no sophisticated math: Comer relies throughout on figures, drawings, examples, and analogies, not mathematical proofs.

Principles of Computer Networks and Communications provides a blend of foundation material and historical context that follows a developmental approach to understanding network and communications technology. Following a discourse that keeps the business student's needs squarely in mind, M. Barry Dumas and Morris Schwartz create a text that allows the student to develop a comprehension of the subject matter and an overall appreciation for the telecommunications field.

"To design future networks that are worthy of society's trust, we must put the 'discipline' of computer networking on a much stronger foundation. This book rises above the considerable minutiae of today's networking technologies to emphasize the long-standing mathematical underpinnings of the field." -Professor Jennifer Rexford, Department of Computer Science, Princeton University "This book is exactly the one I have been waiting for the last couple of years. Recently, I decided most students were already very familiar with the way the net works but were not being taught the fundamentals-the math. This book contains the knowledge for people who will create and understand future communications systems." -Professor Jon Crowcroft, The Computer Laboratory, University of Cambridge The Essential Mathematical Principles Required to Design, Implement, or Evaluate Advanced Computer Networks Students, researchers, and professionals in computer networking require a firm conceptual understanding of its foundations. Mathematical Foundations of Computer Networking provides an intuitive yet rigorous introduction to these essential mathematical principles and techniques. Assuming a basic grasp of calculus, this book offers sufficient detail to serve as the only reference many readers will need. Each concept is described in four ways: intuitively; using appropriate mathematical notation; with a numerical example carefully chosen for its relevance to networking; and with a numerical exercise for the reader. The first part of the text presents basic concepts, and the second part introduces four theories in a progression that has been designed to gradually deepen readers' understanding. Within each part, chapters are as self-contained as possible. The first part covers probability; statistics; linear algebra; optimization; and signals, systems, and transforms. Topics range from Bayesian networks to hypothesis testing, and eigenvalue computation to Fourier transforms. These preliminary chapters establish a basis for the four theories covered in the second part of the book: queueing theory, game theory, control theory, and information theory. The second part also demonstrates how mathematical concepts can be applied to issues such as contention for limited resources, and the optimization of network responsiveness, stability, and throughput.

This fully revised and updated new edition of the definitive text/reference on computer network and information security presents a comprehensive guide to the repertoire of security tools, algorithms and best practices mandated by the technology we depend on. Topics and features: highlights the magnitude of the vulnerabilities, weaknesses and loopholes inherent in computer networks; discusses how to develop effective security solutions, protocols, and best practices for the modern computing environment; examines the role of legislation, regulation, and enforcement in securing computing and mobile systems; describes the burning security issues brought about by the advent of the Internet of Things and the eroding boundaries between enterprise and home networks (NEW); provides both quickly workable and more thought-provoking exercises at the end of each chapter, with one chapter devoted entirely to hands-on exercises; supplies additional support materials for instructors at an associated website.

Computers at Risk presents a comprehensive agenda for developing nationwide policies and practices for computer security. Specific recommendations are provided for industry and for government agencies engaged in computer security activities. The volume also outlines problems and opportunities in computer security research, recommends ways to improve the research infrastructure, and suggests topics for investigators. The book explores the diversity of the field, the need to engineer countermeasures based on speculation of what experts think computer attackers may do next, why the technology community has failed to respond to the need for enhanced security systems, how innovators could be encouraged to bring more options to the marketplace, and balancing the importance of security against the right of privacy.

Taking a unique "engineering" approach that will help readers gain a grasp of not just how but also why networks work the way

they do, this book includes the very latest network technology--including the first practical treatment of Asynchronous Transfer Mode (ATM). The CD-ROM contains an invaluable network simulator.

This handbook introduces the basic principles and fundamentals of cyber security towards establishing an understanding of how to protect computers from hackers and adversaries. The highly informative subject matter of this handbook, includes various concepts, models, and terminologies along with examples and illustrations to demonstrate substantial technical details of the field. It motivates the readers to exercise better protection and defense mechanisms to deal with attackers and mitigate the situation. This handbook also outlines some of the exciting areas of future research where the existing approaches can be implemented. Exponential increase in the use of computers as a means of storing and retrieving security-intensive information, requires placement of adequate security measures to safeguard the entire computing and communication scenario. With the advent of Internet and its underlying technologies, information security aspects are becoming a prime concern towards protecting the networks and the cyber ecosystem from variety of threats, which is illustrated in this handbook. This handbook primarily targets professionals in security, privacy and trust to use and improve the reliability of businesses in a distributed manner, as well as computer scientists and software developers, who are seeking to carry out research and develop software in information and cyber security. Researchers and advanced-level students in computer science will also benefit from this reference.

Modeling and Simulation of Computer Networks and Systems: Methodologies and Applications introduces you to a broad array of modeling and simulation issues related to computer networks and systems. It focuses on the theories, tools, applications and uses of modeling and simulation in order to effectively optimize networks. It describes methodologies for modeling and simulation of new generations of wireless and mobiles networks and cloud and grid computing systems. Drawing upon years of practical experience and using numerous examples and illustrative applications recognized experts in both academia and industry, discuss: Important and emerging topics in computer networks and systems including but not limited to; modeling, simulation, analysis and security of wireless and mobiles networks especially as they relate to next generation wireless networks Methodologies, strategies and tools, and strategies needed to build computer networks and systems modeling and simulation from the bottom up Different network performance metrics including, mobility, congestion, quality of service, security and more... Modeling and Simulation of Computer Networks and Systems is a must have resource for network architects, engineers and researchers who want to gain insight into optimizing network performance through the use of modeling and simulation. Discusses important and emerging topics in computer networks and Systems including but not limited to; modeling, simulation, analysis and security of wireless and mobiles networks especially as they relate to next generation wireless networks Provides the necessary methodologies, strategies and tools needed to build computer networks and systems modeling and simulation from the bottom up Includes comprehensive review and evaluation of simulation tools and methodologies and different network performance metrics including mobility, congestion, quality of service, security and more

This book demystifies the amazing architecture and protocols of computers as they communicate over the Internet. While very complex, the Internet operates on a few relatively simple concepts that anyone can understand. Networks and networked applications are embedded in our lives. Understanding how these technologies work is invaluable. This book was written for everyone - no technical knowledge is required!While this book is not specifically about the Network+ or CCNA certifications, it as a way to give students interested in these certifications a starting point.

Original textbook (c) October 31, 2011 by Olivier Bonaventure, is licensed under a Creative Commons Attribution (CC BY) license made possible by funding from The Saylor Foundation's Open Textbook Challenge in order to be incorporated into Saylor's collection of open courses available at: http: //www.saylor.org. Free PDF 282 pages at https: //www.textbookequity.org/bonaventure-computer-networking-principles-protocols-and-practice/ This open textbook aims to fill the gap between the open-source implementations and the open-source network specifications by providing a detailed but pedagogical description of the key principles that guide the operation of the Internet. 1 Preface 2 Introduction 3 The application Layer 4 The transport layer 5 The network layer 6 The datalink layer and the Local Area Networks 7 Glossary 8 Bibliography COMPUTER NETWORKS: PRINCIPLES,TECHNOLOGIES AND PROTOCOLS FOR NETWORK DESIGNJohn Wiley & Sons

This fully revised and updated book, now in its Fourth Edition, continues to provide a comprehensive coverage of data communications and computer networks in an easy to understand style. The text places as much emphasis on the application of the concepts as on the concepts themselves. While the theoretical part is intended to offer a solid foundation of the basics so as to equip the student for further study, the stress on the applications is meant to acquaint the student with the realistic status of data communications and computer networks as of now. Audience Intended primarily as a textbook for the students of computer science and engineering, electronics and communication engineering, master of computer applications (MCA), and those offering IT courses, this book would also be useful for practising professionals. NEW TO THIS EDITION • Three new chapters on: o Network Architecture and OSI Model o Wireless Communication Technologies o Web Security • Appendix on Binary and Hexadecimal Numbering Key features • Illustrates the application of the principles through highly simplified block diagrams. • Contains a comprehensive glossary which gives simple and accurate descriptions of various terms. • Provides Questions and Answers at the end of the book which facilitate quick revision of the concept.

Appropriate for Computer Networking or Introduction to Networking courses at both the undergraduate and graduate level in Computer Science, Electrical Engineering, CIS, MIS, and Business Departments. Tanenbaum takes a structured approach to explaining how networks work from the inside out. He starts with an explanation of the physical layer of networking, computer hardware and transmission systems; then works his way up to network applications. Tanenbaum's in-depth application coverage includes email; the domain name system; the World Wide Web (both client- and server-side); and multimedia (including voice over IP, Internet radio video on demand, video conferencing, and streaming media.

Market_Desc: · Undergraduate Computer Science Students · Networking Professionals Special Features: · The Website will offer Instructors and Students more than any other book for Networking courses· Expert author team with long and proven track record· Networking concepts explained plainly· Practical solutions backed up with examples and case studies· Balance of topics reflects modern environments About The Book: This undergraduate textbook covers the breadth, depth and detail necessary to cater to the various entry points to the subject, the emphasis required by teachers, and the technical background of the student or practitioner coming to this subject. The book adopts a consistent approach to covering both the theory of basic networking technologies as well as practical solutions to networking problems. The structure of the book helps the reader to form a picture of the network as a whole. Essential and supplemental material to help both instructors and students will be made available from the

book site which includes visualisations of networking problems and solutions.

On computer networks

In network design, the gap between theory and practice is woefully broad. This book narrows it, comprehensively and critically examining current network design models and methods. You will learn where mathematical modeling and algorithmic optimization have been under-utilized. At the opposite extreme, you will learn where they tend to fail to contribute to the twin goals of network efficiency and cost-savings. Most of all, you will learn precisely how to tailor theoretical models to make them as useful as possible in practice. Throughout, the authors focus on the traffic demands encountered in the real world of network design. Their generic approach, however, allows problem formulations and solutions to be applied across the board to virtually any type of backbone communication or computer network. For beginners, this book is an excellent introduction. For seasoned professionals, it provides immediate solutions and a strong foundation for further advances in the use of mathematical modeling for network design. Written by leading researchers with a combined 40 years of industrial and academic network design experience. Considers the development of design models for different technologies, including TCP/IP, IDN, MPLS, ATM, SONET/SDH, and WDM. Discusses recent topics such as shortest path routing and fair bandwidth assignment in IP/MPLS networks. Addresses proper multi-layer modeling across network layers using different technologies—for example, IP over ATM over SONET, IP over WDM, and IDN over SONET. Covers restoration-oriented design methods that allow recovery from failures of large-capacity transport links and transit nodes. Presents, at the end of each chapter, exercises useful to both students and practitioners.

Software-defined networking (SDN) technologies powered by the OpenFlow protocol provide viable options to address the bandwidth needs of next-generation computer networks. And, since many large corporations already produce network devices that support the OpenFlow standard, there are opportunities for those who can manage complex and large-scale networks using these technologies. Network Innovation through OpenFlow and SDN: Principles and Design explains how you can use SDN and OpenFlow to build networks that are easy to design, less expensive to build and operate, and more agile and customizable. Among the first books to systematically address the design aspects in SDN/OpenFlow, it presents the insights of expert contributors from around the world. The book's four sections break down basic concepts, engineering design, QoS (quality-of-service), and advanced topics. Introduces the basic principles of SDN/OpenFlow and its applications in network systems Illustrates the entire design process of a practical OpenFlow/SDN Addresses the design issues that can arise when applying OpenFlow to cloud computing platforms Compares various solutions in QoS support Provides an overview of efficient solutions to the integration of SDN with optical networks Identifies the types of network attacks that could occur with OpenFlow and outlines possible solutions for overcoming them Supplying a cutting-edge look at SDN and OpenFlow, this book gives you the wide-ranging understanding required to build, deploy, and manage OpenFlow/SDN products and networks. The book's comprehensive coverage includes system architectures, language and programming issues, switches, controllers, multimedia support, security, and network operating systems. After reading this book you will understand what it takes to make a smooth transition from conventional networks to SDN/OpenFlow networks.

Sample Chapters: goo.gl/9aMqNm Table of Contents (Chapters): Organization of Chapters Introduction Networking Devices OSI and TCP/IP Models LAN Technologies ARP and RARP IP Addressing Network Routing TCP and UDP TCP Error Control TCP Flow Control TCP Congestion Control Session layer Presentation layer Network Security Application Layer Protocols Miscellaneous Concepts Networking and the Internet touch our lives in untold ways every day. From onnecting our computers together at home and surfing the net at high speeds to editing and sharing digital music and video, computer networking has become both ubiquitous and indispensable. Computer Networking continues with an early emphasis on application-layer paradigms and application programming interfaces (the top layer), encouraging a hands-on experience with protocols and networking concepts, before working down the protocol stack to more abstract layers. In total, there are 17 chapters in this book, and they include Application Layer, Transport Layer, Physical Layer, Data Link Layer, Medium Access Control Sublayer, and Network Security. Narasimha style of structured teaching helps the readers to grasp concepts easily. He begins by explaining the physical layer of computer hardware, networking, and transmission systems, after which he tackles advanced concepts pertaining to network applications. This book has become the dominant book for this course because of the authors' reputations, the precision of explanation, the quality of the art program, and the value of their own supplements. Salient Features of Book All the concepts are discussed in a lucid, easy to understand manner. A reader without any basic knowledge in computers can comfortably follow this book. Helps to build logic in the students which becomes stepping stone for understanding computer networking protocols. Interview questions collected from the actual interviews of various Software companies (and past competitive examinations like GATE) will help the students to be successful in their campus interviews. Hundreds of solved problems help the students of various universities do well in their examinations like B.C.A, B.Sc, M.Sc, M.C.A, B.E, B.Tech, M.Tech, etc. Works like a handy reference to the Software professionals.