

Data Computer Communications

Primarily intended as a text for undergraduate courses in Electronics and Communications Engineering, Computer Science, IT courses, and Computer Applications, this up-to-date and accessible text gives an indepth analysis of data communications and computer networks in an easy-to-read style. Though a new title, it is a completely revised and fully updated version of the author's earlier book Data Communications. The rapid strides made during the last decade in the fields of data communication and networking, and the close link between these two subjects have prompted the author to add several chapters on computer networks in this text. The book gives a masterly analysis of topics ranging from the principles of data transmission to computer networking applications. It also provides standard protocols, thereby enabling to bridge the gap between theory and practice. What's more, it correlates the network protocols to the concepts, which are explained with the help of numerous examples to facilitate students' understanding of the subject. This well-organized text presents the latest developments in the field and details current topics of interest such as Multicasting, MPLS, IPv6, Gigabit Ethernets, IPsec, SSL, Auto-negotiation, Wireless LANs, Network security, Differentiated services, and ADSL. Besides students, the practicing professionals would find the book to be a valuable resource. The book, in its second edition introduces a full chapter on Quality of Service, highlighting the meaning, parameters and functions required for quality of service. This book is recommended in Kaziranga University, Nagaland, IIT Guwahati, Assam and West Bengal University of Technology (WBUT), West Bengal for B.Tech. Key Features • The book is self-contained and student friendly. • The sequential organization lends flexibility in designing courses on the subject. • Large number of examples, diagrams and tables illustrate the concepts discussed in the text. • Numerous exercises (with answers), a list of acronyms, and references to protocol standards. This book gathers selected papers presented at the 2nd International Conference on Computing, Communications and Data Engineering, held at Sri Padmavati Mahila Visvavidyalayam, Tirupati, India from 1 to 2 Feb 2019. Chiefly discussing major issues and challenges in data engineering systems and computer communications, the topics covered include wireless systems and IoT, machine learning, optimization, control, statistics, and social computing.

Business Data Communications, 6/e, is ideal for use in Business Data Communications, Data Communications, and introductory Networking for Business courses. Business Data Communications, 6/e, covers the fundamentals of data communications, networking, distributed applications, and network management and security. Stallings presents these concepts in a way that relates specifically to the business environment and the concerns of business management and staff, structuring his text around requirements, ingredients, and applications. While making liberal use of real-world case studies and charts and graphs to provide a business perspective, the book also provides the student with a solid grasp of the technical foundation of business data communications. Throughout the text, references to the interactive, online animations supply a powerful tool in understanding complex protocol mechanisms. The Sixth Edition maintains Stallings' superlative support for either a research projects or modeling projects component in the course. The diverse set of projects and student exercises enables the instructor to use the book as a component in a rich and varied learning experience and to tailor a course plan to meet the specific needs of the instructor and students.

Monograph Series of the International Council for Computer Communications, Volume 1: The Office of the Future: Communication and Computers focuses on the advancements in the processes, technologies, techniques, principles, and approaches involved in communication and computers, including computer based tools, data gathering and information retrieval, and office automation. The publication first elaborates on the automated office of the future, tools to support the communication activity, and text editing tools for generating, organizing, analyzing, and transforming information. Discussions focus on generating, organizing, and analyzing information, basic message system concepts, impact of computer networks, and other processes in the office. The text then examines the integration of computer based tools, data gathering and information retrieval tools, coordination tools in the office of the future, and tools to support office processes. The manuscript ponders on the integration of the spoken word with interactive computer based office support systems, underlying technology, digital channel, and software aspects of the office environment utilizing the micro-processor. Topics include single board computer, advances in digital computer communications technology, future directions for digital networks, bandwidth availability, and storage and retrieval of voice information. The book is a dependable source of data for computer science experts and researchers interested in the relationship of communication and computers.

Data Communications Pocket Book, Second Edition presents information relevant to data communication. The book provides tabulated reference materials with a brief description and diagrams. The coverage of the text includes abbreviations, terminal control codes, and conversion tables. The text will be of great use to individuals involved in the interconnection of computer systems.

Balancing the most technical concepts with practical everyday issues, DATABASE COMMUNICATIONS AND COMPUTER NETWORKS, 8e provides thorough coverage of the basic features, operations, and limitations of different types of computer networks--making it the ideal resource for future business managers, computer programmers, system designers, as well as home computer users. Offering a comprehensive introduction to computer networks and data communications, the book includes coverage of the language of computer networks as well as the effects of data communications on business and society. It provides full coverage of wireless technologies, industry convergence, compression techniques, network security, LAN technologies, VoIP, and error detection and correction. The Eighth Edition also offers up-to-the-minute coverage of near field communications, updated USB interface, lightning interface, and IEEE 802.11 ac and ad wireless standards, firewall updates, router security problems, the Internet of Things, cloud computing, zero-client workstations, and Internet domain names. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Thoroughly updated for currency, this book offers a clear presentation of data communications and network fundamentals. Featuring a wide array of applications, the book fully explains concepts and supports them with case studies or descriptions of specific software and other products. Students learn the protocols of analog and digital signals, data compression, data integrity, data security, local area networks, asynchronous transfer mode (ATM), and much more. The third edition includes important information on the latest developments of the Internet. The objective of this book is to outline the best practice in designing, installing, commissioning and troubleshooting industrial data communications systems. In any given plant, factory or

installation there are a myriad of different industrial communications standards used and the key to successful implementation is the degree to which the entire system integrates and works together. With so many different standards on the market today, the debate is not about what is the best - be it Foundation Fieldbus, Profibus, Devicenet or Industrial Ethernet but rather about selecting the most appropriate technologies and standards for a given application and then ensuring that best practice is followed in designing, installing and commissioning the data communications links to ensure they run fault-free. The industrial data communications systems in your plant underpin your entire operation. It is critical that you apply best practice in designing, installing and fixing any problems that may occur. This book distills all the tips and tricks with the benefit of many years of experience and gives the best proven practices to follow. The main steps in using today's communications technologies involve selecting the correct technology and standards for your plant based on your requirements; doing the design of the overall system; installing the cabling and then commissioning the system. Fiber Optic cabling is generally accepted as the best approach for physical communications but there are obviously areas where you will be forced to use copper wiring and, indeed, wireless communications. This book outlines the critical rules followed in installing the data communications physical transport media and then ensuring that the installation will be trouble-free for years to come. The important point to make is that with today's wide range of protocols available, you only need to know how to select, install and maintain them in the most cost-effective manner for your plant or factory - knowledge of the minute details of the protocols is not necessary. An engineer's guide to communications systems using fiber optic cabling, copper cabling and wireless technology Covers: selection of technology and standards - system design - installation of equipment and cabling - commissioning and maintenance Crammed with practical techniques and know how - written by engineers for engineers

Once again, Bud Bates brings you the most comprehensive and definitive reference covering the latest in networking and telecommunications technologies. Updated to cover wireless protocols, optical networking, and high-speed broadband services this easy-to-understand resource contains comprehensive coverage of this fast-growing industry. Learn everything from basic concepts to practical implementation techniques--all presented in a straightforward and jargon-free style.

As the world grows increasingly interconnected, data communications has become a critical aspect of business operations. Wireless and mobile technology allows us to seamlessly transition from work to play and back again, and the Internet of things has brought our appliances, vehicles, and homes into the network; as life increasingly takes place online, businesses recognize the opportunity for a competitive advantage. Today's networking professionals have become central to nearly every aspect of business, and this book provides the essential foundation needed to build and manage the scalable, mobile, secure networks these businesses require. Although the technologies evolve rapidly, the underlying concepts are more constant. This book combines the foundational concepts with practical exercises to provide a well-grounded approach to networking in business today. Key management and technical issues are highlighted and discussed in the context of real-world applications, and hands-on exercises reinforce critical concepts while providing insight into day-to-day operations. Detailed technical descriptions reveal the tradeoffs not presented in product summaries, building the analytical capacity needed to understand, evaluate, and compare current and future technologies.

Computer communications is one of the most rapidly developing technologies and it is a subject with which everyone in the computer systems profession should be familiar. Computer communications and networks is an introduction to communications technology and system design for practising and aspiring computer professionals. The subject is described from the computer system designer's point of view rather than from the communications engineer's viewpoint. The presentation is suitable for introductory reading as well as for reference. The emphasis is on practical, rather than theoretical, aspects and on technology which will become more important in the future. The majority of the subject matter applies to civil and military communications but some aspects which are unique to military applications have been included where considered significant. Computer communications is a rapidly changing and highly complex subject. Sufficient practical knowledge of the subject is not usually gained at university or college but is generally developed over a period of several years by trial and error, attending courses, reading reference books and journals; this book attempts to simplify and speed up the process by bringing together a body of information which is otherwise distributed throughout many books and journals. The information is presented in a framework which makes a wider understanding of the subject possible. Basic knowledge of communications is assumed, a general familiarity with computer systems is anticipated in later chapters, and, where relevant, theory is explained.

This timely revision of an all-time best-seller in the field features the clarity and scope of a Stallings classic. This comprehensive volume provides the most up-to-date coverage of the essential topics in data communications, networking, Internet technology and protocols, and standards - all in a convenient modular format. Features updated coverage of multimedia, Gigabit and 10 Gbps Ethernet, WiFi/IEEE 802.11 wireless LANs, security, and much more. Ideal for professional reference or self-study. For Product Development personnel, Programmers, Systems Engineers, Network Designers and others involved in the design of data communications and networking products.

Recent developments in computer communications and networks have enabled the deployment of exciting new areas such as Internet of Things and collaborative big data analysis. The design and implementation of energy efficient future generation communication and networking technologies also require the clever research and development of mobile, pervasive, and large-scale computing technologies. Advances in Computer Communications and Networks: from Green, Mobile, Pervasive Networking to Big Data Computing studies and presents recent advances in communication and networking technologies reflecting the state-of-the-art research achievements in novel communication technology and network optimization. Technical topics discussed in the book include: Data Center Networks Mobile Ad Hoc Networks Multimedia Networks Internet of Things Wireless Spectrum Network Optimization. This book is ideal for personnel in computer communication and networking industries as well as academic staff and collegial, master, Ph.D. students in computer science, computer engineering, electrical engineering and telecommunication systems.

Providing essential information on data communication in an interesting, simple, and straightforward way, this comprehensive overview examines the primary components which make up data communications networks, and helps students build a foundation for understanding the more technical aspects of the subject.

In order to carry out data analytics, we need powerful and flexible computing software. However the software available for data analytics is often proprietary and can be expensive. This book reviews Apache tools, which are open source and easy to use. After providing an overview of the background of data analytics, covering the different types of analysis and the basics of using Hadoop as a tool, it focuses on different Hadoop ecosystem tools, like Apache Flume, Apache Spark, Apache Storm, Apache Hive, R, and Python, which can be used for different types of analysis. It then examines the different machine learning techniques that are useful for data analytics, and how to visualize data with different graphs and charts. Presenting data analytics from a practice-oriented viewpoint, the book discusses useful tools and approaches for data analytics, supported by concrete code examples. The book is a valuable reference resource for graduate students and professionals in related fields, and is also of interest to general readers with an understanding of data analytics.

This expanded and completely updated edition, of the popular text reflects the major changes to communications technology since 1990. New coverage includes discussions of ATM and Frame Relay, Ethernet and Token-Ring Networks, and expanded treatment of satellite communications. There is also new material on the ATM LAN versus WAN evolution as well as new sections on LAN networking and Internetworking. Emphasis is given throughout to reflect the emergence of the Internet with timely information on TCP/IP, NetWare, and LAN applications.

The usage of data communications and computer networks are ever in creasing. It is one of the few technological areas which brings benefits to most of the countries and the peoples of the world. Without it many industries could not exist. It is the objective of this book to discuss data communications in a readable form that students and professionals all over the world can understand. As much as possible the text uses dia grams to illustrate key points. Most currently available data communications books take their view point from either a computer scientists top-down approach or from an electronic engineers bottom-up approach. This book takes a practical ap proach and supports it with a theoretical background to create a textbook which can be used by electronic engineers, computer engineers, computer scientists and industry professionals. It discusses most of the current and future key data communications technologies, including: • Data Communications Standards and Models; • Local Area Networks (Ethernet, Token Ring and FDDI); • Transmission Control ProtocolInternet Protocol (TCPIIP); • High-level Data Link Control (HDLC); • X.25 Packet-switching; • Asynchronous Communications (RS-232) and Modems; • Pulse Coded Modulation (PCM); • Integrated Digital Services Network (ISDN); • Asynchronous Transfer Mode (ATM); • Error Control; • X-Windows. The chapters are ordered in a possible structure for the presentation of the material and have not been sectioned into data communications areas.

This book introduces different interconnection networks applied to different systems. Interconnection networks are used to communicate processing units in a multi-processor system, routers in communication networks, and servers in data centers. Queuing techniques are applied to interconnection networks to support a higher utilization of resources. There are different queuing strategies, and these determine not only the performance of the interconnection network, but also the set of requirements to make them work effectively and their cost. Routing algorithms are used to find routes to destinations and directions in what information travels. Additional properties, such as avoiding deadlocks and congestion, are sought. Effective routing algorithms need to be paired up with these networks. The book will introduce the most relevant interconnection networks, queuing strategies, and routing algorithm. It discusses their properties and how these leverage the performance of the whole interconnection system. In addition, the book covers additional topics for memory management and congestion avoidance, used to extract higher performance from the interconnection network.

This book provides a review of advanced topics relating to the theory, research, analysis and implementation in the context of big data platforms and their applications, with a focus on methods, techniques, and performance evaluation. The explosive growth in the volume, speed, and variety of data being produced every day requires a continuous increase in the processing speeds of servers and of entire network infrastructures, as well as new resource management models. This poses significant challenges (and provides striking development opportunities) for data intensive and high-performance computing, i.e., how to efficiently turn extremely large datasets into valuable information and meaningful knowledge. The task of context data management is further complicated by the variety of sources such data derives from, resulting in different data formats, with varying storage, transformation, delivery, and archiving requirements. At the same time rapid responses are needed for real-time applications. With the emergence of cloud infrastructures, achieving highly scalable data management in such contexts is a critical problem, as the overall application performance is highly dependent on the properties of the data management service.

Reference Data for Engineers is the most respected, reliable, and indispensable reference tool for technical professionals around the globe. Written by professionals for professionals, this book is a complete reference for engineers, covering a broad range of topics. It is the combined effort of 96 engineers, scientists, educators, and other recognized specialists in the fields of electronics, radio, computer, and communications technology. By providing an abundance of information on essential, need-to-know topics without heavy emphasis on complicated mathematics, Reference Data for Engineers is an absolute "must-have" for every engineer who requires comprehensive electrical, electronics, and communications data at his or her fingertips. Featured in the Ninth Edition is updated coverage on intellectual property and patents, probability and design, antennas, power electronics, rectifiers, power supplies, and properties of materials. Useful information on units, constants and conversion factors, active filter design, antennas, integrated circuits, surface acoustic wave design, and digital signal processing is also included. The Ninth Edition also offers new knowledge in the fields of satellite technology, space communication, microwave science, telecommunication, global positioning systems, frequency data, and radar. * Widely acclaimed as the most practical reference ever published for a wide range of electronics and computer professionals, from technicians through post-graduate engineers. * Provides a great way to learn or review the basics of various technologies, with a minimum of tables, equations, and other heavy math.

The use of data communications and computer networks is constantly increasing, bringing benefits to most of the countries and peoples of the world, and serving as the lifeline of industry. Now there is a textbook that discusses data communications and networking in a readable form that can be easily understood by students who will become the IS professionals of the future. Advanced Data Communications and Networks provides a comprehensive and practical treatment of rapidly evolving areas. The text is divided into seven main sections and appendices: " General data compression " Video, images, and sound " Error coding and encryption " TCP/IP and the Internet " Network operating systems " LANs/WANs " Cables and connectors Other topics include error detection/correction, image/video compression, digital video, digital audio, TCP/IP, HTTP, electronic mail, HTML, Windows NT, NetWare, UNIX, Fast Ethernet, ATM, FDDI, and much more. Written by a respected academician who is also an accomplished engineer, this textbook uses the author's wide practical experience in applying techniques and theory toward solving real engineering problems. It also includes an accompanying Web site that contains software, source code, and other supplemental information.

CDPD is a standards-based wireless technology capable of carrying enough data to compete against Personal Communications Services. This volume is a report from the frontlines covering protocols and network architectures, topologies and interfaces, network management issues, and applications development.

Foundations of Modern Networking is a comprehensive, unified survey of modern networking technology and applications for today's professionals, managers, and students. Dr. William Stallings offers clear and well-organized coverage of five key technologies that are transforming networks: Software-Defined Networks (SDN), Network Functions Virtualization (NFV), Quality of Experience (QoE), the Internet of Things (IoT), and cloudbased services. Dr. Stallings reviews current network ecosystems and the challenges they face—from Big Data and mobility to security and complexity. Next, he offers complete, self-contained coverage of each new set of technologies: how they work, how they are architected, and how they can be applied to solve real problems. Dr. Stallings presents a chapter-length analysis of emerging security issues in modern networks. He concludes with an up-to date discussion of networking careers, including important recent changes in roles and skill requirements. Coverage: Elements of the modern networking ecosystem: technologies, architecture, services, and applications Evolving requirements of current network environments SDN: concepts, rationale, applications, and standards across data, control, and application planes OpenFlow, OpenDaylight, and other key SDN technologies Network functions virtualization: concepts, technology, applications, and software defined infrastructure Ensuring customer Quality of Experience (QoE) with interactive video and multimedia network traffic Cloud networking: services, deployment models, architecture, and linkages to SDN and NFV IoT and fog computing in depth: key components of IoT-enabled devices, model architectures, and example implementations Securing SDN, NFV, cloud, and IoT environments Career preparation and ongoing education for tomorrow's networking careers Key Features: Strong coverage of unifying principles and practical techniques More than a hundred figures that clarify key concepts Web support at williamstallings.com/Network/ QR codes throughout, linking to the website and other resources Keyword/acronym lists, recommended readings, and glossary Margin note definitions of key words throughout the text

Introduction, datacommunications, information theory, introduction to local area networks. Internet protocols ...

In large measure the traditional concern of communications engineers has been the conveyance of voice signals. The most prominent example is the telephone network, in which the techniques used for transmission multiplexing and switching have been designed for voice signals. However, one of the many effects of computers has been the growing volume of the sort of traffic that flows in networks composed of user terminals, processors, and peripherals. The characteristics of this data traffic and the associated performance requirements are quite different from those of voice traffic. These differences, coupled with burgeoning digital technology, have engendered a whole new set of approaches to multiplexing and switching this traffic. The new techniques are the province of what has been loosely called computer communications networks. The subject of this book is the mathematical modeling and analysis of computer communications networks, that is to say, the multiplexing and switching techniques that have been developed for data traffic. The basis for many of the models that we shall consider is queueing theory, although a number of other disciplines are drawn on as well. The level at which this material is covered is that of a first-year graduate course. It is assumed that at the outset the student has had a good undergraduate course in probability and random processes of the sort that are more and more common among electrical engineering and computer science departments.

Details the most important techniques used to make the storage and transmission of data fast, secure, and reliable. Accessible to both specialists and nonspecialists: Avoids complex mathematics

We depend on information and information technology (IT) to make many of our day-to-day tasks easier and more convenient. Computers play key roles in transportation, health care, banking, and energy. Businesses use IT for payroll and accounting, inventory and sales, and research and development. Modern military forces use weapons that are increasingly coordinated through computer-based networks. Cybersecurity is vital to protecting all of these functions. Cyberspace is vulnerable to a broad spectrum of hackers, criminals, terrorists, and state actors. Working in cyberspace, these malevolent actors can steal money, intellectual property, or classified information; impersonate law-abiding parties for their own purposes; damage important data; or deny the availability of normally accessible services. Cybersecurity issues arise because of three factors taken together - the presence of malevolent actors in cyberspace, societal reliance on IT for many important functions, and the presence of vulnerabilities in IT systems. What steps can policy makers take to protect our government, businesses, and the public from those would take advantage of system vulnerabilities? At the Nexus of Cybersecurity and Public Policy offers a wealth of information on practical measures, technical and nontechnical challenges, and potential policy responses. According to this report, cybersecurity is a never-ending battle; threats will evolve as adversaries adopt new tools and techniques to compromise security. Cybersecurity is therefore an ongoing process that needs to evolve as new threats are identified. At the Nexus of Cybersecurity and Public Policy is a call for action to make cybersecurity a public safety priority. For a number of years, the cybersecurity issue has received increasing public attention; however, most policy focus has been on the short-term costs of improving systems. In its explanation of the

fundamentals of cybersecurity and the discussion of potential policy responses, this book will be a resource for policy makers, cybersecurity and IT professionals, and anyone who wants to understand threats to cyberspace.

Data and Computer Communications Simon & Schuster Books For Young Readers

This book constitutes the refereed proceedings of the First International Conference on Smart Trends in Information Technology and Computer Communications, SmartCom 2016, held in Jaipur, India, in August 2016. The 106 revised papers presented were carefully reviewed and selected from 469 submissions. The papers address issues on smart and secure systems; technologies for digital world; data centric approaches; applications for e-agriculture and e-health; products and IT innovations; research for knowledge computing.

This complete guide to setting up and running a TCP/IP network is essential for network administrators, and invaluable for users of home systems that access the Internet. The book starts with the fundamentals -- what protocols do and how they work, how addresses and routing are used to move data through the network, how to set up your network connection -- and then covers, in detail, everything you need to know to exchange information via the Internet. Included are discussions on advanced routing protocols (RIPv2, OSPF, and BGP) and the gated software package that implements them, a tutorial on configuring important network services -- including DNS, Apache, sendmail, Samba, PPP, and DHCP -- as well as expanded chapters on troubleshooting and security. TCP/IP Network Administration is also a command and syntax reference for important packages such as gated, pppd, named, dhcpd, and sendmail. With coverage that includes Linux, Solaris, BSD, and System V TCP/IP implementations, the third edition contains: Overview of TCP/IP Delivering the data Network services Getting started M Basic configuration Configuring the interface Configuring routing Configuring DNS Configuring network servers Configuring sendmail Configuring Apache Network security Troubleshooting Appendices include dip, pppd, and chat reference, a gated reference, a dhcpd reference, and a sendmail reference This new edition includes ways of configuring Samba to provide file and print sharing on networks that integrate Unix and Windows, and a new chapter is dedicated to the important task of configuring the Apache web server. Coverage of network security now includes details on OpenSSH, stunnel, gpg, iptables, and the access control mechanism in xinetd. Plus, the book offers updated information about DNS, including details on BIND 8 and BIND 9, the role of classless IP addressing and network prefixes, and the changing role of registrars. Without a doubt, TCP/IP Network Administration, 3rd Edition is a must-have for all network administrators and anyone who deals with a network that transmits data over the Internet.

Data Communications and Networks uses a top-down, Internet-focussed approach to tackle the problem of communication system design. An integrated approach is taken to networks and data communications, with an emphasis that starts from the top level requirements and works downwards, describing how such requirements are fulfilled by lower layers of the transmission chain. While the book contains sufficient detail to provide an excellent foundation, clarity is paramount and care is taken not to swamp the reader with information to the point where the underlying concepts are obscured. The Internet is used as the principle example of a communication system, allowing the reader to follow the system from the application layers, with source coding and security, through the network, with naming and routing algorithms, down to transport and physical aspects of a communication system. Modern techniques such as mobile radio, Voice over IP, and ASDL, are covered, while more traditional aspects such as circuit switching, which still form a significant part of current systems, are not overlooked. By providing a technical introduction and including application examples, this text will have significant appeal to final year students, postgraduates and professionals with a science or engineering background wishing to gain a basic understanding of the key concepts behind data communications engineering.

This example-laden book/disk combination is a practical resource for communications professionals who are interested in the nuts and bolts of implementing data communications systems using object-oriented design in C++. The author illustrates such fundamental data communications concepts as layering, flow control, sliding window protocols, and error detection and recovery.

Thanks to inexpensive computers and data communications, the speed and volume of human communication are exponentially greater than they were even a quarter-century ago. Not since the advent of the telephone and telegraph in the nineteenth century has information technology changed daily life so radically. We are in the midst of what Gerald Brock calls a second information revolution. Brock traces the complex history of this revolution, from its roots in World War II through the bursting bubble of the Internet economy. As he explains, the revolution sprang from an interdependent series of technological advances, entrepreneurial innovations, and changes to public policy. Innovations in radar, computers, and electronic components for defense projects translated into rapid expansion in the private sector, but some opportunities were blocked by regulatory policies. The contentious political effort to accommodate new technology while protecting beneficiaries of the earlier regulated monopoly eventually resulted in a regulatory structure that facilitated the explosive growth in data communications. Brock synthesizes these complex factors into a readable economic history of the wholesale transformation of the way we exchange and process information. Table of Contents: Acknowledgments Abbreviations 1. Introduction The Promise of Regulation Conceptual Framework 2. The First Information Revolution The Development of Telegraph Services The Telephone and State Regulation Radio and Federal Regulation 3. Technological Origins of the Second Information Revolution, 1940-1950 Radar The Transistor Electronic Digital Computers 4. The SAGE Project I. THE SEPARATE WORLDS OF COMPUTERS AND COMMUNICATIONS, 1950-1968 5. The Early Semiconductor Industry The Creation of a Competitive Market Innovation and the Integrated Circuit Falling Prices, Rising Output 6. The Early Commercial Computer Industry Vacuum-Tube and Transistor Computers The System/360 and IBM Dominance Alternatives to IBM Computers 7. The Regulated Monopoly Telephone Industry Antitrust and the 1956 Consent Decree Microwave Technology and Potential Long Distance Competition Central Office Switches Terminal Equipment II. BOUNDARY DISPUTES AND LIMITED COMPETITION, 1969-1984 8. Data Communications Packet-Switching and the Arpanet Network Protocols and Interconnection Local Area Networks and Ethernet 9. From Mainframes to Microprocessors Intel and the Microprocessor Personal Computers and Workstations 10. The Computer-Communications Boundary Computer-Assisted

Messages: Communications or Data Processing? Smart Terminals: Teletypewriters or Computers? Interconnection of Customer-Owned Equipment with the Telephone Network The Deregulation of Terminal Equipment The Deregulation of Enhanced Services 11. Fringe Competition in Long Distance Telephone Service Competition in Specialized Services Competition in Switched Services The Transition to Optical Fiber 12. Divestiture and Access Charges The Divestiture Access Charges The Enhanced Service Provider Exemption III. INTERCONNECTED COMPETITION AND INTEGRATED SERVICES, 1985-2002 13. Mobile Telephones and Spectrum Reform Early Land Mobile Telephones Cellular Spectrum Allocation Cellular Licensing Problems Spectrum Institutional Reform PCS and Auctions 14. Local Competition and the Telecommunications Act of 1996 Competitive Access Providers Interconnection: CAP to CLEC The Telecommunications Act of 1996 Implementation of the Telecommunications Act of 1996 15. The Internet and the World Wide Web The Commercial Internet and Backbone Interconnection The Development of the Web The New Economy Financial Boom and Bust Real Growth in Telecommunication and Price Benefits 16. Conclusion Technological Progress and Policy Evolution The Process of Institutional Change Final Comment References Index Reviews of this book: The Second Information Revolution is important reading for anyone who needs to understand the functioning of American telecommunications, either to be able to analyse today's financial markets or to understand or influence public policy in this area. --Wendy M. Grossman, Times Higher Education Supplement [UK] Reviews of this book: Brock traces a phenomenon he refers to as the 'second information revolution.' According to Brock, there have been two times in history when information technology has dramatically changed daily life. The first 'information revolution' occurred with the advent of the telephone and telegraph, which made communication less expensive and more readily available. The second information revolution is currently in progress...A concise, thorough, and well-written history of the transformation in exchanging and processing of information. --K. A. Coombs, Choice

Several years ago when I began consulting full time, I quickly discovered that despite three advanced academic degrees my practical industrial experience had some significant gaps. It thus was necessary initially to spend considerable (nonbillable) time collecting and organizing a great deal of essential information on the various aspects of modern data communications. The task was made more difficult by the highly interdisciplinary nature of the field, with the required information scattered throughout the vast international literature of telecommunications, computers, electrical engineering, military systems, mathematics, operations research, optimization, speech processing, and the murky world of legal and regulatory policy. Although there were a number of fine books and periodicals in each of these specialized disciplines, I was unable to find a single comprehensive text that covered the entire field at even a modestly attractive technical and mathematical level. After going to the trouble of organizing all this diverse material for my clients and students, it seemed rather natural to put it into book form and thus share it with those professionals working with computer data communications who need a comprehensive coverage of the subject at a level immediately applicable to their work and yet easily accessible for self-study. The project was facilitated by an agreeable publisher and an incredibly understanding and cooperative family, and Practical Computer Data Communications is the result.

Overview of Data Communications; Basic Data Communication Principles; Physical Serial Communication Standards; Error Detection; Cabling Basics; Electrical Noise and Interference; Modems and Multiplexers; Introduction to Protocols; Open Systems Interconnection Model; Industrial Protocols; HART Protocol; Open Industrial Fieldbus and DeviceNet Systems; Local Area Networks; Appendix A: Numbering Systems; Appendix B: Cyclic Redundancy Check (CRC) Program Listing; Appendix C: Serial Link Design; Glossary.

The protocols and standards for networking are numerous and complex. Multivendor internetworking, crucial to present day users, requires a grasp of these protocols and standards. Data and Computer Communications: Networking and Internetworking, a comprehensive text/reference, brings clarity to all of the complex issues involved in networking activity, providing excellent instruction for students and an indispensable reference for practitioners. This systematic work answers a vast array of questions about overall network architecture, design, protocols, and deployment issues. It offers a practical, thorough treatment of the applied concepts of data and computer communication systems, including signaling basics, transmission of digital signals, and layered architecture. The book features in-depth discussions of integrated digital networks, integrated services digital networks, and high-speed networks, including currently evolving technologies, such as ATM switching, and their applications in multimedia technology. It also presents the state-of-the-art in Internet technology, its services, and implementations. The balance of old and new networking technologies presents an appealing set of topics for both undergraduate students and computer and networking professionals. This book presents all seven layers of OSI-based networks in great detail, covering services, functions, design issues, interfacing, and protocols. With its introduction to the basic concepts and practical aspects of the field, Data and Computer Communications: Networking and Internetworking helps you keep up with the rapidly growing and dominating computer networking technology.

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