

Data Communications And Networks An Engineering Approach

The result of decades of research and international project experience, Multimedia Communications and Networking provides authoritative insight into recent developments in multimedia, digital communications, and networking services and technologies. Supplying you with the required foundation in these areas, it illustrates the means that will allow

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,

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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.

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

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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.

For an accessible and comprehensive survey of telecommunications and data communications technologies and services, consult the *Telecommunications and Data Communications Handbook*, which includes information on origins, evolution and meaningful contemporary applications. Find discussions of technologies set in context, with details on fiber optics, cellular radio, digital carrier systems, TCP/IP, and the Internet. Explore topics like Voice over Internet Protocol (VoIP); 802.16 & WiMAX; Passive Optical Network (PON); 802.11g & Multiple Input Multiple Output (MIMO) in this easily accessible guide without the burden of technical jargon.

This book has evolved primarily from lecture notes for data communications courses taught at Georgia State University since 1969. Additional material was derived from seminar presentations that were made during this period as well as from consulting work. Teaching data communications in the College of Business Administration influenced the point of view of this material, giving it a semitechnical orientation. This point of view has been extended to the preparation of this book. Only those technical details were included which, it was felt, would lead the student to a better understanding of the subject. References are provided for those who desire further

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information in particular areas. The reader for whom this book is intended is the nontechnical person who has some knowledge of computer technology and who wishes to extend that knowledge to the field of data communications. The two key points stressed in this book are terminology and concepts. The objectives of this book are to enable the student:

1. To read articles in the field of data communications with an understanding of their content.
2. To be able to engage in knowledgeable discussions with communications engineers on the subject of data communications.
3. To design and implement the hardware aspects of applications using data communications. The software that would be involved is beyond the scope of this book except where protocols are considered.
4. To effectively evaluate proposals for the implementation of data communications systems.

Over the past few years, many fundamental changes have occurred in data communications and networking that will shape the future for decades to come. Updated with the latest advances in the field, Jerry FitzGerald and Alan Dennis' 10th Edition of *Business Data Communications and Networking* continues to provide the fundamental concepts and cutting-edge coverage applications that students need to succeed in this fast-moving field. Authors FitzGerald and Dennis have developed a foundation and balanced presentation from which new technologies and applications can be easily understood, evaluated, and compared.

What every electrical engineering student and technical professional needs to know

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about data exchange across networks While most electrical engineering students learn how the individual components that make up data communication technologies work, they rarely learn how the parts work together in complete data communication networks. In part, this is due to the fact that until now there have been no texts on data communication networking written for undergraduate electrical engineering students. Based on the author's years of classroom experience, Fundamentals of Data Communication Networks fills that gap in the pedagogical literature, providing readers with a much-needed overview of all relevant aspects of data communication networking, addressed from the perspective of the various technologies involved. The demand for information exchange in networks continues to grow at a staggering rate, and that demand will continue to mount exponentially as the number of interconnected IoT-enabled devices grows to an expected twenty-six billion by the year 2020. Never has it been more urgent for engineering students to understand the fundamental science and technology behind data communication, and this book, the first of its kind, gives them that understanding. To achieve this goal, the book: Combines signal theory, data protocols, and wireless networking concepts into one text Explores the full range of issues that affect common processes such as media downloads and online games Addresses services for the network layer, the transport layer, and the application layer Investigates multiple access schemes and local area networks with coverage of services for the physical layer and the data link layer Describes mobile communication

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networks and critical issues in network security Includes problem sets in each chapter to test and fine-tune readers' understanding Fundamentals of Data Communication Networks is a must-read for advanced undergraduates and graduate students in electrical and computer engineering. It is also a valuable working resource for researchers, electrical engineers, and technical professionals.

Data Communications 2 Network Mechanisms. 3 Interfaces, Transmission Media, Multiplexing & Error Detection 4 Local Area Networks (Lan) Architectures 5 Networking And Internetworking Devices 6 Tcp/Ip Architecture 7 Metropolitan Area Networks & Wide Area Networks 8 The Physical And Datalink Layers 9 Ethernet 10 Token Ring 11 Token Bus 12 Fiber Distributed Data Interface (Fddi) 13 Integrated Services Digital Network 14 Broadband—Isdn 15 X.25, Frame Relay And Sonet 16 Asynchronous Transfer Mode (Atm) 17 Network Layer 18 Transport Layer 19 Application Layer Services 20 Upper Osi Layers 21 Local Area Network Management 22 Internet Protocol Version 6: Ipv6 23 Ipv6 Essential Functions And Services 24 Network Security Appendix A Quick Reference (Important Points To Be Remember) Appendix B Practice Set (Multiple Choice Questions) Appendix C Acronyms Appendix D Glossary Appendix E References

Data Communication And Computer Networks Deals With Various Aspects Of The Subject Vis-À-Vis The Emerging Trends In Network-Centric Information Technology. It Provides The Reader With An In-Depth Framework Of The Fundamental Concepts. Networking Involves 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

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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.

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.

This book is designed and developed assuming little or no technical background on part of the reader. The book therefore first introduces the philosophy of data communications covering signal propagation and information encoding. It then proceeds to cover various technologies, OSI model, protocols, network architectures, internetworking concepts and TCP/IP. All this makes the book ideally suited for the first course on Data Communications and Networks.

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This text presents data communications and network fundamentals, and a wide array of specific applications, at a level for Junior CS and CIS majors intending to be information systems professionals. The 2nd edition is updated with new information on state-of-the-art developments supporting the World Wide Web, including expanded and updated coverage of LAN/WAN systems and protocols, and such topics as asynchronous transfer mode (ATM), modems, encryption and network security.

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

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, the book provides a comprehensive coverage of the subject. Basic elements of communication such as data, signal and channel alongwith their characteristics such as bandwidth, bit internal and bit rate have been explained. Contents related to guided and unguided transmission media, Bluetooth wireless technology, developed for Personal Area Network (PAN) and issues related to routing covering popular routing algorithms namely RIP, OSPF and BGP, have been introduced in the book. Various aspects of data link control alongwith their application in HDLC network and techniques such as encoding, multiplexing and encryption/decryption are presented in detail. Characteristics and implementation

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of PSTN, SONET, ATM, LAN, PACKET RADIO network, Cellular telephone network and Satellite network have also been explained. Different aspects of IEEE 802.11 WLAN and congestion control protocols have also been discussed in the book. Key Features • Each chapter is divided into section and subsection to provide flexibility in curriculum design. • The text contains numerous solved examples, and illustrations to bring clarity to the subject and enhance its understanding. • Review questions given at the end of each chapter, are meant to enable the teacher to test student's grasping of the subject.

Data Communications and Networking Huga Media
Advanced Data Communications and Networks CRC Press

Data Communication and Networking, First Edition provides a solid, thorough overview of data communications and networking for Engineering Technology programs. This text covers information for one or more courses spanning digital communication systems, computer communication and networks, and data communications. It is specifically written and designed for engineering and engineering technology learners by using a systematic and visual approach with abundant tables, illustrations, and practical examples making it easy for students to comprehend concepts. Content begins with data communication, signal conversion and issues in data transmission. Each chapter includes an

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introduction, summary of key information, as well as practice questions and problems with answers. The text also includes coverage of network and network standards, Ethernet, network components and Transmission Control and Internets Protocols (TCP/IP). The integration of applications and laboratory experiments are found throughout the text, making Data Communication and Networking, First Edition a one-of-a-kind and practical text. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

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.

The object of this book is to cover most of the currently relevant areas of data communications and networks. These include: Communications protocols

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(especially TCP/IP) Networking (especially in Ethernet, Fast Ethernet, FDDI and ATM) Networking operating systems (especially in Windows NT, Novell NetWare and UNIX) Communications programs (especially in serial communications, parallel communications and TCP/IP) Computer hardware (especially in PC hardware, serial communications and parallel communication) The book thus splits into 15 different areas, these are: General data compression (Chapters 2 and 3) Video, images and sound (Chapters 4-11) Error coding and encryption (Chapters 12-17) TCP/IP, WWW, Internets and Intranets (Chapters 18-20 and 23) Electronic Mail (Chapter 21) HTML (Chapters 25 and 26) Java (Chapters 27-29) Communication Programs (Chapters 20, 29 and 49) Network Operating Systems (Chapters 31-34) LANs/WANs (Chapters 35, 38-46) Serial Communications (Chapters 47 and 48) Parallel Communications (Chapters 50-52) Local Communications (Chapters 53-57) Routing and Protocols (Chapters 36 and 37) Cables and connectors (Chapters 58--60) Many handbooks and reference guides on the market contain endless tables and mathematics, or are dry to read and contain very little insight in their subject area. I have tried to make this book readable, but also contain key information which can be used by professionals.

This text provides a comprehensive coverage of data communications

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fundamentals, telephone system operation, local area networks, internetworking, and Internet communications. Each chapter contains numerous examples emphasizing the most important concepts presented. Questions and problems are included at the end of each chapter, and answers to selected problems are provided at the end of the book. Significant material is provided on the following:

- Analog and digital electronic communications systems
- Metallic and optical fiber cable systems
- Digital transmission and multiplexing
- Wireless communications systems, including free-space electromagnetic wave preparation
- Wireline, cellular, and PCS telephone theory
- Codes, data formats, error detection and correction, modems, UARTs and USARTs, and serial interfaces
- Data-link protocols, including XMODEM, YMODEM, KERMIT, SDLC, and HDLC
- Transmission formats, LAN topologies, and basic internetworking devices
- IEEE 802 Project including access methodologies, and MAC and LLC sublayers
- IEEE 802.3 Ethernet and DIX Ethernet II IP addressing, subnets, supernetworks, and IP classless and classful addressing hierarchies
- Layer 3 networking protocols, such as ARP, IPv4, and ICMP; and Layer 4 transport protocols, such as UDP and TCP
- Internet Protocol version 6 (IPv6) and Internet Control Management Protocol version 6 (ICMPv6)
- Configuration and domain name protocols, including DHCP and DNS
- Application layer protocols, including Telnet, FTP TFTP, SMTP,

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POP, and HTTP Integrated Services Digital Network and Digital Subscriber Loop Broadband WAN access technologies such as X.25, Frame Relay, and ATM Keep Up With the Rapid Changes in Data Communications and Networking As you look at the cover, you may be wondering what an overnight delivery service has to do with data communications and networking. While following this cumulative case study in each chapter, you'll discover how to successfully apply the fundamental concepts behind the latest technologies and applications to business. You'll be introduced to these concepts throughout the text from this applied business perspective. Inside, you'll find the latest advances with the Internet, Internet access (cable modems,) DSL), local area and backbone networks (gigabit ethernet, ATM), and wide area networks (ATM, SONET, SMDS). A greater emphasis is placed on the changing nature of the Internet and the increased importance of electronic commerce in business. And up-to-date articles on the latest innovations are provided at our Web site at www.wiley.com/college/dennis/datacomm6e.

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

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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.

Business Data Communications and Networking, 14th Edition presents a classroom-tested approach to the subject, combining foundational concepts, practical exercises, and real-world case studies. The text provides a balanced, well-rounded presentation of data communications while highlighting its importance to nearly every aspect of modern business. This fully-updated new edition helps students understand how networks work and what is required to build and manage scalable, mobile, and secure networks. Clear, student-friendly chapters introduce, explain, and summarize fundamental concepts and applications such as server architecture, network and transport layers, network design processes and tools, wired and wireless networking, and network security and management. An array of pedagogical features teaches students how to select the appropriate technologies necessary to build and manage networks that meet organizational needs, maximize competitive advantage, and protect networks and data from cybersecurity threats. Discussions of real-world management and technical issues, from improving device performance to

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assessing and controlling costs, provide students with insight into the daily networking operations of actual businesses.

A friendlier voice in an area crowded with technical, formal textbooks, Miller's style reaches the students quickly and effectively. The abundance of chapter projects and the audio/visual support of concepts enables instructors to keep students engaged.

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

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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.

This revised edition with new technologies, new applications, and new examples, offers balanced coverage of the technical and managerial aspects of data communications to help understand how networks operate and how to successfully apply them. It features a chapter on wireless LANS, an expansion of the security chapter to include more on security design and new technologies, and more coverage of technology design material on network design including a selection of technologies and best practices for network design. · Introduction · Application Layer · Physical Layer · Data Link Layer · Network and Transport Layers · Local Area Networks · Wireless Local Area Networks · Backbone Networks · Metropolitan and Wide Area Networks · The Internet · Network Management · Network Security · Network Design

Data Communication and Networking, International Edition provides a solid, thorough overview of data communications and networking for Engineering Technology programs. This text covers information for one or more courses spanning digital communication systems, computer communication and

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networks, and data communications. It is specifically written and designed for engineering and engineering technology learners by using a systematic and visual approach with abundant tables, illustrations, and practical examples making it easy for students to comprehend concepts. Content begins with data communication, signal conversion and issues in data transmission. Each chapter includes an introduction, summary of key information, as well as practice questions and problems with answers. The text also includes coverage of network and network standards, Ethernet, network components and Transmission Control and Internets Protocols (TCP/IP). The integration of applications and laboratory experiments are found throughout the text, making Data Communication and Networking, First Edition a one-of-a-kind and practical text.

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

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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,

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and references to protocol standards.

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Database and Data Communication Network Systems examines the utilization of the Internet and Local Area/Wide Area Networks in all areas of human endeavor. This three-volume set covers, among other topics, database systems, data compression, database architecture, data acquisition, asynchronous transfer mode (ATM) and the practical application of these technologies. The international collection of contributors was culled from exhaustive research of over 100,000 related archival and technical journals. This reference will be indispensable to

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engineering and computer science libraries, research libraries, and telecommunications, networking, and computer companies. It covers a diverse array of topics, including: *

- * Techniques in emerging database system architectures
- * Techniques and applications in data mining
- * Object-oriented database systems
- * Data acquisition on the WWW during heavy client/server traffic periods
- * Information exploration on the WWW
- * Education and training in multimedia database systems
- * Data structure techniques in rapid prototyping and manufacturing
- * Wireless ATM in data networks for mobile systems
- * Applications in corporate finance
- * Scientific data visualization
- * Data compression and information retrieval
- * Techniques in medical systems, intensive care units

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 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

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scientists top-down approach or from an electronic engineers bottom-up approach. This book takes a practical approach 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 Protocol/Internet Protocol (TCP/IP); • 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.

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 ADSL, are covered, while more traditional aspects such as

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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.

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