Computer Network Architectures And Protocols Applications Of Communications Theory

Learn all you need to know about wireless sensor networks! Protocols and Architectures for Wireless Sensor Networks provides a thorough description of the nuts and bolts of wireless sensor networks. The authors give an overview of the state-of-the-art, putting all the individual solutions into perspective with one and other. Numerous practical examples, case studies and illustrations demonstrate the theory, techniques and results presented. The clear chapter structure, listing learning objectives, outline and summarizing key points, help guide the reader expertly through the material. Protocols and Architectures for Wireless Sensor Networks: Covers architecture and communications protocols in detail with practical implementation examples and case studies. Provides an understanding of mutual relationships and dependencies between different protocols and architectural decisions. Offers an in-depth investigation of relevant protocol mechanisms. Shows which protocols are suitable for which tasks within a wireless sensor network and in which circumstances they perform efficiently. Features an extensive website with the bibliography, PowerPoint slides, additional exercises and worked solutions.

This text provides academic researchers, graduate students in computer science, computer engineering, and electrical engineering, as well as practitioners in industry and research engineers with an understanding of the specific design challenges and solutions for wireless sensor networks. Check out www.wiley.com/go/wsn for accompanying course material! "I am deeply impressed by the book of Karl & Willig. It is by far the most complete source for wireless sensor networks...The book covers almost all topics related to sensor networks, gives an amazing number of references, and, thus, is the perfect source for students, teachers, and researchers. Throughout the book the reader will find high quality text, figures, formulas, comparisons etc. - all you need for a sound basis to start sensor network research." Prof. Jochen Schiller, Institute of Computer Science, Freie Universität Berlin Network processing units (NPUs) will be the occasion of sweeping changes in the network hardware industry over the next few years. This new breed of microchip impacts chip designers like Intel, equipment vendors like Cisco, application developers like IBM and Morotola, and an army of software engineers who spent the last decade working on protocols and network management solutions. A thoroughly practical dissection of the early NPU market, this designer's guide explains how network processors work and provides detailed

information on all major commercial architectures,
from features to design considerations. Comparative
tables are a rich source of cross-industry info.
Coverage includes traffic managers, classification
chips, content-addressable memories, switch fabrics,
security accelerators, storage coprocessors and
NetASICs.
In Patterns in Network Architecture, pioneer John
Day takes a unique approach to solving the problem
of network architecture. Piercing the fog of history,
he bridges the gap between our experience from the
original ARPANET and today's Internet to a new
perspective on networking. Along the way, he shows
how socioeconomic forces derailed progress and led
to the current crisis. Beginning with the seven
fundamental, and still unanswered, questions
identified during the ARPANET's development,
Patterns in Network Architecture returns to bedrock
and traces our experience both good and bad. Along
the way, he uncovers overlooked patterns in
protocols that simplify design and implementation
and resolves the classic conflict between connection
and connectionless while retaining the best of both.
He finds deep new insights into the core challenges
of naming and addressing, along with results from
upper-layer architecture. All of this in Day's deft
hands comes together in a tour de force of elegance
and simplicity with the annoying turn of events that
the answer has been staring us in the face:

Operating systems tell us even more about networking than we thought. The result is, in essence, the first "unified theory of networking," and leads to a simpler, more powerful—and above all—more scalable network infrastructure. The book then lays the groundwork for how to exploit the result in the design, development, and management as we move beyond the limitations of the Internet. With ever-increasing demands on capacity, quality of service, speed, and reliability, current Internet systems are under strain and under review. Combining contributions from experts in the field, this book captures the most recent and innovative designs, architectures, protocols, and mechanisms that will enable researchers to successfully build the next-generation Internet. A broad perspective is provided, with topics including innovations at the physical/transmission layer in wired and wireless media, as well as the support for new switching and routing paradigms at the device and sub-system layer. The proposed alternatives to TCP and UDP at the data transport layer for emerging environments are also covered, as are the novel models and theoretical foundations proposed for understanding network complexity. Finally, new approaches for pricing and network economics are discussed, making this ideal for students, researchers, and practitioners who need to know about designing, constructing, and operating the next-generation

Internet.

Practical design and performance solutions for every
ad hoc wireless network Ad Hoc Wireless Networks
comprise mobile devices that use wireless
transmission for communication. They can be set up
anywhere and any time because they eliminate the
complexities of infrastructure setup and central
administration-and they have enormous commercial
and military potential. Now, there's a book that
addresses every major issue related to their design
and performance. Ad Hoc Wireless Networks:
Architectures and Protocols presents state-of-the-art
techniques and solutions, and supports them with
easy-to-understand examples. The book starts off
with the fundamentals of wireless networking
(wireless PANs, LANs, MANs, WANs, and wireless
Internet) and goes on to address such current topics
as Wi-Fi networks, optical wireless networks, and
hybrid wireless architectures. Coverage includes:
Medium access control, routing, multicasting, and
transport protocols QoS provisioning, energy
management, security, multihop pricing, and much
more In-depth discussion of wireless sensor
networks and ultra wideband technology More than
200 examples and end-of-chapter problems Ad Hoc
Wireless Networks is an invaluable resource for
every network engineer, technical manager, and
researcher designing or building ad hoc wireless
networks.

Network routing can be broadly categorized into Internet routing, PSTN routing, and telecommunication transport network routing. This book systematically considers these routing paradigms, as well as their interoperability. The authors discuss how algorithms, protocols, analysis, and operational deployment impact these approaches. A unique feature of the book is consideration of both macro-state and micro-state in routing; that is, how routing is accomplished at the level of networks and how routers or switches are designed to enable efficient routing. In reading this book, one will learn about 1) the evolution of network routing, 2) the role of IP and E.164 addressing in routing, 3) the impact on router and switching architectures and their design, 4) deployment of network routing protocols, 5) the role of traffic engineering in routing, and 6) lessons learned from implementation and operational experience. This book explores the strengths and weaknesses that should be considered during deployment of future routing schemes as well as actual implementation of these schemes. It allows the reader to understand how different routing strategies work and are employed and the connection between them. This is accomplished in part by the authors' use of numerous real-world examples to bring the material alive. Bridges the gap between theory and practice in network routing, including the fine points of

implementation and operational experience Routing in a multitude of technologies discussed in practical detail, including, IP/MPLS, PSTN, and optical networking Routing protocols such as OSPF, IS-IS, BGP presented in detail A detailed coverage of various router and switch architectures A comprehensive discussion about algorithms on IP-lookup and packet classification Accessible to a wide audience due to its vendor-neutral approach Because they provide practical machine-to-machine communication at a very low cost, the popularity of wireless sensor networks is expected to skyrocket in the next few years, duplicating the recent explosion of wireless LANs. Wireless Sensor Networks: Architectures and Protocols describes how to build these networks, from the layers of the Networking Explained 2e offers a comprehensive overview of computer networking, with new chapters and sections to cover the latest developments in the field, including voice and data wireless networking, multimedia networking, and network convergence. Gallo and Hancock provide a sophisticated introduction to their subject in a clear, readable format. These two top networking experts answer hundreds of questions about hardware, software, standards, and future directions in network technology. Wireless networks Convergence of voice and data Multimedia networking Computer networks remain one of the central aspects of the computer world. This book examines crucial issues and research under the following rubrics: Communication Network Architectures; Communication Network Protocols; Network Services and Applications; Network Security and Privacy;

Network Operation and Management; Discrete Algorithms and Discrete Modelling Algorithmic and discrete aspects in the context of computer networking as well as mobile and wireless computing and communications.
The exponential increase in mobile device users and high-bandwidth applications has pushed the current 3G and 4G wireless networks to their capacity. Moreover, it is predicted that mobile data traffic will continue to grow by over 300 percent by 2017. To handle this spectacular growth, the development of improved wireless networks for the future ha
This important text/reference presents the latest research and developments in the field of mobile payment systems (MPS), covering issues of mobile device security, architectures and models for MPS, and transaction security in MPS. Topics and features: introduces the fundamental concepts in MPS, discussing the benefits and disadvantages of such systems, and the entities that underpin them; reviews the mobile devices and operating systems currently available on the market, describing how to identify and avoid security threats to such devices; examines the different models for mobile payments, presenting a classification based on their core features; presents a summary of the most commonly used cryptography schemes for secure communications; outlines the key challenges in MPS, covering security for ubiquitous mobile commerce and usability issues; highlights the opportunities offered by mobile cloud computing and vehicular ad hoc networks in the design and development of MPS.
This is a book about the bricks and mortar from which are built those edifices that will permeate the emerging information society of the future-computer networks. For many years such computer networks have played an indirect role in our daily lives as the hidden servants of banks, airlines, and stores. Now they are becoming more visible as

they enter our offices and homes and directly become part of our work, entertainment, and daily living. The study of how computer networks function is a combined study of communication theory and computer science, two disciplines appearing to have very little in common. The modern communication scientist wishing to work in this area soon finds that solving the traditional problems of transmission, modulation, noise immunity, and error bounds in getting the signal from one point to another is just the beginning of the challenge. The communication must be in the right form to be routed properly, to be handled without congestion, and to be understood at various points in the network. As for the computer scientist, he finds that his discipline has also changed. The fraction of computers that belong to networks is increasing all the time. And for a typical single computer, the fraction of its execution load, storage occupancy, and system management problems that are in volved with being part of a network is also growing.

This book addresses researchers and graduate students at the forefront of study/research on the Internet of Things (IoT) by presenting state-of-the-art research together with the current and future challenges in building new smart applications (e.g., Smart Cities, Smart Buildings, and Industrial IoT) in an efficient, scalable, and sustainable way. It covers the main pillars of the IoT world (Connectivity, Interoperability, Discoverability, and Security/Privacy), providing a comprehensive look at the current technologies, procedures, and architectures.

Service providers are increasingly focused on delivering triple-play bundles that incorporate Internet, video, and VoIP services—as well as multi-play bundles containing even more advanced services. Broadband Network Architectures is the first comprehensive guide to designing, implementing, and managing the networks that make triple-play services

possible. Hellberg, Greene, and Boyes present their field-tested industry best practices and objectively evaluate the tradeoffs associated with key up-front architectural decisions that balance the complexities of bundled services and sophisticated traffic policies. Broadband Network Architectures not only documents what is possible on this rapidly changing field of networking, but it also details how to divide Internet access into these more sophisticated services with specialized Quality of Service handling. Coverage includes · An in-depth introduction to next-generation triple-play services: components, integration, and business connectivity · Triple-play backbone design: MPLS, Layer 3 VPNs, and Broadband Network Gateways (BNGs)/Broadband Remote Access Servers (B-RAS) · Protocols and strategies for integrating BNGs into robust triple-play networks · Triple-play access network design: DSLAM architectures, aggregation networks, transport, and Layer 2 tunneling · VLAN-per-customer versus service-per-VLAN architectures: advantages and disadvantages · PPP or DHCP: choosing the right access protocol · Issues associated with operating in wholesale, unbundled environments · IP addressing and subscriber session management · Broadband network security, including Denial of Service attacks and VoIP privacy · The future of wireless broadband: IMS, SIP, and non-SIP based fixed mobile convergence and wireless video Java's rich, comprehensive networking interfaces make it an ideal platform for building today's networked, Internet-centered applications, components, and Web services. Now, two Java networking experts demystify Java's complex networking API, giving developers practical insight into the key techniques of network development, and providing extensive code examples that show exactly how it's done. David and Michael Reilly begin by

reviewing fundamental Internet architecture and TCP/IP protocol concepts all network programmers need to understand, as well as general Java features and techniques that are especially important in network programming, such as exception handling and input/output. Using practical examples, they show how to write clients and servers using UDP and TCP; how to build multithreaded network applications; and how to utilize HTTP and access the Web using Java. The book includes detailed coverage of server-side application development; distributed computing development with RMI and CORBA; and email-enabling applications with the powerful JavaMail API. For all beginning to intermediate Java programmers, network programmers who need to learn to work with Java.

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 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 startedM Basic
configuration Configuring the interface Configuring
routing Configuring DNS Configuring network servers
Configuring sendmail Configuring Apache Network
security Troubleshooting Appendices include dip, ppd,
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.

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

This is a book about the bricks and mortar out of which are built those edifices that so well characterize late twentieth century industrial society networks of computers and terminals. Such computer networks are playing an increasing role in our daily lives, somewhat indirectly up to now as the hidden servants of banks, retail credit bureaus, airline reservation offices, and so forth, but soon they will become more visible as they enter our offices and homes and directly become part of our work, entertainment, and daily living. The study of how computer networks work is a combined study of communication theory and computer science, two disciplines appearing to have very little in common. The modern communication scientist wishing to work in this area finds himself in suddenly unfamiliar territory. It is no longer sufficient for him to think of transmission, modulation, noise immun ity, error bounds, and other abstractions of a single communication link; he is dealing now with a topologically complex interconnection of such links. And what is more striking, solving the problems of getting the signal from one point to another is just the beginning of the communication process. The

communication must be in the right form to be routed properly, to be handled without congestion, and to be understood at the right points in the network. The communication scientist suddenly finds himself charged with responsibility for such things as code and format conversions, addressing, flow control, and other abstractions of a new and challenging kind.

Get the big picture on converged network architectures and emerging protocols! Converged networks integrate voice, video, and data traffic on a single network. This book covers converged network architectures as well as the latest enabling protocols including SIP, H.323, MPLS, and H.248. Readers will gain a better understanding of network architectures and protocols such as SONET, frame relay, ATM and IP. The book offers the latest information on voice communication networks, data networks, voice packet processing, coding for broadband systems, and voice- over packet networks. Readers will also discover how converged networks can provide the highest level of service for the least cost.

This book collects articles featuring recent advances in the theory and applications of wireless mesh networking technology. The contributed articles, from the leading experts in the field, cover both theoretical concepts and system-level implementation issues. The book starts with the essential background on the basic concepts and architectures of wireless mesh networking and then presents advanced level materials in a step-by-step fashion.

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

The Art of Network Architecture Business-Driven Design The business-centered, business-driven guide to architecting and evolving networks The Art of Network Architecture is the first book that places business needs and capabilities at the center of the process of architecting and evolving networks. Two leading enterprise network architects help you craft solutions that are fully aligned with business strategy, smoothly accommodate change, and maximize future flexibility. Russ White and Denise Donohue guide network designers in asking and answering the crucial questions that lead to elegant, high-value solutions. Carefully blending business and technical concerns, they show how to optimize all network interactions involving flow, time, and people. The authors review important links between business requirements and network design, helping you capture the information you need to design effectively. They introduce today's most useful models and frameworks, fully addressing modularity, resilience, security, and management. Next, they drill down into network structure and topology, covering virtualization, overlays, modern routing choices, and highly complex

network environments. In the final section, the authors integrate all these ideas to consider four realistic design challenges: user mobility, cloud services, Software Defined Networking (SDN), and today's radically new data center environments. • Understand how your choices of technologies and design paradigms will impact your business • Customize designs to improve workflows, support BYOD, and ensure business continuity • Use modularity, simplicity, and network management to prepare for rapid change • Build resilience by addressing human factors and redundancy • Design for security, hardening networks without making them brittle • Minimize network management pain, and maximize gain • Compare topologies and their tradeoffs • Consider the implications of network virtualization, and walk through an MPLS-based L3VPN example • Choose routing protocols in the context of business and IT requirements • Maximize mobility via ILNP, LISP, Mobile IP, host routing, MANET, and/or DDNS • Learn about the challenges of removing and changing services hosted in cloud environments • Understand the opportunities and risks presented by SDNs • Effectively design data center control planes and topologies

This book contains a key component of the NII 2000 project of the Computer Science and Telecommunications Board, a set of white papers that contributed to and complements the project's final report, The Unpredictable Certainty: Information Infrastructure Through 2000, which was published in the spring of 1996. That report was disseminated widely and was well

received by its sponsors and a variety of audiences in government, industry, and academia. Constraints on staff time and availability delayed the publication of these white papers, which offer details on a number of issues and positions relating to the deployment of information infrastructure.

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

Architecture of Network Systems explains the practice and methodologies that will allow you to solve a broad range of problems in system design, including problems related to security, quality of service, performance, manageability, and more. Leading researchers Dimitrios Serpanos and Tilman Wolf develop architectures for all network sub-systems, bridging the gap between operation and VLSI. This book provides comprehensive coverage of the technical aspects of network systems,

including system-on-chip technologies, embedded protocol processing and high-performance, and low-power design. It develops a functional approach to network system architecture based on the OSI reference model, which is useful for practitioners at every level. It also covers both fundamentals and the latest developments in network systems architecture, including network-on-chip, network processors, algorithms for lookup and classification, and network systems for the next-generation Internet. The book is recommended for practicing engineers designing the architecture of network systems and graduate students in computer engineering and computer science studying network system design. This is the first book to provide comprehensive coverage of the technical aspects of network systems, including processing systems, hardware technologies, memory managers, software routers, and more. Develops a systematic approach to network architectures, based on the OSI reference model, that is useful for practitioners at every level. Covers both the important basics and cutting-edge topics in network systems architecture, including Quality of Service and Security for mobile, real-time P2P services, Low-Power Requirements for Mobile Systems, and next generation Internet systems.

An ideal starting point for anyone wanting to learn about nextgeneration wireless networks Gives important insights into the design of wireless IPnetworks Illustrates the standards and network architectures defined byleading standards bodies (including MWIF, 3GPP and 3GPP2) Discusses protocols in four key areas: signaling,

mobility,quality of service, and security The authors have a good deal of experience in this field, andhave many patents pending in the area of wireless networking 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.

As the Internet has grown, so have the challenges associated with delivering static, streaming, and dynamic content to end-users. This book is unique in that it addresses the topic of content networking exclusively and comprehensively, tracing the evolution from traditional web caching to today's open and vastly more flexible architecture. With this evolutionary approach, the authors emphasize the field's most persistent concepts, principles, and mechanisms--the core information that will help you

understand why and how content delivery works
today, and apply that knowledge in the future. +
Focuses on the principles that will give you a deep
and timely understanding of content networking. +
Offers dozens of protocol-specific examples showing
how real-life Content Networks are currently
designed and implemented. + Provides extensive
consideration of Content Services, including both the
Internet Content Adaptation Protocol (ICAP) and
Open Pluggable Edge Services (OPES). + Examines
methods for supporting time-constrained media such
as streaming audio and video and real-time media
such as instant messages. + Combines the vision
and rigor of a prominent researcher with the practical
experience of a seasoned development engineer to
provide a unique combination of theoretical depth
and practical application.
Providing Internet services to mobile users has
become the most significant topic within the
telecommunications research community in the past
few years. As a result several books have been
published by the experts from the cellular
communications world and researchers from the
computer science field. While cellular books cover
architecture and air interface of the second- and third-
generation wireless systems, computer networks
and Internet books overview some fundamentals and
protocols on migrating the fix-IP into mobile
environment. Other books that claimed to cover the

both topics in the past, however, also failed to provide a complete literature on wireless IP, because of focusing on either access technology or network protocols. The Wireless Mobile Internet - Architectures, Protocols, and Services elegantly bridges this gap and therefore provides the first complete literature for the wireless Internet both describing the standard activities and the current status of the wireless IP, as well as detailing network models and specific techniques. While some chapters in the Wireless Mobile Internet describe the standard activities and the current status of the wireless IP other chapters detail network models and specific techniques that usually approached by academic researchers. * Comprehensive yet simple understanding of the wireless Internet through usage of more than 250 conceptual and numerical result figures * Logical organization for customized use as a reference book on the state-of-the-art technology for wireless Internet, a text for fundamental components of the wireless Internet, standards, and a guideline for advanced research topics * Provides an easy-to-read but complete reference for core network and access technology of 2G and 3G cellular systems as well as related standards * Illustrates the main features of future mobile networks * Offers a thorough literature on essentials for a mobile network: quality of service, traffic modelling and management, mobility management,

transport protocols, and network protocols * Uniquely
covers all relevant telecommunication access and
network technologies for wireless Internet from
wireless LAN to satellite Essential reading for
researchers from industry and academia in the field
of wireless cellular networks and Internet, practicing
engineers who need a single text on the subject as
well as senior level undergraduates and first-year
postgraduates.
This practical resource provides a survey on the
technologies, protocols, and architectures that are
widely used in practice to implement networked
multimedia services. The book presents the
background and basic concepts behind multimedia
networking, and provides a detailed analysis of how
multimedia services work, reviewing the diverse
network protocols that are of common use to
implement them. To guide the explanation of
concepts, the book focuses on a representative set
of networked multimedia services with proven
success and high penetration in the
telecommunication market, namely Internet
telephony, Video-on-Demand (VoD), and live IP
television (IPTV). Contents are presented following a
stepwise approach, describing each network
protocol in the context of a networked multimedia
service and making appropriate references to the
protocol as needed in the description of other
multimedia services. This book also contains

questions and exercises to provide the reader with insight on the practical application of the explained concepts. Additionally, a laboratory practice is included, based on open-source tools and software, to analyze the operation of an Internet telephony service from a practical perspective, as well as to deploy some of its fundamental components. Take an in-depth tour of core Internet protocols and learn how they work together to move data packets from one network to another. With this concise book, you'll delve into the aspects of each protocol, including operation basics and security risks, and learn the function of network hardware such as switches and routers. Ideal for beginning network engineers, each chapter in this book includes a set of review questions, as well as practical, hands-on lab exercises. Understand basic network architecture, and how protocols and functions fit togetherLearn the structure and operation of the Eth. Answering the need for an accessible overview of the field, this text/reference presents a manageable introduction to both the theoretical and practical aspects of computer networks and network programming. Clearly structured and easy to follow, the book describes cutting-edge developments in network architectures, communication protocols, and programming techniques and models, supported by code examples for hands-on practice with creating network-based applications. Features: presents

detailed coverage of network architectures; gently introduces the reader to the basic ideas underpinning computer networking, before gradually building up to more advanced concepts; provides numerous step-by-step descriptions of practical examples; examines a range of network programming techniques; reviews network-based data storage and multimedia transfer; includes an extensive set of practical code examples, together with detailed comments and explanations. Wireless sensor networks (WSNs) are a special class of ad hoc network in which network nodes composed of tiny sensors pass data such as temperature, pressure, and humidity through the network to a central location. Wireless sensor multimedia networks (WSMNs) are a special category of WSNs in which the sensor nodes are small cameras and microphones that can send voice, image, or video data through the network. This book presents the latest advances and research in WSMN architecture, algorithms, and protocols. WSMNs are attracting great attention from academia and industry due to the variety of applications in which they can be deployed. Wireless Sensor Multimedia Networks: Architectures, Protocols, and Applications explores the many benefits of WSMNs and the variety of applications in which they can be used—surveillance, traffic monitoring, advanced healthcare (blood pressure and heart rate

monitoring), habitat monitoring, and localization services (finding missing children or wanted criminals). The contributed chapters in this book explore current research into key areas such as New quality-of-service-aware routing protocols that support a high data rate in WSMNs Cognitive radio capability that increases efficiency of spectrum utilization and decreases the probability of collision and contention Multimedia streaming optimization techniques New security schemes for real-time video streaming Various ways of optimizing power consumption in WSMNs Wireless Sensor Multimedia Networks: Architectures, Protocols, and Applications discusses open research issues and future trends in WSMNs. With this book, academic researchers, engineers, and graduate students will be well-equipped to advance the research in this emerging field.

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