An Introduction To Broadband Networks Lans Mans Atm B Isdn And Optical Networks For Integrated Multimedia Telecommunications Applications Of Communications Theory

Broadband networks, such as asynchronous transfer mode (ATM), frame relay, and leased lines, allow us to easily access multimedia services (data, voice, and video) in one package. Exploring why broadband networks are important in modern-day telecommunications, Introduction to Broadband Communication Systems covers the concepts and components of both standard and emerging broadband communication network systems. After introducing the fundamental concepts of broadband communication systems, the book discusses Internet-based networks, such as intranets and extranets. It then addresses the networking technologies of X.25 and frame relay, fiber channels, a synchronous optical network (SONET), a virtual private network (VPN), an integrated service digital network (ISDN), broadband ISDN (B-ISDN), and ATM. The authors also cover access networks, including digital subscriber lines (DSL), cable modems, and passive optical networks, as well as explore wireless networks, such as wireless data services, personal communications services (PCS), and satellite communications. The book concludes with chapters on network management, network security, and network testing, fault tolerance, and analysis. With up-to-date, detailed information on the state-of-the-art technology in broadband communication systems, this resource illustrates how some networks have the potential of eventually replacing traditional dial-up Internet. Requiring only a general knowledge of communication systems theory, the text is suitable for a one- or two-semester course for advanced undergraduate and beginning graduate students in engineering as well as for short seminars on broadband communication systems.

A comparative introduction to major global wireless standards, technologies and their applications From GSM to LTE-Advanced Pro and 5G: An Introduction to Mobile Networks and Mobile Broadband, 3rd Edition provides technical descriptions of the various wireless technologies currently in use. It explains the rationales behind their differing mechanisms and implementations while exploring the advantages and limitations of each technology. This edition has been fully updated and substantially expanded to reflect the significant evolution in mobile network technology occurring over the past several years. The chapter on LTE has been extensively enhanced with new coverage of current implementations of LTE carrier aggregation, mobility management, cell reselection and handover procedures, as well as the latest developments in 5G radio and core networks in 3GPP. It now features additional information on the TD-LTE air interface, IPv6 in mobile networks, Network Function Virtualization (NFV) and Narrowband Internet of Things (NB-IOT). Voice-over-LTE (VoLTE) is now treated extensively in a separate chapter featuring coverage of the VoLTE call establishment process, dedicated bearer setup, header compression, speech codec and bandwidth negotiation, supplementary service configuration and VoLTE emergency calls. In addition, extensive coverage of Voice-over-Wifi and mission critical communication for public safety organizations over LTE has been added. The WLAN chapter now provides coverage of WPA2-Professional with certificates for authentication in large deployments, such as the global Eduroam network and the new WLAN 60 GHz air interface. Bluetooth evolution has been addressed by including a detailed description of Bluetooth Low Energy (BLE) in the chapter devoted to Bluetooth. Describes the different systems based on the standards, their practical implementation and design assumptions, and the performance and capacity of each system in practice is analyzed and explained Questions at the end of each chapter

and answers on the accompanying website make this book ideal for self-study or as course material.

Internet TV is the quintessential digital convergence medium, linking television, telecommunications, the Internet, computer applications, games, and more. Soon, venturing beyond the convenience of viewer choice and control, Internet TV will enable and encourage new types of entertainment, education, and games that take advantage of the Internet's interactive capabilities. What Internet TV is today and can be in the future forms the context for this book. Arising from collaboration between the Columbia Institute for Tele-Information (CITI) and the European Institute for the Media (EIM), this volume investigates the advent of widely available individual broadband Internet communications and their impact on the development of Internet TV. Editors Eli Noam, Jo Groebel, and Darcy Gerbarg have collected seminal papers by leaders from the U.S. and European media and technology industries that offer a critical look at the impact of interactivity on television content, and address the need for media organizations to create interactive programming in this untapped realm with unclear consumer interest and desires. Each section of the volume fleshes out key issues and concepts of television and the Internet: *Part I, Infrastructure Implications of Internet TV, discusses questions about the required network capacity for various quality grades to deliver individualized broadband to homes. *Part II, Network Business Models and Strategies, addresses the business challenges of making Internet TV a financial success. *Part III, Policy, examines policy issues, including copyright and regulation. *Part IV, Content and Culture, reviews available content, those creating it, and how consumers view Internet TV content. *Part V, Future Impacts, considers future global prospects for Internet TV content creation and distribution. Internet Television is an essential resource for professionals and scholars in new technology and media studies, media policy, telecommunication, broadcasting, and related areas. It is also appropriate for graduate seminars in telecommunications, media and new technologies, and broadcasting and the Internet.

The rapid development of optical fiber transmission technology has created the possibility for constructing digital networks that are as ubiquitous as the current voice network but which can carry video, voice, and data in massive qlJantities. How and when such networks will evolve, who will pay for them, and what new applications will use them is anyone's guess. There appears to be no doubt, however, that the trend in telecommunication networks is toward far greater transmission speeds and toward greater heterogeneity in the requirements of different applications. This book treats some of the central problems involved in these networks of the future. First, how does one switch data at speeds orders of magnitude faster than that of existing networks? This problem has roots in both classical switching for telephony and in switching for packet networks. There are a number of new twists here, however. The first is that the high speeds necessitate the use of highly parallel processing and place a high premium on computational simplicity. The second is that the required data speeds and allowable delays of different applications differ by many orders of magnitude. The third is that it might be desirable to support both point to point applications and also applications involving broadcast from one source to a large set of destinations.

This book provides up to date coverage of the basics of ATM and internet protocols, and characteristics of satellite networks and internetworking between satellite and terrestrial networks Satellite Networking: Principles and Protocols, Second Edition provides up to date information of the original topics in satellite networking and protocols focusing on Internet Protocols (IP) over satellites, broadband over satellites, next generation IP (IPv6) over satellites, new generation of DVB-S/S2 and DVB-RCS next generations and new services and applications. It also includes some analytical techniques for evaluation of end to end IP performance and QoS over satellite, reflecting the recent convergence of telecommunication, Internet, broadcasting and mobile networks. Topics new to this edition: Internetworking with MANET, DVB-S/S2 and DVB-RCS/RCS2 (including TCP/IP over DVB-S/RCS), recent developments in broadband satellite systems,

convergence of services and network technologies (including Internet, telecom, mobile, TV, etc.), radio resource management, PEP, I-PEP, SCPS, traffic modelling and engineering with analysis and examples, and future developments of satellite networking. Provides up to date coverage of the basics of ATM and internet protocols, and characteristics of satellite networks and internetworking between satellite and terrestrial networks (e.g. mobile ad hoc networks), including coverage of new services and applications (e.g. Internet, telecom, mobile and TV) Discusses the real-time protocols including RTP, RTCP and SIP for real-time applications such as VoIP and MMC, and explains TCP/IP over satellite and evolution of IPv6 over satellite and beyond

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

Multimedia service provisioning is believed to be one of the prerequisites to guarantee the success of next-generation wireless networks. Examining the role of multimedia in state-of-the-art wireless systems and networks, Broadband Mobile Multimedia: Techniques and Applications presents a collection of introductory concepts, fundamental tech

Janet Abbate recounts the key players and technologies that allowed the Internet to develop; but her main focus is always on the social and cultural factors that influenced the Internet's design and use. Since the late 1960s the Internet has grown from a single experimental network serving a dozen sites in the United States to a network of networks linking millions of computers worldwide. In Inventing the Internet, Janet Abbate recounts the key players and technologies that allowed the Internet to develop; but her main focus is always on the social and cultural factors that influenced the Internets design and use. The story she unfolds is an often twisting tale of collaboration and conflict among a remarkable variety of players, including government and military agencies, computer scientists in academia and industry, graduate students, telecommunications companies, standards organizations, and network users. The story starts with the early networking breakthroughs formulated in Cold War think tanks and realized in the Defense Department's creation of the ARPANET. It ends with the emergence of the Internet and its rapid and seemingly chaotic growth. Abbate looks at how academic and military influences and attitudes shaped both networks; how the usual lines between producer and user of a technology were crossed with interesting and unique results; and how later users invented their own very successful applications, such as electronic mail and the World Wide Web. She concludes that such applications continue the trend of decentralized, user-driven development that has characterized the Internet's entire history and that the key to the Internet's success has been a commitment to flexibility and diversity, both in technical design and in organizational culture.

The Internet Book, Fifth Edition explains how computers communicate, what the Internet is, how the Internet works, and what services the Internet offers. It is designed for readers who do not have a strong technical background — early chapters clearly explain the terminology and concepts needed to understand all the services. It helps the reader to understand the technology behind the Internet, appreciate how the Internet can be used, and discover why people find it so exciting. In addition, it explains the origins of the Internet and shows the reader how rapidly it has grown. It also provides information on how to avoid scams and exaggerated marketing claims. The first section of the book introduces

communication system concepts and terminology. The second section reviews the history of the Internet and its incredible growth. It documents the rate at which the digital revolution occurred, and provides background that will help readers appreciate the significance of the underlying design. The third section describes basic Internet technology and capabilities. It examines how Internet hardware is organized and how software provides communication. This section provides the foundation for later chapters, and will help readers ask good questions and make better decisions when salespeople offer Internet products and services. The final section describes application services currently available on the Internet. For each service, the book explains both what the service offers and how the service works. About the Author Dr. Douglas Comer is a Distinguished Professor at Purdue University in the departments of Computer Science and Electrical and Computer Engineering. He has created and enjoys teaching undergraduate and graduate courses on computer networks and Internets, operating systems, computer architecture, and computer software. One of the researchers who contributed to the Internet as it was being formed in the late 1970s and 1980s, he has served as a member of the Internet Architecture Board, the group responsible for guiding the Internet's development. Prof. Comer is an internationally recognized expert on computer networking, the TCP/IP protocols, and the Internet, who presents lectures to a wide range of audiences. In addition to research articles, he has written a series of textbooks that describe the technical details of the Internet. Prof. Comer's books have been translated into many languages, and are used in industry as well as computer science, engineering, and business departments around the world. Prof. Comer joined the Internet project in the late 1970s, and has had a high-speed Internet connection to his home since 1981. He wrote this book as a response to everyone who has asked him for an explanation of the Internet that is both technically correct and easily understood by anyone. An Internet enthusiast, Comer displays INTRNET on the license plate of his car.

Written by experts in the field, this book provides an overview of all forms of broadband subscriber access networks and technology, including fiber optics, DSL for phone lines, DOCSIS for coax, power line carrier, and wireless. Each technology is described in depth, with a discussion of key concepts, historical development, and industry standards. The book contains comprehensive coverage of all broadband access technologies, with a section each devoted to fiber-based technologies, non-fiber wired technologies, and wireless technologies. The four co-authors' breadth of knowledge is featured in the chapters comparing the relative strengths, weaknesses, and prognosis for the competing technologies. Key Features: Covers the physical and medium access layers (OSI Layer 1 and 2), with emphasis on access transmission technology Compares and contrasts all recent and emerging wired and wireless standards for broadband access in a single reference Illustrates the technology that is currently being deployed by network providers, and also the technology that has recently been or will soon be standardized for deployment in the coming years, including vectoring,

wavelength division multiple access, CDMA, OFDMA, and MIMO Contains detailed discussion on the following standards: 10G-EPON, G-PON, XG-PON, VDSL2, DOCSIS 3.0, DOCSIS Protocol over EPON, power line carrier, IEEE 802.11 WLAN/WiFi, UMTS/HSPA, LTE, and LTE-Advanced

Planet Broadband is a breakthrough book that goes beyond jargon-laden technical manuals to describe not just what broadband is but why broadband matters to everyday people. Learn how broadband connectivity can help solve some of the vexing environmental and social problems confronting us today, while improving our lives.

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

Broadband communication expands our opportunities for entertainment, e-commerce and work at home, health care, education, and even e-government. It can make the Internet more useful to more people. But it all hinges on higher capacity in the â€œfirst mileâ€ or â€œlast mileâ€ that connects the user to the larger communications network. That connection is often adequate for large organizations such as universities or corporations, but enhanced connections to homes are needed to reap the full social and economic promise. Broadband: Bringing Home the Bits provides a contemporary snapshot of technologies, strategies, and policies for improving our communications and information infrastructure. It explores the potential benefits of broadband, existing and projected demand, progress and failures in

deployment, competition in the broadband industry, and costs and who pays them. Explanations of broadbandâ€™s alphabet soup â€" HFC, DSL, FTTH, and all the rest â€" are included as well. The reportâ€™s finding and recommendations address regulation, the roles of communities, needed research, and other aspects, including implications for the Telecommunications Act of 1996.

This textbook presents all the latest information on all aspects of each important component of ATM - the hottest telecommunications technology of this decade. It demonstrates how ATM internetworks several incompatible telecommunications technologies and provide the high-speed, high bandwidth backbone network that the entire telecom industry is converging toward.

Finally, there is a guide to home networking that was written for true beginners! The Absolute Beginner's Guide to Home Networking goes far beyond traditional printer or Internet sharing and is geared to help you understand home network types and concepts, install, configure and interconnect various types of wired and wireless networks. This easy-to-understand guide will help you achieve the desired goals of entertainment, information access and home security control with Windows, MacOS and Linux-based systems. Soon you will learn to share and enhance entertainment and even integrate business network hardware with a home network to exploit telecommuting, work-from-home and remote education opportunities.

This book explains the functional parts of a WiMax system and its basic operation. You will learn how WiMax can use base stations to provide high speed data connections that can be used for voice, data and video services to distances of over 30 km. The original WiMax system was designed to operate at 10-66 GHz and it had to change to offer broadband wireless access (BWA) in the 2-11 GHz frequency range. To do this, the WiMax standard includes variants (profiles) that use different combinations of radio channel types (single carrier -vs- multicarrier), modulation types, channel coding types to provide fixed, nomadic or portable services. WiMax can provide multiple types of services to the same user with different QoS levels. For example, it is possible to install a single WiMax transceiver in an office building and provide real time telephone services and best effort Internet browsing services on the same WiMax connection. To do this, WiMax was designed to mix contention based (competitive access) and contention free (polled access) to provide services which have different quality of service (QoS) levels. You will learn about WiMax protocols and how they are designed to allow for point to point (PTP), point to multipoint (PMP) and mesh networks. Operators can use the mesh configuration to allow it to link base stations without the need to install or lease interconnecting communication lines. Some of the services WiMax operators can provide include leased line, residential broadband, commercial broadband and digital television (IPTV) services. WiMax can use radio channel bandwidths that can vary from 1.25 MHz to 28 MHz and data transmission

rates can exceed 155 Mbps. The types of data connections on WiMax radio channels include basic (physical connection), primary (device control), secondary (configuration) and transport (user data). You will learn about the typical range for WIMAX systems and how to extend the range of WIMAX systems through the use of directional antennas.

Broadband Cable Access Networks focuses on broadband distribution and systems architecture and concentrates on practical concepts that will allow the reader to do their own design, improvement, and troubleshooting work. The objective is to enhance the skill sets of a large population that designs and builds broadband cable plants, as well as those maintaining and troubleshooting it. A large cross-section of technical personnel who need to learn these skills design, maintain, and service HFC systems from signal creation through transmission to reception and processing at the customer end point. In addition, data/voice and video specialists need to master and reference the basics of HFC design and distribution before contending with the intricacies of their own unique services. This book serves as an essential reference to all cable engineers—those who specifically design and maintain the HFC distribution plant as well as those primarily concerned with data/voice technology as well as video technology. Concentrates on practical concepts that will allow the user to do his own design, improvement, and trouble-shooting work. Prepares cable engineers and technicians to work with assurance as they face the latest developments and future directions. Concise and tightly focused, allowing readers to easily find answers to questions about an idea or concept they are developing in this area.

This book includes detailed coverage of digital cable systems -- most existing systems are analog. It shows how to control the return data coming from customers via the coax network. It discusses migrating from a broadcast-only network to one that can handle 2-way traffic.

An Introduction to Broadband NetworksLANs, MANs, ATM, B-ISDN, and Optical Networks for Integrated Multimedia TelecommunicationsSpringer Science & Business Media

When one considers broadband, the Internet immediately springs to mind. However, broadband is impacting society in many ways. For instance, broadband networks can be used to deliver healthcare or community related services to individuals who don't have computers, have distance as an issue to contend with, or don't use the internet. Broadband can support better management of scarce energy resources with the advent of smart grids, enables improved teleworking capacity and opens up a world of new entertainment possibilities. Yet scholarly examinations of broadband technology have so far examined adoption, usage, or diffusion but missed exploring the capacity of broadband networks to enable new applications, the management aspects of funding and developing broadband-enabled services, or the policy environment in which such networks are developed. This book explores a wide range of issues associated with the deployment and use of broadband including its impacts on individuals, organizations, and society, and offers a generalist understanding of the technical aspects of broadband. Management of Broadband Technology and Innovation offers insights on broadband from the perspectives of Information Systems, Management, Strategy, and Communications Policy scholars, drawing on research from these disciplines to inform diverse aspects of broadband deployment, policy, and use. Issues associated with a subject technical in nature, but now researched in many ways, are emphasised. This book explains various softer aspects of broadband deployment and use, focusing on the benefits of broadband rather than on details of the technology.

An introduction to theories and applications in wireless broadband networks As wireless broadband networks evolve into future generation wireless networks, it's important for students, researchers, and professionals to have a solid understanding of their underlying theories and

practical applications. Divided into two parts, the book presents: Enabling Technologies for Wireless Broadband Networks—orthogonal frequency-division multiplexing and other block-based transmissions; multi-input/multi-output antenna systems; ultra-wideband; medium access control; mobility resource management; routing protocols for multi-hop wireless broadband networks; radio resource management for wireless broadband networks; and quality of service for multimedia services Systems for Wireless Broadband Networks—long-term evolution cellular networks; wireless broadband networking with WiMax; wireless local area networks; wireless personal area networks; and convergence of networks Each chapter begins with an introduction and ends with a summary, appendix, and a list of resources for readers who would like to explore the subjects in greater depth. The book is an ideal resource for researchers in electrical engineering and computer science and an excellent textbook for electrical engineering and computer science courses at the advanced undergraduate and graduate levels.

Written by experts directly involved in the B-ISDN standards evolution, this book introduces the idea of integrated networks, and gives an overview of the current standardization situation. It discusses existing broadband networks based on the arising international standards, and explains how ATM is the basis for B-ISDN.

Written exclusively from broadcasters perspective, Mobile Broadcasting with WiMAX will help you move ahead in the use of WiMAX technologies. Whether you are an engineer, content provider, manager, or operator and planning such services, this book helps you understand the dimensions of this new medium and integration of communication, broadcasting and Multimedia technologies. The book oulines migrating to a new generation of broadcasting which integrates the Mobile, Wireless and Fixed network domains, then gives you a complete picture on what is happening in the field. The book is divided into five parts as follows: PART I Gives an introduction to Broadband Wireless Technologies and Mobile WiMAX. Wi-Fi including 802.11a,b,n and g, WiMAX technologies with focus on Mobile WiMAX 802.16e, and provides a global overview of deployment of Wireless broadband networks. PART-II is about Mobile Multimedia broadcasting and Mobile TV technologies, based on both cellular and broadband wireless. PART III covers Resources for Mobile multimedia broadcasting and comprises of four structured chapters on Spectrum for WiMAX networks, WiMAX terrestrial broadcasting networks, client devices for WiMAX and an update of on chipsets developments. Part IV is devoted to the Network Architectures and the integration of WiMAX with other networks, both fixed and mobile. Part V deals with Software architectures and Applications which help the process of mobile multimedia broadcasting. Case studies of prominent networks are given with country specific examples.

An authoritative introduction to the roles of switching and transmission in broadband integrated services networks Principles of Broadband Switching and Networking explains the design and analysis of switch architectures suitable for broadband integrated services networks, emphasizing packet-switched interconnection networks with distributed routing algorithms. The text examines the mathematical properties of these networks, rather than specific implementation technologies. Although the pedagogical explanations in this book are in the context of switches, many of the fundamental principles are relevant to other communication networks with regular topologies. After explaining the concept of the modern broadband integrated services network and why it is necessary in today’s society, the book moves on to basic switch design principles, discussing two types of circuit switch design—space domain and time domain—and packet switch design. Throughput improvements are illustrated by some switch design variations such as Speedup principle, Channel-Grouping principle, Knockout principle, and Dilation principle. Moving seamlessly into advanced switch design principles, the book covers switch scalability, switch design for multicasting, and path switching. Then the focus moves to broadband communications networks that make use of such switches. Readers

receive a detailed introduction on how to allocate network resources and control traffic to satisfy the quality of service requirements of network users and to maximize network usage. As an epilogue, the text shows how transmission noise and packet contention have similar characteristics and can be tamed by comparable means to achieve reliable communication. Principles of Broadband Switching and Networking is written for senior undergraduate and first-year postgraduate students with a solid background in probability theory.

This revised edition of Communication Systems from GSM to LTE: An Introduction to Mobile Networks and Mobile Broadband Second Edition (Wiley 2010) contains not only a technical description of the different wireless systems available today, but also explains the rationale behind the different mechanisms and implementations; not only the ‘how’ but also the ‘why’. In this way, the advantages and also limitations of each technology become apparent. Offering a solid introduction to major global wireless standards and comparisons of the different wireless technologies and their applications, this edition has been updated to provide the latest directions and activities in 3GPP standardization up to Release 12, and importantly includes a new chapter on Voice over LTE (VoLTE). There are new sections on Building Blocks of a Voice Centric Device, Building Blocks of a Smart Phone, Fast Dormancy, IMS and High-Speed Downlink Packet Access, and Wi-Fi-Protected Setup. Other sections have been considerably updated in places reflecting the current state of the technology. • Describes the different systems based on the standards, their practical implementation and design assumptions, and the performance and capacity of each system in practice is analyzed and explained • Questions at the end of each chapter and answers on the accompanying website make this book ideal for self-study or as course material

Broadband communications is widely recognized as one of the key technologies for building the next generation global network infrastructure to support ever-increasing multimedia applications. This book contains a collection of timely leading-edge research papers that address some of the important issues of providing such a broadband network infrastructure. Broadband Communications represents the selected proceedings of the Fifth International Conference on Broadband Communications, sponsored by the International Federation for Information Processing (IFIP) and held in Hong Kong in November 1999. The book is organized according to the eighteen technical sessions of the conference. The topics covered include internet services, traffic modeling, internet traffic control, performance evaluation, billing, pricing, admission policy, mobile network protocols, TCP/IP performance, mobile network performance, bandwidth allocation, switching systems, traffic flow control, routing, congestion and admission control, multicast protocols, network management, and quality of service. It will serve as an essential reference for computer scientists and practitioners.

This book provides you with a thorough introduction to wireless access and local networks, covers broadband mobile wireless access systems, and details mobile and broadband wireless local area networks. This forward-looking reference

focuses on cutting-edge mobile WiMax, WiFi, and WiBro technologies, including in-depth design and implementation guidance.

Considering the key evolutions within the access network technologies as well as the unprecedented levels of bandwidth demands by end users, this book condenses the relentless research, design, and deployment experience of state-of-the-art access networks. Furthermore, it shares the critical steps and details of the developments and deployment of these emergent technologies; which is very crucial particularly as telecommunications vendors and carriers are looking for cost-effective ultra-broadband “last-mile” access solutions to stay competitive in the “post bubble” era. The book is written to provide a comprehensive overview of the major broadband access technologies and deployments involving internationally recognized authors and key players. Due to its scope and depth, the proposed book is able to fill an important gap of today’s available literature.

This is an elementary textbook on an advanced topic: broadband telecommunica tion networks. I must declare at the outset that this book is not primarily intended for an audience of telecommunication specialists who are weIl versed in the concepts, system architectures, and underlying technologies of high-speed, multi media, bandwidth-on-demand, packet-switching networks, although the techni cally sophisticated telecommunication practitioner may wish to use it as a refer ence. Nor is this book intended to be an advanced textbook on the subject of broadband networks. Rather, this book is primarily intended for those eager to leam more about this exciting fron tier in the field of telecommunications, an audience that includes systems designers, hardware and software engineers, en gineering students, R&D managers, and market planners who seek an understand ing of local-, metropolitan-, and wide-area broadband networks for integrating voice, data, image, and video. Its primary audience also includes researchers and engineers from other disciplines or other branches of telecommunications who anticipate a future involvement in, or who would simply like to leam more about, the field of broadband networks, along with scientific researchers and corporate telecommunication and data communication managers whose increasingly sophis ticated applications would benefit from (and drive the need for) broadband net works. Advanced topics are certainly not ignored (in fact, a plausible argument could be mounted that aIl of the material is advanced, given the infancy of the topic).

The access network is expected to be one of the major battlegrounds of telecommunications network operators, since upgrades of the existing narrowband access network will be the critical factor in supplying multimedia broadband services in a competitive market. The future broadband access network architecture needs to be flexible enough to efficiently support the provision of a full set of broadband and narrowband services with a wide range of capacity demands. A wide range of broadband access technologies are available. Furthermore, the key issues in the upgrading of the very cost

sensitive access network are financial as well as technological, both for incumbent and new entrant operators. Thus, in order to identify minimum-risk introductory strategies the economic viability of access network broadband upgrades needs to be carefully assessed. However, despite the definite need for techno-economic evaluations, very few books have been published in this field. One of the reasons might be that broadband access network upgrading only very recently gained wide recognition as a key challenge for broadband delivery. Secondly, this kind of strategic work and these studies tend to be considered rather sensitive by operators, and thus both results and methodologies are not usually readily available. Thirdly, the work reported in this book in many respects was a major pioneering effort, which quite ambitiously aimed at modelling the whole life-cycle costs and revenue streams of access network upgrades, as opposed to several other efforts, which often are limited to pure investment cost comparisons.

Nowadays, the Internet plays a vital role in our lives. It is currently one of the most effective media that is shifting to reach into all areas in today's society. While we move into the next decade, the future of many emerging technologies (IoT, cloud solutions, automation and AI, big data, 5G and mobile technologies, smart cities, etc.) is highly dependent on Internet connectivity and broadband communications. The demand for mobile and faster Internet connectivity is on the rise as the voice, video, and data continue to converge to speed up business operations and to improve every aspect of human life. As a result, the broadband communication networks that connect everything on the Internet are now considered a complete ecosystem routing all Internet traffic and delivering Internet data faster and more flexibly than ever before. This book gives an insight into the latest research and practical aspects of the broadband communication networks in support of many emerging paradigms/applications of global Internet from the traditional architecture to the incorporation of smart applications. This book includes a preface and introduction by the editors, followed by 20 chapters written by leading international researchers, arranged in three parts. This book is recommended for researchers and professionals in the field and may be used as a reference book on broadband communication networks as well as on practical uses of wired/wireless broadband communications. It is also a concise guide for students and readers interested in studying Internet connectivity, mobile/optical broadband networks and concepts/applications of telecommunications engineering.

Broadband Networking shows you how to bring all the benefits of multiservice networks to your company, and build an infrastructure for audio, graphics, animation, full motion video - all types of real-time multimedia applications. Broadband Networking provides easy-to-understand material on service issues, such as latency and bandwidth, standards, and critical technologies, including The rapid deployment of voice over traditionally data-only networks with chapters on Voice over IP, Voice over Frame Relay, the IP PBX, video conferencing, and voice/video operations in the LAN. Emerging new

technologies, such as dense wave-division multiplexing (DWDM). Delivery technologies coverage, including digital subscriber line (DSL), cable modems, wireless, and even satellite delivery With Broadband Networking, you'll learn how to: Reduce costs and add services with new bandwidth saving techniques o Expand a network's capacity, leverage infrastructure, and safeguard network privacy Prepare a network for the stringent requirements for two-way interactive video Lower WAN costs, enhance access capability, and make faster upgrades with frame relay Find out key networking options for supporting bursty data on LANs and WANs Learn practical information from top experts at leading-edge companies, such as Lucent Technologies, IBM, Hewlett-Packard, Siemens, and MCI Whether you're a network manager, architect, administrator, or engineer, Broadband Networking brings together crucial information and insight for making the best possible decisions about today's most important networking technologies.

Explains how ATM fits into WANs and LANs with chapters on architecture, switching elements, and traffic management. The second edition covers new ATM enhancements, including MPOA, LAN emulation, frame-based ATM, layer 3 switching, and wireless ATM. Intended for systems engineers. Annotation copyrighted by Book News, Inc., Portland, OR.

Optical networks, undersea networks, GSM, UMTS...The recent explosion in broadband communications technologies has opened a new world of fast, flexible services and applications. To successfully implement these services, however, requires a solid understanding of the concepts and capabilities of broadband technologies and networks. Building Broadband Networks provides a comprehensive, non-theoretical introduction to broadband networking. It clearly and thoroughly conveys the principles and the technical fundamentals of the high-performance technologies that enable the reliable delivery of media-rich voice, video, and data services. After a careful examination of ISDN and ATM technologies, it describes optical network solutions based on SONET/SDH, WDM, and DWDM technologies. It then explores Ethernet operations and services and introduces Frame Relay and Fibre Channel networks, DSL solutions, and wireline and wireless cable networks. The author reviews the capabilities of cellular technologies, describes the characteristics of wireless networking technologies, and examines broadband satellite networks. She also explores next-generation network configurations, such as Internet2 and GEANT, and concludes with a study of network security problems and solutions. The process of building and implementing broadband networks is technically complicated. Straightforward, highly readable, and logically presented, Building Broadband Networks provides the foundation for understanding the broadband communications infrastructure and the framework needed to effectively develop and deploy broadband network solutions.

A new edition of Wiley's Communication Systems for the Mobile Information Society, from the same author Wireless systems such as GSM, UMTS, LTE, WiMAX, Wi-Fi and Bluetooth offer possibilities to keep people connected while on

the move. In this flood of technology, From GSM to LTE: An Introduction to Mobile Networks and Mobile Broadband enables readers to examine and understand each technology, and how to utilise several different systems for the best results. This book contains not only a technical description of the different wireless systems available today, but also explains the rationale behind the different mechanisms and implementations; not only the 'how' but also the 'why' is focused on. Thus the advantages and also limitations of each technology become apparent. Offering a solid introduction to major global wireless standards and comparisons of the different wireless technologies and their applications, this new edition has been updated to provide the latest directions and activities in 3GPP standardization reaching up to Release 10, and importantly includes a new chapter on LTE. The new LTE chapter covers aspects such as Mobility Management and Power Optimization, Voice over LTE, and Air Interface and Radio Network. Provides readers with an introduction to major global wireless standards and compares the different wireless technologies and their applications The performance and capacity of each system in practice is analyzed and explained, accompanied with practical tips on how to discover the functionality of different networks Offers approximately 25% new material, which includes a major new chapter on LTE and updates to the existing material including Release 4 BICN in relation to GSM Questions at the end of each chapter and answers on the accompanying website (http://www.wirelessmoves.com) make this book ideal for self study or as course material

Multi-Protocol Label Switch (MPLS) and Generalized MPLS (GMPLS) are key technologies for next-generation IP backbone networks. Until now, however, engineers have been forced to search for technical papers on this subject and read them in an ad-hoc manner. At last there is a book that explains both MPLS and GMPLS concepts in a systematic way. GMPLS Technologies: Broadband Backbone Networks and Systems addresses the basic concepts, network architectures, protocols, and traffic engineering needed to operate MPLS and GMPLS networks. The book begins with an introduction of the nature and requirements of broadband networks. It describes the basics of control-oriented networks and Internet Protocol (IP). The text then examines the fundamentals of MPLS, explaining why MPLS is preferable to IP packet-based forwarding. This volume covers MPLS applications, details IP router structures, illustrates GMPLS, and explores important studies on traffic engineering in GMPLS Networks. The text concludes with a description of IP, MPLS, and GMPLS standardization topics. Network equipment design engineers and network service provision engineers can reference this book to understand the crucial techniques for building MPLS/GMPLS-based networks. Features Addresses the basic concepts, network architectures, protocols, and traffic engineering needed to operate MPLS and GMPLS networks Covers the fundamentals of connection-oriented networks including TCP/IP, flow control mechanism, and ATM protocol Analyzes MPLS issues and applications, such as label switched paths (LSPs) and VPNs Highlights IP router

structures, examining technologies of data path function - switch architecture, packet scheduling, and forwarding engine Explores multi-layer traffic engineering, survivable networks, and wavelength-routed optical networks Demonstrates GMPLS-based routers

Mobile Broadband Multimedia Networks: Techniques, Models and Tools for 4G provides the main results of the prestigious and well known European COST 273 research project on the development of next generation mobile and wireless communication systems. Based on the applied research of over 350 participants in academia and industry, this book focuses on the radio aspects of mobile and wireless broadband multimedia communications, by exploring and developing new methods, models, techniques, strategies and tools towards the implementation of 4th generation mobile and wireless communication systems. This complete reference includes topics ranging from transmission and signal processing techniques to antennas and diversity, ultra wide band, MIMO and reference scenarios for radio network simulation and evaluation. This book will be an ideal source of the latest developments in mobile multimedia broadband technologies for researchers, R&D engineers, graduates and engineers in industry implementing simulation models and conducting measurements. Based on the well known and respected research of the COST 273 project ‘Towards Mobile Broadband Multimedia Networks', whose previous models have been adopted by standardisation bodies such as ITU, ETSI and 3GPP Gives methods, techniques, models and tools for developing 4th generation mobile and wireless communication systems Includes the latest development of key technologies and methods such as MIMO systems, ultra wide-band and OFDM

Broadband Optical Access and Fiber-to-the-Home (FTTH) will provide the ultimate broadband service capabilities. Compared with the currently well-deployed broadband access technologies of ADSL (Asymmetric Digital Subscriber Line) and Cable Modems, optical broadband access with Fiber-to-the-User’s home will cater for much higher speed access for new services. Broadband Optical Access Networks and Fiber-to-the-Home presents a comprehensive technical overview of key technologies and deployment strategies for optical broadband access networks and emerging new broadband services. The authors discuss network design considerations, new services, deployment trends and operational experiences, while explaining the current situation and providing insights into future broadband access technologies and services. Broadband Optical Access Networks and Fiber-to-the-Home: Offers a comprehensive, up-to-date introduction to new developments in broadband access network technologies and services. Examines the impact of research and development in photonics technologies on broadband access and FTTH. Covers ADSL, VDSL with FTTC (Fiber-to-the-Curb), Cable Modem over HFC (Hybrid-Fiber Coax) and Gigabit Ethernet. Discusses the roles of Broadband Wireless LAN and integrated FTTH/Wireless Broadband Access as well as Broadband Home Networks.

Provides a global view of broadband network development, presenting different technical and system deployment approaches and strategic considerations for comparison. Gives insight into the worldwide broadband competition and the future of this technology. Broadband Optical Access Networks and Fiber-to-the-Home will be an invaluable resource for engineers in research and development, network planners, business managers, consultants as well as analysts and educators for a better understanding of the future of broadband in the field of telecommunications, data communications, and broadband multimedia service industries.