

Broadband Satellite Communication Systems And The

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Broadband Satellite Communication Systems and the Challenges of Mobility Chapman & Hall
The emphasis of this text is on data networking, internetworking and distributed computing issues. The material surveys recent work in the area of satellite networks, introduces certain state-of-the-art technologies, and presents recent research results in these areas.

Innovations in Satellite Communications and Satellite Technology Academic Press

This authoritative book provides a thorough understanding of the fundamental concepts of satellite communications (SATCOM) network design and performance assessments. You find discussions on a wide class of SATCOM networks using satellites as core components, as well as coverage key applications in the field. This in-depth resource presents a broad range of critical topics, from geosynchronous Earth orbiting (GEO) satellites and direct broadcast satellite systems, to low Earth orbiting (LEO) satellites, radio standards and protocols. This invaluable reference explains the many specific uses of satellite networks, including small-terminal wireless and mobile communications systems. Moreover, this book presents advanced topics such as satellite RF link analyses, optimum transponder loading, on-board processing, antenna characteristics, protected systems, information assurance, and spread spectrums. You are introduced to current and future SATCOM systems and find details on their performance supportabilities. This cutting-edge book also presents trends in multimedia satellite applications and IP services over satellites.

Principles and Protocols Springer

Mobile satellite services are set to change with the imminent launch of satellite personal communication services (S-PCS), through the use of non-geostationary satellites. This new generation of satellites will be placed in low earth orbit or medium earth orbit, hence, introducing new satellite design concepts. One of the first texts to cover this rapidly evolving field, this text provides the reader with an overview of mobile satellite systems, from their initial introduction (Inmarsat), current satellite-PCS (referring to such systems as Globalstar), through to Satellite-UMTS and an understanding of the following: * The design concepts associated with non-geostationary satellite systems (constellation, link budgets, Doppler) * The concepts of UMTS (network architecture, aims, in the context of IMT-2000) and the role foreseen for the satellite component (complementary to terrestrial network, network extension, global availability) * Inter-working between satellite and terrestrial networks (network architecture, ATM Adaptation Layer) * Radio interface technologies (WB-CDMA, TDMA, transmission environment) * Regulatory issues * Future services and applications * Potential satellite markets (prediction techniques, effect of tariffing policies on potential market) With leading edge information, this valuable resource will be indispensable to researchers, engineers, operators and market evaluators in satellite service industries and research institutions, as well as postgraduates and research students in the field.

Broadband Satellite Communication Systems and the Challenges of Mobility CRC Press

Provides an introduction to High-Altitude Platform Stations (HAPS) technology and its applications for wireless communications High-altitude platform stations offer a promising new technology that combines the benefits of terrestrial and satellite communication systems for delivering broadband communications to users at a low cost. They are easily deployable and easy to maintain, which is why they offer a good alternative for network operators who need to find ways to get more coverage to satisfy the increasing demand for more capacity. HAPS are usually balloons, airships or unmanned aerial systems (UAS) located in the stratosphere. An enormous interest has grown worldwide to examine their use not only for broadband communications, but also for emergency services, navigation, traffic monitoring, cellular, etc. Key features include: Unique book focusing on emerging HAPS technology and its applications Provides a thorough overview of the technology including HAPS-based communications systems, antennas for HAPS, radio propagation and channel modelling issues and HAPS networking aspects Presents various HAPS-related projects and initiatives developed throughout the world (North America, Europe and Asia-Pacific) Features a comprehensive overview on both aeronautical and telecommunications regulatory aspects, which will affect the deployment and future developments in the field of HAPS High-Altitude Platform Systems for Wireless Communications will prove essential reading for postgraduate students in the field of HAPS, engineers, developers and designers involved in the design and maintenance of HAPS, aerospace engineers, and communications system planners and researchers.

Cooperative and Cognitive Satellite Systems John Wiley & Sons

Broadband Satellite Communications for Internet Access is a systems engineering methodology for satellite communication networks. It discusses the implementation of Internet applications that involve network design issues usually addressed in standard organizations. Various protocols for IP- and ATM-based networks are examined and a comparative performance evaluation of different alternatives is described. This methodology can be applied to similar evaluations over any other transport medium.

Information Gatekeepers Inc

Gain the knowledge needed to execute end-to-end performance analysis over satellite links and networks, evaluate throughput and capacity over satellite systems, and understand IP/ATM over SATCOM issues and limitations with this in-depth, practical resource. The book examines current and future land mobile satellite (LMS) communication systems, and the techniques necessary to support reliable and efficient communication.

Telecommunications in Alaska from Telegraph to Broadband John Wiley & Sons

Broadband Satellite Communication Systems and the Challenges of Mobility is an essential reference for both academic and professional researchers in the field of telecommunications, computer networking and wireless networks. Recently the request of multimedia services has been rapidly increasing and satellite networks appear to be attractive for a fast service deployment and for extending the typical service area of terrestrial systems. In comparison with traditional wide area networks, a characteristic of satellite communication systems is their ability in broadcasting and multicasting multimedia information flows anywhere over the satellite coverage. The papers presented in this volume highlight key areas such as Satellite Network Architectures, Services and Applications; Mobile Satellite Systems and Services; and Hybrid Satellite and Terrestrial Networks. Mobility will inevitably be one of the main characteristics of future networks, terminals and applications and, thus, extending and integrating fixed network protocols and services to mobile systems represents one of the main issues of present networking. The secondary focus of this volume is on challenges of mobility, that is, on technologies, protocols and services for the support

of seamless and nomadic user access to new classes of applications in person-to-person, device-to-device and device-to-person environments. The book comprises recent results of research and development in the following areas; Seamless mobility; Mobile ad hoc and sensor networks; Analysis, simulation and measurements of mobile and wireless systems; Integration and inter-working of wired and wireless networks; QoS in mobile and wireless networks; Future trends and issues concerning mobility. This state-of-the-art volume contains a collection of papers from two of the workshops of the 18th IFIP World Computer Congress, held August 22-27, 2004, in Toulouse, France: the Workshop on Broadband Satellite Communication Systems, and the Workshop on the Challenges of Mobility.

Network and Protocol Architectures for Future Satellite Systems University of Alaska Press

The first edition of Satellite Communications Systems Engineering (Wiley 2008) was written for those concerned with the design and performance of satellite communications systems employed in fixed point to point, broadcasting, mobile, radio navigation, data relay, computer communications, and related satellite based applications. This welcome Second Edition continues the basic premise and enhances the publication with the latest updated information and new technologies developed since the publication of the first edition. The book is based on graduate level satellite communications course material and has served as the primary text for electrical engineering Masters and Doctoral level courses in satellite communications and related areas. Introductory to advanced engineering level students in electrical, communications and wireless network courses, and electrical engineers, communications engineers, systems engineers, and wireless network engineers looking for a refresher will find this essential text invaluable.

Broadband Communications Broadband Satellite Communication Systems and the Challenges of Mobility/IFIP TC6 Workshops on Broadband Satellite Communication Systems and Challenges of Mobility, World Computer Congress August 22-27, 2004, Toulouse, France

This open access book constitutes the refereed proceedings of the 16th International Annual Conference on Cyber Security, CNCERT 2020, held in Beijing, China, in August 2020. The 17 papers presented were carefully reviewed and selected from 58 submissions. The papers are organized according to the following topical sections: access control; cryptography; denial-of-service attacks; hardware security implementation; intrusion/anomaly detection and malware mitigation; social network security and privacy; systems security.

High-Altitude Platforms for Wireless Communications Springer Science & Business Media

This book constitutes the proceedings of the 7th International Conference on Wireless and Satellite Services, WiSATS 2015, held in Bradford, UK, in July 2015. The conference was formerly known as the International Conference on Personal Satellite Services (PSATS) mainly covering topics in the satellite domain. As the scope of the conference widened to include wireless systems, the conference was renamed to WiSATS. The 29 revised papers were presented at the conference in three technical sessions and one special session on "Network Coding for Satellites". WiSATS 2015 also hosted two workshops along with the main conference: The first workshop, Communication Applications in Smart Grid (CASG 2015), focused on the merging area of using communication technology within the electricity power grid for smart monitoring and control. The second workshop, Advanced Next-Generation Broadband Satellite Systems (BSS 2015), focused on the use of satellite systems for providing next-generation broadband services.

Mobile Satellite Communication Networks Springer Science & Business Media

This is the first book primarily about the satellite payload of satellite communications systems. It represents a unique combination of practical systems engineering and communications theory. It tells about the satellites in geostationary and low-earth orbits today, both the so-called bent-pipe payloads and the processing payloads. The on-orbit environment, mitigated by the spacecraft bus, is described. The payload units (e.g. antennas and amplifiers), as well as payload-integration elements (e.g. waveguide and switches) are discussed in regard to how they work, what they do to the signal, their technology, environment sensitivity, and specifications. At a higher level are discussions on the payload as an entity: architecture including redundancy; specifications--what they mean, how they relate to unit specifications, and how to verify; and specification-compliance analysis ("budgets") with uncertainty. Aspects of probability theory handy for calculating and using uncertainty and variation are presented. The highest-level discussions, on the end-to-end communications system, start with a practical introduction to physical-layer communications theory. Atmospheric effects and interference on the communications link are described. A chapter gives an example of optimizing a multibeam payload via probabilistic analysis. Finally, practical tips on system simulation and emulation are provided. The carrier frequencies treated are 1 GHz and above. Familiarity with Fourier analysis will enhance understanding of some topics. References are provided throughout the book for readers who want to dig deeper. Payload systems engineers, payload proposal writers, satellite-communications systems designers and analysts, and satellite customers will find that the book cuts their learning time. Spacecraft-bus systems engineers, payload unit engineers, and spacecraft operators will gain insight into the overall system. Students in systems engineering, microwave engineering, communications theory, probability theory, and communications simulation and modelling will find examples to supplement theoretical texts.

Gigahertz and Terahertz Technologies for Broadband Communications Artech House

Extensive revision of the best-selling text on satellite communications — includes new chapters on cubesats, NGSO satellite systems, and Internet access by satellite There have been many changes in the thirty three years since the first edition of Satellite Communications was published. There has been a complete transition from analog to digital communication systems, with analog techniques replaced by digital modulation and digital signal processing. While distribution of television programming remains the largest sector of commercial satellite communications, low earth orbit constellations of satellites for Internet access are set to challenge that dominance. In the third edition, chapters one through three cover topics that are specific to satellites, including orbits, launchers, and spacecraft. Chapters four through seven cover the principles of digital communication systems, radio frequency communications, digital modulation and multiple access techniques, and propagation in the earth's atmosphere, topics that are common to all radio communication systems. Chapters eight through twelve cover applications that include non-geostationary satellite systems, low throughput systems, direct broadcast satellite television, Internet access by satellite, and global navigation satellite systems. The chapter on Internet access by satellite is new to the third edition, and each of the chapters has been extensively revised to include the many changes in the field since the publication of the second edition in 2003. Two appendices have been added that cover digital transmission of analog signals, and antennas. An

invaluable resource for students and professionals alike, this book: Focuses on the fundamental theory of satellite communications Explains the underlying principles and essential mathematics required to understand the physics and engineering of satellite communications Discusses the expansion of satellite communication systems in areas such as direct-broadcast satellite TV, GPS, and internet access Introduces the rapidly advancing field of small satellites, referred to as SmallSats or CubeSats Provides relevant practice problems based on real-world satellite systems Satellite Communications is required reading for undergraduate and postgraduate students in satellite communications courses and an authoritative reference for engineers working in communications, systems and networks, and satellite operations and management.

Satellite Communications Systems Engineering Springer Science & Business Media
Broadband Satellite Communication Systems and the Challenges of Mobility/FIP TC6 Workshops on Broadband Satellite Communication Systems and Challenges of Mobility, World Computer Congress August 22-27, 2004, Toulouse, France/Springer Science & Business Media

Moving Broadband Mobile Communications Forward Springer Science & Business Media
The revised and updated sixth edition of *em style="font-style: normal;"* Satellite Communications Systems contains information on the most recent advances related to satellite communications systems, technologies, network architectures and new requirements of services and applications. The authors – noted experts on the topic – cover the state-of-the-art satellite communication systems and technologies and examine the relevant topics concerning communication and network technologies, concepts, techniques and algorithms. New to this edition is information on internetworking with the broadband satellite systems, more intensive coverage of Ka band technologies, GEO high throughput satellite (HTS), LEO constellations and the potential to support the current new broadband Internet services as well as future developments for global information infrastructure. The authors offer details on digital communication systems and broadband networks in order to provide high-level researchers and professional engineers an authoritative reference. The companion website provides slides for instructors to teach and for students to learn. In addition, the book is designed in a user-friendly format.

Satellite Communications Springer Science & Business Media

This book constitutes the refereed post-conference proceedings of the 6th International Conference on Personal Satellite Services, PSATS 2014, held in Genova, Italy, in July 2014. The 10 revised full papers presented were carefully reviewed and present the latest advances in the next generation satellite networking and communication systems.

Optimization and Cross-Layer Design John Wiley & Sons

Introduction -- Alaska's first information highway -- Expansion after World War II and "the talking lady of the North" -- Early broadcasting -- Privatizing the Alaska communications system -- The beginning of the satellite era -- The NASA experiments -- From satellite experiments to commercial service -- Telephone service for every village -- Broadcasting and teleconferencing for rural Alaska -- Rural television : from RATNET to ARCS -- Deregulation and disruption -- State planning and policy -- Alaska's local telephone companies -- The phone wars -- Distance learning : from satellites to the internet -- Telemedicine in Alaska -- A new century : the growth of mobile and broadband -- Past and future connections

Mobile Satellite Communications Handbook John Wiley & Sons

Discusses long-term developments Addresses advanced physical layer techniques designed for broadband communications, for fixed and mobile terminals Considers 4G evolutions and possible convergence between different technologies

Digital Satellite Communications John Wiley & Sons

This monograph reviews the integration of satellite and terrestrial networks, focusing on Multi Path

TCP (MPTCP) and Information Centric Networking (ICN). It also extensively reviews content-based networking.

Wireless and Satellite Systems John Wiley & Sons

A Local Area Network (LAN) is a network usually within a single office or building that links desktop computers with each other and with peripherals such as servers and printers. The interconnect is the electrical and functional association of two different services, often provided by different suppliers, and it is from LAN inter-connection that telecoms operators seek to profit. The application of LAN interconnection via satellite can be used to complement and extend existing terrestrial public access networks through interconnection of clusters of broadband islands (such as LANs and MANs) in remote regions, where terrestrial lines are expensive to install and operate. Examples include: * Hospitals/clinics in remote and rural areas can be connected to the central hospitals in a tele-medicine environment * Remote offices can be connected to the central office to facilitate tele-working * University/colleges can be inter-connected to provide tele-education facilities Similarly, the possibility to provide access to such facilities in developing regions of the world is also viable and particularly attractive in the short to mid-term. Private LAN connection facilities could also be made available to the corporate user, offering the possibility to establish broadband internet access within a closed user group. Such a scenario could be of interest to the financial sector. By gathering the knowledge and experiences of well-known satellite systems experts from different parts of Europe this comprehensive volume provides detailed analysis on technical aspects for interconnecting local area network using satellite. Starting from traffic source modelling for different types of applications and services to different types of transmission techniques and networking functions for supporting such services, different case studies are presented to analyse the performance of such technologies. By providing an insight to current and future developments in satellite communications systems and by covering a broad range of materials in technical aspects in relation to satellite communication systems technologies, this volume will be of tremendous use to researchers, academia and industry. * First book to present such a thorough description of the reliability functions of satellite systems * Discusses IP over satellite * Provides a unique analysis and description of different simulation tools that are under development for evaluating the performance of satellite systems * Includes a chapter devoted to traffic modelling for satellite systems * Reviews current research and developments in security and discusses how such security functions can be implemented over satellite networks * Addresses different types of routing strategies and includes three different case studies which have been carried out to analyse the performance of different routing strategies

Satellite Communications Springer Science & Business Media

The deployment of 4G/LTE (Long-Term Evolution) mobile networks has solved the major challenge of high capacities to build a real broadband mobile internet. This was possible mainly through a very strong physical layer and flexible network architecture. However, bandwidth-hungry services such as virtual reality (VR) and augmented reality (AR), have been developed in an unprecedented way. Furthermore, mobile networks are facing other new services with extreme demand for greater reliability and almost zero-latency performance, like vehicle communications and the Internet of Vehicles (IoV). Therefore, industries and researchers are investigating new physical layers and softwarization techniques and including more intelligence in 5G and beyond 5G (B5G/6G). This book discusses some of these softwarization techniques, such as fog computing, cloud computing, and artificial intelligence (AI) and machine learning (ML). It also presents use cases showing practical aspects from 5G deployment scenarios, where other communications technologies will co-habit to build the landscape of next-generation mobile networks (NGMNs).