

## Comparison Of 802 11ah Ble And 802 15 4 For A Home

Explore the current state of the production, processing, and manufacturing industries and discover what it will take to achieve re-industrialization of the former industrial powerhouses that can counterbalance the benefits of cheap labor providers dominating the industrial sector. This book explores the potential for the Internet of Things (IoT), Big Data, Cyber-Physical Systems (CPS), and Smart Factory technologies to replace the still largely mechanical, people-based systems of offshore locations. Industry 4.0: The Industrial Internet of Things covers Industry 4.0, a term that encapsulates trends and technologies that could rewrite the rules of manufacturing and production. What You'll Learn: Discover the Industrial Internet and Industrial Internet of Things See the technologies that must advance to enable Industry 4.0 and learn what is happening today to make that happen Observe examples of the implementation of Industry 4.0 Apply some of these case studies Discover the potential to take back the lead in manufacturing, and the potential fallout that could result Who This Book is For: Business futurists, business strategists, CEOs and CTOs, and anyone with an interest and an IT or business background; or anyone who may have a keen interest in how the future of IT, industry and production will develop over the next two decades.

This book presents on the latest research findings, and innovative research methods and development techniques related to the emerging areas of broadband and wireless computing from both theoretical and practical perspectives. Information networking is evolving rapidly with various kinds of networks with different characteristics emerging and being integrated into heterogeneous networks. As a result, a number of interconnection problems can occur at different levels of the communicating entities and communication networks' hardware and software design. These networks need to manage an increasing usage demand, provide support for a significant number of services, guarantee their QoS, and optimize the network resources. The success of all-IP networking and wireless technology has changed the way of life for people around the world, and the advances in electronic integration and wireless communications will pave the way for access to the wireless networks on the fly. This in turn means that all electronic devices will be able to exchange the information with each other in a ubiquitous way whenever necessary. Wi-Fi has become the mainstream technology for fixed and mobile operators, as well as the retail and hospitality industry in meeting business challenges. Wi-Fi data rates and spectral efficiencies have continued to improve over the past two decades. This book covers the foundational principles of Wi-Fi, including the latest technologies and applications. It is the first book to discuss the technical details of the emerging 802.11ax amendment and provide a comparative assessment of 802.11ac and 802.11ax. The book also describes practical issues in Wi-Fi performance optimization and LTE-unlicensed coexistence. More specifically, it covers orthogonal frequency division multiple access, multi-user multi-antenna technologies, beamforming protocols, dynamic channel switching, operating range versus rate tradeoffs, Internet of Things (802.11ah), cognitive radio (802.11af), and challenging Wi-Fi deployments such as large-scale mesh networks, long-range point-to-point networks, unmanned aircrafts, drones and flying hotspots, naval sensors and sonobuoys, undersea environmental monitoring, communicating balloons, and location management systems. As you will discover, Wi-Fi technologies are never standing still but constantly evolving. At the same time, Wi-Fi applications are becoming more pervasive and diverse than before.

This textbook explores all of the protocols and technologies essential to IoT communication mechanisms. Geared towards an upper-undergraduate or graduate level class, the book is presented from a perspective of the standard layered architecture with special focus on protocol interaction and functionality. The IoT protocols are presented and classified based on physical, link, network, transport and session/application layer functionality. The author also lets readers understand the impact of the IoT mechanisms on network and device performance with special emphasis on power consumption and computational complexity. Use cases – provided throughout – provide examples of IoT protocol stacks in action. The book is based on the author's popular class "Fundamentals of IoT" at Northeastern University. The book includes examples throughout and slides for classroom use. Also included is a 'hands-on' section where the topics discussed as theoretical content are built as stacks in the context of an IoT network emulator so readers can experiment.

Designing, Developing, and Facilitating Smart Cities

Fundamentals of IoT Communication Technologies

Wi-Fi at Gigabit and Beyond

Urban Design to IoT Solutions

Getting Started with Enterprise Internet of Things: Design Approaches and Software Architecture Models

Cognitive Radar

International Conference on Communication, Computing and Electronics Systems

This book provides the technical essentials, state-of-the-art knowledge, business ecosystem and standards of Near Field Communication (NFC) by NFC Lab – Istanbul research centre which conducts intense research on NFC technology. In this book, the authors present the contemporary research on all aspects of NFC, addressing related security aspects as well as information on various business models. In addition, the book provides comprehensive information a designer needs to design an NFC project, an analyzer needs to analyze requirements of a new NFC based system, and a programmer needs to implement an application. Furthermore, the authors introduce the technical and administrative issues related to NFC technology, standards, and global stakeholders. It also offers comprehensive information as well as use case studies for each NFC operating mode to give the usage idea behind each operating mode thoroughly. Examples of NFC application development are provided using Java technology, and security considerations are discussed in detail. Key Features: Offers a complete understanding of the NFC technology, including standards, technical essentials, operating modes, application development with Java, security and privacy, business ecosystem analysis Provides analysis, design as well as development guidance for professionals from administrative and technical perspectives Discusses methods, techniques and modelling support including UML are demonstrated with real cases Contains case studies such as payment, ticketing, social networking and remote shopping This book will be an invaluable guide for business and ecosystem analysts, project managers, mobile commerce consultants, system and application developers, mobile developers and practitioners. It will also be of interest to researchers, software engineers, computer scientists, information technology specialists including students and graduates.

Cognitive Computing for Human-Robot Interaction: Principles and Practices explores the

efforts that should ultimately enable society to take advantage of the often-heralded potential of robots to provide economical and sustainable computing applications. This book discusses each of these applications, presents working implementations, and combines coherent and original deliberative architecture for human-robot interactions (HRI). Supported by experimental results, it shows how explicit knowledge management promises to be instrumental in building richer and more natural HRI, by pushing for pervasive, human-level semantics within the robot's deliberative system for sustainable computing applications. This book will be of special interest to academics, postgraduate students, and researchers working in the area of artificial intelligence and machine learning. Key features: Introduces several new contributions to the representation and management of humans in autonomous robotic systems; Explores the potential of cognitive computing, robots, and HRI to generate a deeper understanding and to provide a better contribution from robots to society; Engages with the potential repercussions of cognitive computing and HRI in the real world. Introduces several new contributions to the representation and management of humans in an autonomous robotic system Explores cognitive computing, robots and HRI, presenting a more in-depth understanding to make robots better for society Gives a challenging approach to those several repercussions of cognitive computing and HRI in the actual global scenario

The book presents new approaches and methods for solving real-world problems. It highlights, in particular, innovative research in the fields of Cognitive Informatics, Cognitive Computing, Computational Intelligence, Advanced Computing, and Hybrid Intelligent Models and Applications. New algorithms and methods in a variety of fields are presented, together with solution-based approaches. The topics addressed include various theoretical aspects and applications of Computer Science, Artificial Intelligence, Cybernetics, Automation Control Theory, and Software Engineering. LPWAN Technologies for IoT and M2M Applications provides insight into LPWAN technologies, also presenting a wide range of applications and a discussion on security issues and future challenges and research directions. This book is a beneficial and insightful resource for university researchers, graduate students and R&D engineers who are designing networks and implementing IoT applications. To support new requirements for this emerging industry, a new paradigm of Low Power Wide Area Networks (LPWAN) has recently evolved, including LoRa, Sigfox and NB-IoT, hence this book presents the latest updates.

Proceedings of the Workshops of the 34th International Conference on Advanced Information Networking and Applications (WAINA-2020)

Real-Time Sensor Networks and Systems for the Industrial IoT

Principles and Practices

Cognitive Informatics and Soft Computing

IEEE Standard for Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications

From Theory to Practice

Complex, Intelligent and Software Intensive Systems

This book includes high impact papers presented at the International Conference on Communication, Computing and Electronics Systems 2019, held at the PPG Institute of Technology, Coimbatore, India, on 15-16 November, 2019. Discussing recent trends in cloud computing, mobile computing, and advancements of electronics systems, the book covers topics such as automation, VLSI, embedded systems, integrated device technology, satellite communication, optical communication, RF communication, microwave engineering, artificial intelligence, deep learning, pattern recognition, Internet of Things, precision models, bioinformatics, and healthcare informatics.

This book presents new communication and networking technologies, an area that has gained significant research attention from both academia and industry in recent years. It also discusses the development of more intelligent and efficient communication technologies, which are an essential part of current day-to-day life, and reports on recent innovations in technologies, architectures, and standards relating to these technologies. The book includes research that spans a wide range of communication and networking technologies, including wireless sensor networks, big data, Internet of Things, optical and telecommunication networks, artificial intelligence, cryptography, next-generation networks, cloud computing, and natural language processing. Moreover, it focuses on novel solutions in the context of communication and networking challenges, such as optimization algorithms, network interoperability, scalable network clustering, multicasting and fault-tolerant techniques, network authentication mechanisms, and predictive analytics.

Today, billions of devices are Internet-connected, IoT standards and protocols are stabilizing, and technical professionals must increasingly solve real problems with IoT technologies. Now, five leading Cisco IoT experts present the first comprehensive, practical reference for making IoT work. IoT Fundamentals brings together knowledge previously available only in white papers, standards documents, and other hard-to-find sources—or nowhere at all. The authors begin with a high-level overview of IoT and introduce key concepts needed to

successfully design IoT solutions. Next, they walk through each key technology, protocol, and technical building block that combine into complete IoT solutions. Building on these essentials, they present several detailed use cases, including manufacturing, energy, utilities, smart+connected cities, transportation, mining, and public safety. Whatever your role or existing infrastructure, you'll gain deep insight what IoT applications can do, and what it takes to deliver them. Fully covers the principles and components of next-generation wireless networks built with Cisco IOT solutions such as IEEE 802.11 (Wi-Fi), IEEE 802.15.4-2015 (Mesh), and LoRaWAN Brings together real-world tips, insights, and best practices for designing and implementing next-generation wireless networks Presents start-to-finish configuration examples for common deployment scenarios Reflects the extensive first-hand experience of Cisco experts

Smart Cities and Homes: Key Enabling Technologies explores the fundamental principles and concepts of the key enabling technologies for smart cities and homes, disseminating the latest research and development efforts in the field through the use of numerous case studies and examples. Smart cities use digital technologies embedded across all their functions to enhance the wellbeing of citizens. Cities that utilize these technologies report enhancements in power efficiency, water use, traffic congestion, environmental protection, pollution reduction, senior citizens care, public safety and security, literacy rates, and more. This book brings together the most important breakthroughs and advances in a coherent fashion, highlighting the interconnections between the works in different areas of computing, exploring both new and emerging computer networking systems and other computing technologies, such as wireless sensor networks, vehicle ad hoc networks, smart grids, cloud computing, and data analytics and their roles in creating environmentally friendly, secure, and prosperous cities and homes. Intended for researchers and practitioners, the book discusses the pervasive and cooperative computing technologies that will perform a central role for handling the challenges of urbanization and demographic change. Includes case studies and contributions from prominent researchers and practitioners from around the globe Explores the latest methodologies, theories, tools, applications, trends, challenges, and strategies needed to build smart cities and homes from the bottom up Provides a pedagogy that includes PowerPoint slides, key terms, and a comprehensive bibliography

The Road to Global Success

Key Enabling Technologies

ICCNCT 2019

Advances in Network-Based Information Systems

Proceedings of ICACIn 2020

Medicinal Chemistry of Bioactive Natural Products

Next Generation Wireless LANs

Chronicling the new field of cognitive radar (CR), this cutting-edge resource provides an accessible introduction to the theory and applications of CR, and presents a comprehensive overview of the latest developments in this emerging area. The first book on the subject, Cognitive Radar covers important breakthroughs in advanced radar systems, and offers new and powerful methods for combating difficult clutter environments. You find details on specific algorithmic and real-time high-performance embedded computing (HPEC) architectures. This practical book is supported with numerous examples that clarify key topics, and includes more than 370 equations.

Wi-Fi has become the preferred means for connecting to the internet - at home, in the office, in hotels and at airports. Increasingly, Wi-Fi also provides internet access for remote communities where it is deployed by volunteers in community-based networks, by operators in 'hotspots' and by municipalities in 'hotzones'. This book traces the global success of Wi-Fi to the landmark change in radio spectrum policy by the US FCC in 1985, the initiative by NCR Corporation to start development of Wireless-LANs and the drive for an open standard IEEE 802.11, released in 1997. It also singles out and explains the significance of the initiative by Steve Jobs at Apple to include Wireless-LAN in the iBook, which moved the product from the early adopters to the mass market. The book explains these developments through first-hand accounts by industry practitioners and concludes with reflections and implications for government policy and firm strategy.

A guide to cable modems includes tutorials, diagrams, source code examples, hardware schematics, and hacks to get the most out of this Internet connection.

Learn to design, implement and secure your IoT infrastructure Key Features Build a complete IoT system that is the best fit for your organization Learn about different concepts, technologies, and tradeoffs in the IoT architectural stack Understand the theory, concepts, and implementation of each element that comprises IoT design—from sensors to the cloud Implement best practices to ensure the reliability, scalability, robust communication systems, security, and data analysis in your IoT infrastructure Book Description

The Internet of Things (IoT) is the fastest growing technology market. Industries are embracing IoT technologies to improve operational expenses, product life, and people's well-being. An architectural guide is necessary if you want to traverse the spectrum of technologies needed to build a successful IoT system, whether that's a single device or millions of devices. This book encompasses the entire spectrum of IoT solutions, from sensors to the cloud. We start by examining modern sensor systems and focus on their power and functionality. After that, we dive deep into communication theory, paying close attention to near-range PAN, including the new Bluetooth® 5.0 specification and mesh networks. Then, we explore IP-based communication in LAN and WAN, including 802.11ah, 5G LTE cellular, SigFox, and LoRaWAN. Next, we cover edge routing and gateways and their role in fog computing, as well as the messaging protocols of MQTT and CoAP. With the data now in internet form, you'll get an understanding of cloud and fog architectures, including the OpenFog standards. We wrap up the analytics portion of the book with the application of statistical analysis, complex event processing, and deep learning models. Finally, we conclude by providing a holistic view of the IoT security stack and the anatomical details of IoT exploits while countering them with software defined perimeters and blockchains. What you will learn Understand the role and scope of architecting a successful IoT deployment, from sensors to the cloud Scan the landscape of IoT technologies that span everything from sensors to the cloud and everything in between See the trade-offs in choices of protocols and communications in IoT deployments Build a repertoire of skills and the vernacular necessary to work in the IoT space Broaden your skills in multiple engineering domains necessary for the IoT architect Who this book is for This book is for architects, system designers, technologists, and technology managers who want to understand the IoT ecosphere, various

technologies, and tradeoffs and develop a 50,000-foot view of IoT architecture.

802.11ac: A Survival Guide

From Integrated Circuits to Integrated Systems

6LoWPAN

Proceedings of the 13th International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA-2018)

Advances on Broadband and Wireless Computing, Communication and Applications

The 21st International Conference on Network-Based Information Systems (NBIS-2018)

802.11n and 802.11ac

***This book constitutes the post-conference proceedings of the First International Conference on Smart Grid Inspired Future Technologies, SmartGIFT 2016, held in May 2016 in Liverpool, UK. Smart grid is the next generation electric grid that enables efficient, intelligent, and economical power generation, transmission, and distribution. The 25 revised full papers presented were reviewed and selected from 36 submissions. The papers cover technical topics such as high-level ideology and methodology, concrete smart grid inspired data sensing, processing, and networking technologies, smart grid system architecture, Quality of Service (QoS), energy efficiency, security in smart grid systems, management of smart grid systems, service engineering and algorithm design, and real-world deployment experiences.***

***This book explores three interwoven and challenging areas of research and development for future ICT-enabled applications: software intensive systems, complex systems and intelligent systems. Software intensive systems are systems that extensively interact with other systems, sensors, actuators, devices and users. More and more domains are now employing software intensive systems, e.g. the automotive sector, telecommunication systems, embedded systems in general, industrial automation systems and business applications. Moreover, the outcome of web services offers a new platform for enabling software intensive systems. Complex systems research is focused on the overall understanding of systems rather than their components. Complex systems are very much characterized by the changing environments in which they operate through their multiple internal and external interactions. They evolve and adapt through (internal and external) dynamic interactions. The development of intelligent systems and agents, which is increasingly characterized by the use of ontologies, can be beneficial for software intensive systems and complex systems alike. Accordingly, recent research in the areas of intelligent systems, robotics, neuroscience, artificial intelligence, and the cognitive sciences is essential to the future development of software intensive and complex systems.***

***This book presents the latest research findings and innovative theoretical and practical research methods and development techniques related to the emerging areas of information networking and their applications. Today's networks and information systems are evolving rapidly, and there are several new trends and applications, such as wireless sensor networks, ad hoc networks, peer-to-peer systems, vehicular networks, opportunistic networks, grid and cloud computing, pervasive and ubiquitous computing, multimedia systems, security, multi-agent systems, high-speed networks, and web-based systems. These networks have to deal with the increasing number of users, provide support for different services, guarantee the QoS, and optimize the network resources, and as such there are numerous research issues and challenges that need to be considered and addressed.***

***This comprehensive text/reference examines the various challenges to secure, efficient and cost-effective next-generation wireless networking. Topics and features: presents the latest advances, standards and technical challenges in a broad range of emerging wireless technologies; discusses cooperative and mesh networks, delay tolerant networks, and other next-generation networks such as LTE; examines real-world applications of vehicular communications, broadband wireless technologies, RFID technology, and energy-efficient wireless communications; introduces developments towards the 'Internet of Things' from both a communications and a service perspective; discusses the machine-to-machine communication model, important applications of wireless technologies in healthcare, and security issues in state-of-the-art networks.***

***Demystifying Internet of Things Security***

***Frequency and Time***

***Advances on Smart and Soft Computing***

***IoT Fundamentals***

***4G and Beyond***

***Web, Artificial Intelligence and Network Applications***

***This novel textbook introduces Enterprise Internet of Things from technology, management and business perspectives, carefully examining enterprise environments through the lens of modernization with the Internet of Things (IoT). It also includes detailed case studies to offer meaningful insights for readers from various disciplines and areas. The book analyzes the ways in which the technology could contribute to the enterprise world in terms of revenue and new business models, and addresses the strategies and principles involved in developing IoT solutions with software engineering practices such as DevOps and Micro services architecture principles. By doing so, it offers readers a clear overview of the power of Internet of Things in building next generation enterprise use cases. The book enables readers to understand the latest opportunities to create new business models in enterprises using the unprecedented level of device connectivity, and the wealth of data generated and information exchange among these devices. As such, it appeals to various user groups, such as engineers trying to solve problems in their own domains using Enterprise IoT, academics interested in gaining a better understanding of applications of IoT in large-scale enterprises, and researchers wanting to contribute to the ever-growing and complex area of IoT.***

***Current discoveries and research into bioactive natural products Medicinal Chemistry of Bioactive Natural Products provides a much-needed survey of bioactive natural products and their applications in medicinal chemistry. This comprehensive reference features articles by some of the world's leading scientists in the field on discovery, structure elucidation, and elegant synthetic strategies--developed for natural products--with an emphasis on the structure activity relationship of bioactive natural***

*products. The topics have been carefully chosen on the basis of relevance to current research and to importance as clinically useful agents. Rather than attempting to be a comprehensive encyclopedia of bioactive natural products, Medicinal Chemistry of Bioactive Natural Products guides the reader to the key developments in the field. By providing not only practical detail but a historical perspective on the chemistry and biology of the compounds under consideration, the book serves as a handy resource for researchers in their own work developing pharmaceuticals, and as an inspiring introduction for young scientists to the dynamic field of bioactive natural products research. Enhanced by examples with updated research results, the discussion covers such topics as: \* The chemistry and biology of epothilones \* Vancomycin and other glycopeptide antibiotic derivatives \* Antitumor and other related activities of Taxol and its analogs \* The antimalarial properties of the traditional Chinese medicine, Qinghaosu (artemisinin) \* Huperzine A: A natural drug for the treatment of Alzheimer's disease \* The medicinal chemistry of ginkgolides from Ginkgo biloba \* Recent progress in Calophyllum coumarins as potent anti-HIV agents \* Plant-derived anti-HIV agents and analogs \* Chemical synthesis of annonaceous acetogenins and their structurally modified mimics*

*This book explains the fundamentals of control theory for Internet of Things (IoT) systems and smart grids and its applications. It discusses the challenges imposed by large-scale systems, and describes the current and future trends and challenges in decision-making for IoT in detail, showing the ongoing industrial and academic research in the field of smart grid domain applications. It presents step-by-step design guidelines for the modeling, design, customisation and calibration of IoT systems applied to smart grids, in which the challenges increase with each system's increasing complexity. It also provides solutions and detailed examples to demonstrate how to use the techniques to overcome these challenges, as well as other problems related to decision-making for successful implementation. Further, it analyses the features of decision-making, such as low-complexity and fault-tolerance, and uses open-source and publicly available software tools to show readers how they can design, implement and customise their own system control instantiations. This book is a valuable resource for power engineers and researchers, as it addresses the analysis and design of flexible decision-making mechanisms for smart grids. It is also of interest to students on courses related to control of large-scale systems, since it covers the use of state-of-the-art technology with examples and solutions in every chapter. And last but not least, it offers practical advice for professionals working with smart grids.*

*The internet of things (IoT) has massive potential to transform current business models and enhance human lifestyles. With the current pace of research, IoT will soon find many new horizons to touch. IoT is now providing a base of technological advancement in various realms such as pervasive healthcare, smart homes, smart cities, connected logistics, automated supply chain, manufacturing units, and many more. IoT is also paving the path for the emergence of the digital revolution in industrial technology, termed Industry 4.0. Transforming the Internet of Things for Next-Generation Smart Systems focuses on the internet of things (IoT) and how it is involved in modern day technologies in a variety of domains. The chapters cover IoT in sectors such as agriculture, education, business and management, and computer science applications. The multi-disciplinary view of IoT provided within this book makes it an ideal reference work for IT specialists, technologists, engineers, developers, practitioners, researchers, academicians, and students interested in how IoT will be implemented in the next generation of smart systems and play an integral role in advancing technology in the future.*

*The Industrial Internet of Things*

*Successful IoT Device/Edge and Platform Security Deployment*

*Second International Conference on Computer Networks and Communication Technologies*

*What Cable Companies Don't Want You to Know*

*The Wireless Embedded Internet*

*IoT for Smart Grids*

*Forthcoming Networks and Sustainability in the IoT Era*

Objectives - Bring papers on new developments, innovations and standards to the readers - Cover pre-development, including technologies with potential of becoming a standard, as well as developed / deployed standards - Publish on-going work including work with potential of becoming a standard technology - Publish papers giving explanation of standardization and innovation process and the link between standardization and innovation. - Publish tutorial type papers giving new comers a understanding of standardization and innovation Aims & Scope Aims: - The aims of this journal is to publish standardized as well as related work making "standards" accessible to a wide public - from practitioners to new comers. The journal aims at publishing in-depth as well as overview work including papers discussing standardization process and those helping new comers to understand how standards work. Scope: - Bring up-to-date information regarding standardization in the field of Information and Communication Technology (ICT) covering all protocol layers and technologies in the field Background - Standardization is essential for our society as well as economy from usage to communication between different devices, including interoperability - Standardization gives choice and reduces cost of the products - Standards make technology or create path for technologies to be available globally - As standards / standardization is essential part of human society, it is essential for people to understand standards and all aspects related to it

This proceedings book presents the latest research findings, and theoretical and practical perspectives on innovative methods and development techniques related to the emerging areas of Web computing, intelligent systems and Internet computing. The Web has become an important source of information, and techniques and methodologies that extract quality information are of paramount importance for many Web and Internet applications. Data mining and knowledge discovery play a key role in many of today's major Web applications, such as e-commerce and computer security. Moreover, Web services provide a new platform for enabling service-oriented systems. The emergence of large-scale distributed computing paradigms, such as cloud computing and mobile computing systems, has opened many opportunities for collaboration services, which are at the core of any information system. Artificial intelligence (AI) is an area of computer science that builds intelligent systems and algorithms that work and react like humans. AI techniques and computational intelligence are powerful tools for learning, adaptation, reasoning and planning, and they have the potential to become enabling technologies for future intelligent networks. Research in the field of intelligent systems, robotics, neuroscience, artificial intelligence and cognitive sciences is vital for the future development and innovation of Web and Internet

applications.

The next frontier for wireless LANs is 802.11ac, a standard that increases throughput beyond one gigabit per second. This concise guide provides in-depth information to help you plan for 802.11ac, with technical details on design, network operations, deployment, and monitoring. Author Matthew Gast, an industry expert who led the development of 802.11-2012 and security task groups at the Wi-Fi Alliance, explains how 802.11ac will not only increase the speed of your network, but its capacity as well. Whether you need to serve more clients with your current level of throughput, or serve your existing client load with higher throughput, 802.11ac is the solution. This book gets you started. Understand how the 802.11ac protocol works to improve the speed and capacity of a wireless LAN Explore how beamforming increases speed capacity by improving link margin, and lays the foundation for multi-user MIMO Learn how multi-user MIMO increases capacity by enabling an AP to send data to multiple clients simultaneously Plan when and how to upgrade your network to 802.11ac by evaluating client devices, applications, and network connections

Break down the misconceptions of the Internet of Things by examining the different security building blocks available in Intel Architecture (IA) based IoT platforms. This open access book reviews the threat pyramid, secure boot, chain of trust, and the SW stack leading up to defense-in-depth. The IoT presents unique challenges in implementing security and Intel has both CPU and Isolated Security Engine capabilities to simplify it. This book explores the challenges to secure these devices to make them immune to different threats originating from within and outside the network. The requirements and robustness rules to protect the assets vary greatly and there is no single blanket solution approach to implement security. Demystifying Internet of Things Security provides clarity to industry professionals and provides an overview of different security solutions What You'll Learn Secure devices, immunizing them against different threats originating from inside and outside the network Gather an overview of the different security building blocks available in Intel Architecture (IA) based IoT platforms Understand the threat pyramid, secure boot, chain of trust, and the software stack leading up to defense-in-depth Who This Book Is For Strategists, developers, architects, and managers in the embedded and Internet of Things (IoT) space trying to understand and implement the security in the IoT devices/platforms.

First EAI International Conference, FoNeS - IoT 2020, Virtual Event, October 1-2, 2020, Proceedings

Enabling the Internet of Things

Transforming the Internet of Things for Next-Generation Smart Systems

Wi-Fi Technologies and Applications

Design Challenges and Paradigms

The Knowledge-aided Fully Adaptive Approach

Internet of Things for Architects

The aim of the book is to provide latest research findings, innovative research results, methods and development techniques from both theoretical and practical perspectives related to the emerging areas of Web Computing, Intelligent Systems and Internet Computing. As Web has become a major source of information, techniques and methodologies that extract quality information are of paramount importance for many Web and Internet applications. Data mining and knowledge discovery play key roles in many of today's prominent Web applications such as e-commerce and computer security. Moreover, the outcome of Web services delivers a new platform for enabling service-oriented systems. The emergence of large scale distributed computing paradigms, such as Cloud Computing and Mobile Computing Systems, has opened many opportunities for collaboration services, which are at the core of any Information System. Artificial Intelligence (AI) is an applied computer science that build intelligent systems and algorithms that work and react like humans. The AI techniques and computational intelligence are powerful tools for learning, adaptation, reasoning and planning. They have the potential to become enabling technologies for the future intelligent networks. Recent research in the field of intelligent systems, robotics, neuroscience, artificial intelligence and cognitive sciences are very important for the future development and innovation of Web and Internet applications.

This book discusses how smart cities strive to deploy and interconnect infrastructures and services to guarantee that authorities and citizens have access to reliable and global customized services. The book addresses the wide range of topics present in the design, development and running of smart cities, ranging from big data management, Internet of Things, and sustainable urban planning. The authors cover - from concept to practice - both the technical aspects of smart cities enabled primarily by the Internet of Things and the socio-economic models and impacts of smart city development. The reader will find smart city deployment motivations, technological enablers and solutions, as well as state of the art cases of smart city implementations and services. · Provides a single compendium of the technological, political, and economic aspects of smart cities; · Discusses how the successful deployment of smart Cities requires a unified infrastructure to support the diverse applications that can be used towards urban development; · Addresses design, development and running of smart cities, including big data management and Internet of Things applications.

Industrial IoT (IIoT) and Industry 4.0 are newly developing and fast emerging domains of interest among students, researchers, and professionals in academia and industry. Due to the popular demand of this topic, Introduction to Industrial Internet of Things and Industry 4.0 is written to serve a diverse readership from the domains of computer science and engineering, mechanical engineering, information technology, industrial engineering, electronics engineering, and other related branches of engineering. Based on the lead author's massive open online courses (MOOCs), this book can be used as a textbook on the emerging paradigm of Industry 4.0 and IIoT, as well as a reference for professionals working in sectors of IIoT. The book covers the significant aspects of IIoT in detail, including sensors, actuators, data transmission, and data acquisition, which form the core of IIoT. Topics and concepts are presented in a comprehensive manner, so that readers can develop expertise and knowledge. The book helps beginners to gain a basic idea of Industry 4.0 and IIoT as the first section provides an overview of IoT applications, infrastructure-based protocols, cloud computing, and fog computing. The second section is designed to impart a basic knowledge of Industry 4.0 and IIoT as well as of the different phases of development in industry. Delving into more advanced areas, other sections in the book cover: The business models and reference architecture of IIoT The technological aspects of Industry 4.0 and IIoT Predictive and prescriptive analytics applied in IIoT-based implementations Applications and case studies of IIoT Key enabling technologies of IIoT To aid students and professional master IIoT and Industry 4.0, the book includes conceptual questions, exercises, and learning objectives.

This book offers the first comprehensive view on integrated circuit and system design for the Internet of Things (IoT), and in particular tiny nodes at its edge. The authors provide a fresh perspective on how the IoT will evolve based on recent and foreseeable trends in the semiconductor industry, highlighting the key challenges, as well as the opportunities for circuit and system innovation to address them. The book describes what the IoT really means from the design point of view, and how the constraints imposed by applications translate into integrated circuit requirements and design guidelines. Chapter contributions equally come from industry and academia. After providing a system perspective on IoT nodes, this book focuses on state-of-the-art design techniques for IoT applications, encompassing the fundamental sub-systems encountered in Systems on Chip for IoT: ultra-low power digital architectures and circuits low- and zero-leak-

memories (including emerging technologies) circuits for hardware security and authentication System on Chip design methodologies on power management and energy harvesting ultra-low power analog interfaces and analog-digital conversion short-range radios miniaturized battery technologies packaging and assembly of IoT integrated systems (on silicon and non-silicon substrates). As a common thread, all chapters conclude with a prospective view on the foreseeable evolution of the related technologies for IoT. The concepts developed throughout the book are exemplified by two IoT node system demonstrations from industry. The unique balance between breadth and depth of this book: enables expert readers quickly to develop an understanding of the specific challenges and state-of-the-art solutions for IoT, as well as their evolution in the foreseeable future provides non-experts with a comprehensive introduction to integrated circuit design for IoT and serves as an excellent starting point for further learning, thanks to the broad coverage of topics and selected references makes it well suited for practicing engineers and scientists working in the hardware and chip design for IoT, and as textbook for senior undergraduate and postgraduate students (familiar with analog and digital circuits).

Proceedings of the Workshops of the 33rd International Conference on Advanced Information Networking and Applications (WAINA-2019) Proceeding of CISC 2019

Smart Grid Inspired Future Technologies

The Innovation Journey of Wi-Fi

Next-Generation Wireless Technologies

Near Field Communication (NFC)

Cognitive Computing for Human-Robot Interaction

**If you've been searching for a way to get up to speed on IEEE 802.11n and 802.11ac WLAN standards without having to wade through the entire specification, then look no further. This comprehensive overview describes the underlying principles, implementation details and key enhancing features of 802.11n and 802.11ac. For many of these features the authors outline the motivation and history behind their adoption into the standard. A detailed discussion of key throughput, robustness, and reliability enhancing features (such as MIMO, multi-user MIMO, 40/80/160 MHz channels, transmit beamforming and packet aggregation) is given, plus clear summaries of issues surrounding legacy interoperability and coexistence. Now updated and significantly revised, this 2nd edition contains new material on 802.11ac throughput, including revised chapters on MAC and interoperability, plus new chapters on 802.11ac PHY and multi-user MIMO. An ideal reference for designers of WLAN equipment, network managers, and researchers in the field of wireless communications.**

**Transforming the Internet of Things for Next-Generation Smart Systems** IGI Global

**This proceedings constitutes the refereed proceedings of the First EAI International Conference on Forthcoming Networks and Sustainability in the IoT Era, FoNeS 2020, held in October 2020. Due to COVID-19 pandemic the conference was held virtually. The 13 papers presented were carefully selected from 28 submissions. The papers focus application areas for advanced communication systems and development of new services, in an attempt to facilitate the tremendous growth of new devices and smart things that need to be connected to the Internet through a variety of wireless technologies. The papers are organized in topical sections on IoT and network applications; machine learning and distributed computing; and cellular networks and security.**

**"It is stunningly thorough and takes readers meticulously through the design, configuration and operation of IPv6-based, low-power, potentially mobile radio-based networking." Vint Cerf, Vice President and Chief Internet Evangelist, Google** This book provides a complete overview of IPv6 over Low Power Wireless Area Network (6LoWPAN) technology In this book, the authors provide an overview of the 6LoWPAN family of standards, architecture, and related wireless and Internet technology. Starting with an overview of the IPv6 'Internet of Things', readers are offered an insight into how these technologies fit together into a complete architecture. The 6LoWPAN format and related standards are then covered in detail. In addition, the authors discuss the building and operation of 6LoWPAN networks, including bootstrapping, routing, security, Internet integration, mobility and application protocols. Furthermore, implementation aspects of 6LoWPAN are covered. Key Features: Demonstrates how the 6LoWPAN standard makes the latest Internet protocols available to even the most minimal embedded devices over low-rate wireless networks Provides an overview of the 6LoWPAN standard, architecture and related wireless and Internet technology, and explains the 6LoWPAN protocol format in detail Details operational topics such as bootstrapping, routing, security, Internet integration, mobility and application protocols Written by expert authors with vast experience in the field (industrial and academic) Includes an accompanying website containing tutorial slides, course material and open-source code with examples (<http://6lowpan.net>) 6LoWPAN: The Wireless Embedded Internet is an invaluable reference for professionals working in fields such as telecommunications, control, and embedded systems. Advanced students and teachers in electrical engineering, information technology and computer science will also find this book useful.

**Hacking the Cable Modem**

**Networking Technologies, Protocols, and Use Cases for the Internet of Things**

**JOURNAL OF ICT STANDARDIZATION**

**First International Conference, SmartGIFT 2016, Liverpool, UK, May 19-20, 2016, Revised**

**Selected Papers**

**Digital Twin – Fundamental Concepts to Applications in Advanced Manufacturing**

**Industry 4.0**

**Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security**

This book gathers high-quality papers presented at the First International Conference of Advanced Computing and Informatics (ICACIn 2020), held in Casablanca, Morocco, on April 12–13, 2020. It covers a range of topics, including artificial intelligence technologies and applications, big data analytics, smart computing, smart cities, Internet of things, data communication, cloud computing, machine learning algorithms, data stream management and analytics, deep learning, data mining applications, information retrieval, cloud computing platforms, parallel processing, natural language processing, predictive analytics, knowledge management approaches, information security, security in IoT, big data and cloud computing, high-performance computing and computational informatics.

This book provides readers with a guide to the use of Digital Twin in manufacturing. It presents a collection of fundamental ideas about sensor electronics and data acquisition, signal and image processing techniques, seamless data communication, artificial intelligence and machine learning for decision making, and explains their necessity for the practical application of Digital Twin in Industry. Providing case studies relevant to the manufacturing processes, systems, and sub-systems, this book is beneficial for both academics and industry professionals within the field of Industry 4.0 and digital manufacturing. The Industrial Internet of Things (Industrial IoT—IIoT) has emerged as the core construct behind the various cyber-physical systems constituting a principal dimension of the fourth Industrial Revolution. While initially born as the concept behind specific industrial applications of generic IoT technologies, for the optimization of operational efficiency in automatic control, it quickly enabled the achievement of the total convergence of Operational (OT) and Information Technologies. The IIoT has now surpassed the traditional borders of automation and control functions in the process and manufacturing industry, shifting towards a wider domain of functions and industries, embraced under the dominant global initiative and architectural frameworks of Industry 4.0 (or Industrie 4.0) in Germany, Industrial Internet in the US, Society 5.0 in Japan, and Made-in-China 2025 in China. As real-time embedded systems are quickly achieving ubiquity in everyday life and industrial environments, and many processes already depend on real-time cyber-physical systems and embedded sensors, the integration of IoT with cognitive computing and real-time data exchange is essential for real-time analytics and realization of digital twins in smart environments and services under the various frameworks' provisions. In this context, real-time networks and systems for the Industrial IoT encompass multiple technologies and raise significant design, optimization, integration and exploitation challenges. The ten articles in this Special Issue describe advances in real-time sensor networks and systems that are significant enablers of the Industrial IoT paradigm. In the relevant landscape, the domain of wireless networking technologies is centrally positioned, as expected.

Proceedings of ICCCES 2019

Introduction to Industrial Internet of Things and Industry 4.0

Proceedings of the 14th International Conference on Complex, Intelligent and Software Intensive Systems (CISIS-2020)

LPWAN Technologies for IoT and M2M Applications

Smart Cities and Homes