Mosquitto Mqtt Broker For Iot Internet Of Things

LEBLANC NICHOLSON

Internet of Things and Connected Technologies Springer Nature
Cyber Security Solutions for Protecting and Building the Future Smart Grid guides the reader from the fundamentals of grid security to practical techniques necessary for grid defense. Through its triple structure, readers can expect pragmatic, detailed recommendations on the design of solutions and real-world problems. The book begins with a supportive grounding in the security needs and challenges of renewable-integrated modern grids. Next, industry professionals provide a wide range of case studies and examples for practical implementation. Finally, cutting-edge researchers and industry practitioners guide readers through regulatory requirements and develop a clear framework for identifying best practices. Providing a unique blend of theory and practice, this comprehensive resource will help readers safeguard the sustainable grids of the future. - Provides a fundamental overview of the challenges facing the renewable-integrated electric grid - Offers a wide range of case studies, examples, and practical techniques for implementing security in smart and micro-grids - Includes detailed guidance and discussion of international standards and regulations for industry and implementation
Hands-On MQTT Programming with Python CRC Press
The five volume set LNCS 10960 until 10964 constitutes the refereed proceedings of the 18th International Conference on Computational Science and Its Applications, ICCSA 2018, held in Melbourne, Australia, in July 2018. Apart from the general tracks, ICCSA 2018 also includes 34 international workshops in various areas of computational sciences, ranging from computational science technologies, to specific areas of computational sciences, such as computer graphics and virtual reality.
Internet of Things. A Confluence of Many Disciplines Springer Nature
MQ Telemetry Transport (MQTT) is a messaging protocol that is lightweight enough to be supported by the smallest devices, yet robust enough to ensure that important messages get to their destinations every time. With MQTT devices such as smart energy meters, cars, trains, satellite receivers, and personal health care devices can communicate with each other and with other systems or applications. This IBM® Redbooks® publication introduces MQTT and takes a scenario-based approach to demonstrate its capabilities. It provides a quick guide to getting started and then shows how to grow to an enterprise scale MQTT server using IBM WebSphere® MQ Telemetry. Scenarios demonstrate how to integrate MQTT with other IBM products, including WebSphere Message Broker. This book also provides typical usage patterns and guidance on scaling a solution. The intended audience for this book ranges from new users of MQTT and telemetry to those readers who are looking for in-depth knowledge and advanced topics.
Raspberry Pi IoT Projects Springer Nature
Learn how to use messaging technologies to build responsive and resilient applications for mobile devices and web browsers. With this hands-on guide, you'll use the STOMP and MQTT messaging protocols to write iOS and web applications capable of sending and receiving GPS and device sensor data, text messages, and alerts. Messaging protocols are not only simple to use, but also conserve network bandwidth, device memory, and batteries. Using this book's step-by-step format, author Jeff Mesnil helps you work with Objective-C and JavaScript libraries, as well as the protocols. All you need to get started are basic programming skills. Understand basic messaging concepts and composition Learn two common messaging models: point-to-point and publish/subscribe Use STOMP to write an iOS application that sends GPS data, and a web app that consumes the data Build an iOS app with MQTT that tracks and broadcasts device motion data, and a web app that displays the data and sends alerts Extend STOMP to filter, prioritize, persist, and expire messages Take a complete tour of STOMP and MQTT, including features not used in the book's sample apps
The Internet of Things in the Industrial Sector Springer
MQTT is a messaging protocol designed for the Internet of Things (IoT). It is lightweight enough to be supported by the smallest devices, yet robust enough to ensure that important messages get to their destinations every time. With MQTT devices, such as energy meters, cars, trains, mobile phones and tablets, and personal health care devices, devices can communicate with each other and with other systems or applications. IBM® MessageSight is a messaging appliance designed to handle the scale and security of a robust IoT solution. MessageSight allows you to easily secure connections, configure policies for messaging, and scale to up to a million concurrently connected devices. This IBM Redbooks® publication introduces MQTT and MessageSight through a simple key fob remote MQTT application. It then dives into the architecture and development of a robust, cross-platform Ride Share and Taxi solution (PickMeUp) with real-time voice, GPS location sharing, and chat among a variety of mobile platforms. The publication also includes an addendum describing use cases in a variety of other domains, with sample messaging topology and suggestions for design.
Innovative Data Communication Technologies and Application Springer Nature
This book presents emerging concepts in data mining, big data analysis, communication, and networking technologies, and discusses the state-of-the-art in data engineering practices to tackle massive data distributions in smart networked environments. It also provides insights into potential data distribution challenges in ubiquitous data-driven networks, highlighting research on the theoretical and systematic framework for analyzing, testing and designing intelligent data analysis models for evolving communication frameworks. Further, the book showcases the latest developments in wireless sensor networks, cloud computing, mobile network, autonomous systems, cryptography, automation, and other communication and networking technologies. In addition, it addresses data security, privacy and trust, wireless networks, data classification, data prediction, performance analysis, data validation and verification models, machine learning, sentiment analysis, and various data analysis techniques.
Practical Node-RED Programming Packt Publishing Ltd
This book introduces a new approach to embedded development, grounded in modern, industry-standard JavaScript. Using the same language that powers web browsers and Node.js, the Moddable SDK empowers IoT developers to apply many of the same tools and techniques used to build sophisticated websites and mobile apps. The Moddable SDK enables you to unlock the full potential of inexpensive microcontrollers like the ESP32 and ESP8266. Coding for these microcontrollers in C or C++ with the ESP-IDF and Arduino SDKs works for building basic products but doesn't scale to handle the increasingly complex IoT products that customers expect. The Moddable SDK adds the lightweight XS JavaScript engine to those traditional environments, accelerating development with JavaScript while keeping the performance benefits of a native SDK. Building user interfaces and communicating over the network are two areas where JavaScript really shines. IoT Development for ESP32 and ESP8266 with JavaScript shows you how to build responsive touch screen user interfaces using the Piu framework. You'll learn how easy it is to securely send and receive JSON data over Wi-Fi with elegant JavaScript APIs for common IoT protocols, including HTTP/HTTPS, WebSocket, MQTT, and mDNS. You'll also learn how to integrate common sensors and actuators, Bluetooth Low Energy (BLE), file systems, and more into your projects, and you'll see firsthand how JavaScript makes it easier to combine these diverse technologies. If you're an embedded C or C++ developer who has never worked in JavaScript, don't worry. This book includes an introduction to the JavaScript language just for embedded developers experienced with C or C++. What You'll Learn Building, installing, and debugging JavaScript projects on the ESP32 and ESP8266 Using modern JavaScript for all aspects of embedded development with the Moddable SDK Developing IoT products with animated user interfaces, touch input, networking, BLE, sensors, actuators, and more Who This Book

Is For Professional embedded developers who want the speed, flexibility, and power of web development in their embedded software work Makers who want a faster, easier way to build their hobby projects Web developers working in JavaScript who want to extend their skills to hardware products

Hacking and Security Packt Publishing Ltd

This book presents the recent research adoption of a variety of enabling wireless communication technologies like RFID tags, BLE, ZigBee, etc., and embedded sensor and actuator nodes, and various protocols like CoAP, MQTT, DNS, etc., that has made Internet of things (IoT) to step out of its infancy to become smart things. Now, smart sensors can collaborate directly with the machine without human involvement to automate decision making or to control a task. Smart technologies including green electronics, green radios, fuzzy neural approaches, and intelligent signal processing techniques play important roles in the developments of the wearable healthcare systems. In the proceedings of 5th International Conference on Internet of Things and Connected Technologies (ICIoTCT), 2020, brought out research works on the advances in the Internet of things (IoT) and connected technologies (various protocols, standards, etc.). This conference aimed at providing a forum to discuss the recent advances in enabling technologies and applications for IoT.

MQTT Essentials - a Lightweight IoT Protocol IBM Redbooks

Leverage Python and Raspberry Pi to create complex IoT applications capable of creating and detecting movement and measuring distance, light, and a host of other environmental conditions Key FeaturesLearn the fundamentals of electronics and how to integrate them with a Raspberry PiUnderstand how to build RESTful APIs, WebSocket APIs, and MQTT-based applicationsExplore alternative approaches to structuring IoT applications with PythonBook Description The age of connected devices is here, be it fitness bands or smart homes. It's now more important than ever to understand how hardware components interact with the internet to collect and analyze user data. The Internet of Things (IoT), combined with the popular open source language Python, can be used to build powerful and intelligent IoT systems with intuitive interfaces. This book consists of three parts, with the first focusing on the "Internet" component of IoT. You'll get to grips with end-to-end IoT app development to control an LED over the internet, before learning how to build RESTful APIs, WebSocket APIs, and MQTT services in Python. The second part delves into the fundamentals behind electronics and GPIO interfacing. As you progress to the last part, you'll focus on the "Things" aspect of IoT, where you will learn how to connect and control a range of electronic sensors and actuators using Python. You'll also explore a variety of topics, such as motor control, ultrasonic sensors, and temperature measurement. Finally, you'll get up to speed with advanced IoT programming techniques in Python, integrate with IoT visualization and automation platforms, and build a comprehensive IoT project. By the end of this book, you'll be well-versed with IoT development and have the knowledge you need to build sophisticated IoT systems using Python. What you will learnUnderstand electronic interfacing with Raspberry Pi from scratchGain knowledge of building sensor and actuator electronic circuitsStructure your code in Python using Async IO, pub/sub models, and moreAutomate real-world IoT projects using sensor and actuator integrationIntegrate electronics with ThingSpeak and IFTTT to enable automationBuild and use RESTful APIs, WebSockets, and MQTT with sensors and actuatorsSet up a Raspberry Pi and Python development environment for IoT projectsWho this book is for This IoT Python book is for application developers, IoT professionals, or anyone interested in building IoT applications using the Python programming language. It will also be particularly helpful for mid to senior-level software engineers who are experienced in desktop, web, and mobile development, but have little to no experience of electronics, physical computing, and IoT.

An An Atypical ASP.NET Core 5 Design Patterns Guide Springer Nature

Send and receive messages with the MQTT protocol for your IoT solutions.About This Book* Make your connected devices less prone to attackers by understanding practical security mechanisms* Dive deep into one of IoT's extremely lightweight machines to enable connectivity protocol with some real-world examples* Learn to take advantage of the features included in MQTT for IoT and Machine-to-Machine communications with complete real-life examplesWho This Book Is ForThis book is a great resource for developers who want to learn more about the MQTT protocol to apply it to their individual IoT projects. Prior knowledge of working with IoT devices is essential.What You Will Learn* Understand how MQTTv3.1 and v3.1.1 works in detail* Install and secure a Mosquitto MQTT broker by following best practices* Design and develop IoT solutions combined with mobile and web apps that use MQTT messages to communicate* Explore the features included in MQTT for IoT and Machine-to-Machine communications* Publish and receive MQTT messages with Python, Java, Swift, JavaScript, and Node.js* Implement the security best practices while setting up the MQTT Mosquitto brokerIn DetailThis step-by-step guide will help you gain a deep understanding of the lightweight MQTT protocol. We'll begin with the specific vocabulary of MQTT and its working modes, followed by installing a Mosquitto MQTT broker. Then, you will use best practices to secure the MQTT Mosquitto broker to ensure that only authorized clients are able to publish and receive messages. Once you have secured the broker with the appropriate configuration, you will develop a solution that controls a drone with Python.Further on, you will use Python on a Raspberry Pi 3 board to process commands and Python on Intel Boards (Joule, Edison and Galileo). You will then connect to the MQTT broker, subscribe to topics, send messages, and receive messages in Python. You will also develop a solution that interacts with sensors in Java by working with MQTT messages.Moving forward, you will work with an asynchronous API with callbacks to make the sensors interact with MQTT messages. Following the same process, you will develop an iOS app with Swift 3, build a website that uses WebSockets to connect to the MQTT broker, and control home automation devices with HTML5, JavaScript code, Node.js and MQTT messagesStyle and approachThis step-by-step guide describes the MQTT protocol for your IoT projects

SAP HANA Cloud Integration BPB Publications

The information infrastructure – comprising computers, embedded devices, networks and software systems – is vital to operations in every sector: chemicals, commercial facilities, communications, critical manufacturing, dams, defense industrial base, emergency services, energy, financial services, food and agriculture, government facilities, healthcare and public health, information technology, nuclear reactors, materials and waste, transportation systems, and water and wastewater systems. Global business and industry, governments, indeed society itself, cannot function if major components of the critical information infrastructure are degraded, disabled or destroyed. Critical Infrastructure Protection XVII describes original research results and innovative applications in the interdisciplinary field of critical infrastructure protection. Also, it highlights the importance of weaving science, technology and policy in crafting sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors. Areas of coverage include: Themes and Issues Smart Grid Risks and Impacts Network and Telecommunications Systems Security Infrastructure Security Automobile Security This book is the seventeenth volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.10 on Critical Infrastructure Protection, an international community of scientists, engineers, practitioners and policy makers dedicated to advancing research, development and implementation efforts focused on infrastructure protection. The book contains a selection of eleven edited papers from the Seventeenth Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, which was held at SRI International, Arlington, Virginia, USA in the spring of 2023. Critical Infrastructure Protection XVII is an important resource for researchers, faculty members and graduate students, as well as for as well as for policy makers, practitioners and other individuals with interests in homeland security.

Automating Building Energy Management for Accelerated Building Decarbonization: System Architecture and the Network Layer Packt Publishing Ltd

Learn how to program the Internet of Things with this hands-on guide. By breaking down IoT programming complexities in step-by-step, building-block fashion, author and educator Andy King shows you how to design and build your own full-stack, end-to-end IoT solution--from device to cloud. This practical book walks you through tooling, development environment setup, solution design, and implementation. You'll learn how a typical IoT ecosystem works, as well as how to tackle integration challenges that crop up when implementing your own IoT solution. Whether you're an engineering student learning the basics of the IoT, a tech-savvy executive looking to better understand the nuances of IoT technology stacks, or a programmer building your own smart house solution, this practical book will help you get started. Design an end-to-end solution that implements an IoT use case Set up an IoT-centric development and testing environment Organize your software design by creating abstractions in Python and Java Use MQTT, CoAP, and other protocols to connect IoT devices and services Create a custom JSON-based data format that's consumable across a range of platforms and services Use cloud services to support your IoT ecosystem and provide business value for stakeholders

Practical IoT Hacking No Starch Press

Explore hacking methodologies, tools, and defensive measures with this practical guide that covers topics like penetration testing, IT forensics, and security risks. Key Features Extensive hands-on use of Kali Linux and security tools Practical focus on IT forensics, penetration testing, and exploit detection Step-by-step setup of secure environments using Metasploitable Book DescriptionThis book provides a comprehensive guide to cybersecurity, covering hacking techniques, tools, and defenses. It begins by introducing key concepts, distinguishing penetration testing from hacking, and explaining hacking tools and procedures. Early chapters focus on security fundamentals, such as attack vectors, intrusion detection, and forensic methods to secure IT systems. As the book progresses, readers explore topics like exploits, authentication, and the challenges of IPv6 security. It also examines the legal aspects of hacking, detailing laws on unauthorized access and negligent IT security. Readers are guided through installing and using Kali Linux for penetration testing, with practical examples of network scanning and exploiting vulnerabilities. Later sections cover a range of essential hacking tools, including Metasploit, OpenVAS, and Wireshark, with step-by-step instructions. The book also explores offline hacking methods, such as bypassing protections and resetting passwords, along with IT forensics techniques for analyzing digital traces and live data. Practical application is emphasized throughout, equipping readers with the skills needed to address real-world cybersecurity threats.What you will learn Master penetration testing Understand security vulnerabilities Apply forensics techniques Use Kali Linux for ethical hacking Identify zero-day exploits Secure IT systems Who this book is for This book is ideal for cybersecurity professionals, ethical hackers, IT administrators, and penetration testers. A basic understanding of network protocols, operating systems, and security principles is recommended for readers to benefit from this guide fully.

Building Real-time Mobile Solutions with MQTT and IBM MessageSight SAP Press

Get familiar with all the concepts related to Raspberry Pi and MQTT, build innovative IoT projects, and discover how to scale these projects to the next level Key FeaturesLearn some of the most popular tools used in IoT – Raspberry Pi, MQTT, ESP8266 and moreBuild exciting projects such as an IoT weather station and a smart switch boardDiscover the advantages of taking your MQTT broker globalBook Description The future of IoT has the potential to be limitless. Wouldn't it be great if you could add it to your own technological stacks? But where to start? With the basics, of course. In this book, you will start by learning about the most popular hardware and communication protocol, Raspberry Pi and MQTT. You will see how to use them together by setting up your own MQTT server on Raspberry Pi and understand how it works. This book explores MQTT in detail, including the clients and devices that you can connect to your server. You will discover two very popular IoT development boards among project developers: the ESP8266 and ESP32 development boards. Then, you will learn how to build interactive dashboards on your Pi and monitor your client devices. The book also shows you how to build a dashboard using another popular software – Node-RED. You will be able to put your skills to the test by creating two full-scale projects. That's not all: you will also learn how to host your own MQTT server on a virtual cloud service. Finally, you will be guided on how to move forward from here, what technologies to learn, and some project recommendations to polish or test your knowledge. By the end of this book, you will be able to build meaningful projects using Raspberry Pi and MQTT and create dashboards for your projects on Node-RED. What you will learnConfigure and use a Raspberry Pi for IoT projectsImplement the MQTT communication protocol for projectsUnderstand how to set up the NodeMCU and ESP32 boards as MQTT clientsControl a NodeMCU board through a Node-RED dashboard hosted on Raspberry PiGet LAMP server, Home Assistant, and MariaDB on the Raspberry PiSet up an online MQTT broker on a cloud service or enterprise service provider platformBuild full-scale, end-to-end prototype projectsWho this book is for This book is for students who are interested in IoT and want to build projects using the available developer hardware. Educators who want to introduce a course on IoT into their curriculum, technology enthusiasts, and IoT developers who are just getting started will also benefit from this book. No prior knowledge about the two main topics that the book covers is required - Raspberry Pi and MQTT. A basic understanding of what IoT is will also be useful but not mandatory.

Data and Applications Security and Privacy XXXVI Packt Publishing Ltd

The definitive guide to hacking the world of the Internet of Things (IoT) -- Internet connected devices such as medical devices, home assistants, smart home appliances and more. Drawing from the real-life exploits of five highly regarded IoT security researchers, Practical IoT Hacking teaches you how to test IoT systems, devices, and protocols to mitigate risk. The book begins by walking you through common threats and a threat modeling framework. You'll develop a security testing methodology, discover the art of passive reconnaissance, and assess security on all layers of an IoT system. Next, you'll perform VLAN hopping, crack MQTT authentication, abuse UPnP, develop an mDNS poisoner, and craft WS-Discovery attacks. You'll tackle both hardware hacking and radio hacking, with in-depth coverage of attacks against embedded IoT devices and RFID systems. You'll also learn how to: • Write a DICOM service scanner as an NSE module • Hack a microcontroller through the UART and SWD interfaces • Reverse engineer firmware and analyze mobile companion apps • Develop an NFC fuzzer using Proxmark3 • Hack a smart home by jamming wireless alarms, playing back IP camera feeds, and controlling a smart treadmill The tools and devices you'll use are affordable and readily available, so you can easily practice what you learn. Whether you're a security researcher, IT team member, or hacking hobbyist, you'll find Practical IoT Hacking indispensable in your efforts to hack all the things REQUIREMENTS: Basic knowledge of Linux command line, TCP/IP, and programming

MQTT Essentials - A Lightweight IoT Protocol "O'Reilly Media, Inc."

This book constitutes revised selected papers of the Third International Conference on Computing Science, Communication and Security, COMS2 2022, held in Gandhinagar, India, in February 2022.

Due to the COVID-19 pandemic the conference was held virtually. The 22 full papers were thoroughly reveiwed and selected from 143 submissions. The papers present ideas, and research results on the aspects of computing science, network communication, and security.

Internet of Things Springer Nature

This book gives an overview of existing models that cover the whole lifecycle of an IoT application, ranging from its design, implementation, deployment, operation, and monitoring to its final termination and retirement. Models provide abstraction and can help IoT application developers into creating more robust, secure, and reliable applications. Furthermore, adaptation of applications can be eased by using these models, leading to an increased dynamic of the developed IoT applications. In the book, research of the last years in the area of model based approaches to the Internet of Things is described and these approaches are incorporated into the lifecycle of IoT applications. Finally, use cases from different domains are introduced that show how these models could be applied in real-world applications.

Raspberry Pi and MQTT Essentials Elsevier

Use a low-code programming approach to create event-driven applications from scratch by wiring together hardware devices, APIs, and online services Key FeaturesDiscover how you can automate the Internet of Things (IoT) without writing huge blocks of codeLearn how to wire together flows using a browser-based visual editorHandle IoT data with little to no coding knowledgeBook Description Node-RED is a free and open source flow-based programming tool used to handle IoT data that allows programmers of any level to interconnect physical I/O, cloud-based systems, databases, and APIs to build web applications without code. Practical Node-RED Programming is a comprehensive introduction for anyone looking to get up to speed with the Node-RED ecosystem in no time. Complete with hands-on tutorials, projects, and self-assessment questions, this easy-to-follow guide will help you to become well versed in the foundations of Node-RED. You'll learn how to use Node-RED to handle IoT data and build web applications without having to write complex code. Once you've covered the basics, you'll explore various visual programming techniques and find out how to make sample flows as you cover web development, IoT development, and cloud service connections, and finally build useful real-world applications. By the end of this book, you'll have learned how to use Node-RED to develop a real-world application from scratch, which can then be implemented in your business. What you will learnUnderstand the history of Node-RED and why you need to learn a flow-based programming toolUse Node-RED to build Node.js-based applicationsHandle data for IoT devices using Node-RED flowsExplore advanced Node-RED features such as connecting repositories and customizing the flow editorFind out what the MQTT protocol is and how it relates to Node-REDCreate and publish your own nodes and flows using the Node-RED libraryWho this book is for This Node-RED book is for web developers and IoT engineers with some background in JavaScript and Node.js. Although not necessary, familiarity with the concepts of electronics will help you to make the most out of this book.

Mobile and Web Messaging IBM Redbooks

Unleash the power of the ESP8266 and build a complete home automation system with it. About This Book Harness the power of the ESP8266 Wi-Fi chip to build an effective Home Automation System Learn about the various ESP8266 modules Configuring the ESP8266 and making interesting home automation projects A step-by-step guide on the ESP8266 chip and how to convert your home into a smart home. Who This Book Is For This book is targeted at people who want to build connected and inexpensive home automation projects using the ESP8266 Wi-Fi chip, and to completely automate their homes. A basic understanding of the board would be an added advantage What You Will Learn Get, compile, install, and configure an MQTT server Use the Wi-Fi connectivity feature to control appliances remotely Control several home appliances using the ESP8266 Wi-Fi chip Control and monitor your home from the cloud using ESP8266 modules Stream real-time data from the ESP8266 to a server over WebSockets Create an Android mobile application for your project In Detail The ESP8266 is a low-cost yet powerful Wi-Fi chip that is becoming more popular at an alarming rate, and people have adopted it to create interesting projects. With this book, you will learn to create and program home automation projects using the ESP8266 Wi-Fi chip. You will learn how to build a thermostat to measure and adjust the temperature accordingly and how to build a security system using the ESP8266. Furthermore, you will design a complete home automation system from sensor to your own cloud. You will touch base on data monitoring, controlling appliances, and security aspects. By the end of the book, you will understand how to completely control and monitor your home from the cloud and from a mobile application. You will be familiar with the capabilities of the ESP8266 and will have successfully designed a complete ready-to-sell home automated system. Style and approach A practical book that will cover independent home automation projects.

IoT Data Analytics using Python Springer Nature

Gain a strong foundation of Arduino-based device development, from which you can go in any direction according to your specific development needs and desires. You'll build Arduino-powered devices for everyday use, and then connect those devices to the Internet. You'll be introduced to the building blocks of IoT, and then deploy those principles to by building a variety of useful projects. Projects in the books gradually introduce the reader to key topics such as internet connectivity with Arduino, common IoT protocols, custom web visualization, and Android apps that receive sensor data on-demand and in realtime. IoT device enthusiasts of all ages will want this book by their side when developing Android-based devices. If you're one of the many who have decided to build your own Arduino-powered devices for IoT applications, then Building Arduino Projects for the Internet of Things is exactly what you need. This book is your single resource--a guidebook for the eager-to-learn Arduino enthusiast--that teaches logically, methodically, and practically how the Arduino works and what you can build with it. Written by a software developer and solution architect who got tired of hunting and gathering various lessons for Arduino development as he taught himself all about the topic. For Arduino enthusiasts, this book not only opens up the world of IoT applications, you will also learn many techniques that likely would not be obvious if not for experience with such a diverse group of applications What You'll Learn Create an Arduino circuit that senses temperature Publish data collected from an Arduino to a server and to an MQTT broker Set up channels in Xively Using Node-RED to define complex flows Publish data visualization in a web app Report motion-sensor data through a mobile app Create a remote control for house lights Set up an app in IBM Bluematrix Who This Book Is For IoT device enthusiasts of all ages will want this book by their side when developing Android-based devices.