

1. Record Nr.	UNINA9910829949103321
Autore	Kwok Yu-Kwong Ricky
Titolo	Wireless Internet and mobile computing : interoperability and performance // Yu-Kwong Ricky Kwok, Vincent K.N. Lau
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley-Interscience : , c2007
ISBN	1-281-00228-3 9786611002282 0-470-16796-3 0-470-16795-5
Descrizione fisica	1 online resource (772 p.)
Collana	Information and communication technology series ; ; 89
Altri autori (Persone)	LauVincent K. N
Disciplina	621.382
Soggetti	Wireless communication systems Mobile computing Internetworking (Telecommunication)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 701-723) and index.
Nota di contenuto	Preface -- Acknowledgments -- Acronyms -- PART I. ESSENTIALS OF WIRELESS COMMUNICATIONS -- 1. The "Mobile" Radio Propagation Channel -- 1.1 Introduction -- 1.2 Large Scale Path-loss -- 1.3 Shadowing Effects -- 1.4 Small Scale Multipath Fading Effects -- 1.4.1 Flat Fading vs Frequency Selective Fading -- 1.4.2 Fast Fading vs Slow Fading -- 1.5 Practical Considerations -- 1.6 Summary -- Problems -- 2. Modulation Techniques -- 2.1 Introduction -- 2.2 Signal Space and Geometric Representation of Signals -- 2.3 Modulation Design and Signal Constellations -- 2.4 Demodulation Design and Optimal Detection in AWGN Channels -- 2.5 Performance and Tradeoffs -- 2.6 Practical Illustrations -- 2.7 Summary -- Problems -- 3. Multiuser Communications -- 3.1 Introduction -- 3.2 Information Theoretical Overview of Multi-user communications -- 3.3 Orthogonal Resource Partition -- 3.4 Non-Orthogonal Resource Partitioning -- 3.5 Spectral Efficiency and Performance Issues -- 3.6 Practical Illustrations of GSM, CDMA and Wireless LAN -- 3.7 Summary -- Problems -- 4. Diversity Techniques -- 4.1 Introduction -- 4.2 Effects of Flat Fading on BER Performance -- 4.3 Effects of Frequency Selective Fading on BER

Performance -- 4.4 Diversity: A Key Technique to Combat Flat Fading Channels -- 4.5 Equalization\* -- 4.6 Practical Illustration: RAKE Receiver -- 4.7 Summary -- Problems -- PART II. CELLULAR WIRELESS TECHNOLOGIES -- 5. Overview and Evolution of Cellular Technologies -- 5.1 Introduction -- 5.2 Evolution of Cellular Systems -- 5.3 Technical Challenges to Realize 3G Services -- 5.4 Summary -- Problems -- 6. CDMA (IS-95) -- 6.1 Introduction -- 6.2 System Architecture of IS95 -- 6.3 Physical Layer and Physical Channels -- 6.4 Call Processing -- 6.5 Power Control -- 6.6 Soft Handover -- 6.7 Summary -- Problems -- 7. GSM -- 7.1 Introduction -- 7.2 GSM System Architecture -- 7.3 GPRS System Architecture -- 7.4 Radio Interface -- 7.5 Core Network Interface and Services. 7.6 Summary -- Problems -- 8. Wideband CDMA and Beyond -- 8.1 Introduction -- 8.2 UMTS Architecture -- 8.3 Packet Switched Connections in UMTS (Rel 99) -- 8.4 Packet Scheduling in HSDPA (Rel 5) -- 8.5 Summary -- Problems -- PART III. SHORT-RANGE WIRELESS TECHNOLOGIES -- 9. IEEE 802.11x WLAN Standards -- 9.1 Introduction -- 9.2 Design Goals -- 9.3 IEEE 802 Architecture -- 9.4 IEEE 802.11 MAC Layer -- 9.5 IEEE 802.11 Physical Layers -- 9.6 IEEE 802.11e for QoS Provisioning -- 9.7 Advanced Developments -- 9.8 Practical Illustration: Home Network -- 9.9 Summary -- Problems -- 10. Bluetooth WPAN -- 10.1 Introduction -- 10.2 Design Goals -- 10.3 Bluetooth Protocol Stack -- 10.4 Bluetooth Physical and MAC Layers -- 10.5 Piconets and Scatternets -- 10.6 Performance Issues -- 10.7 Practical Illustration: Sensor Network -- 10.8 Summary -- Problems -- 11. Coexistence Issues -- 11.1 Introduction -- 11.2 The ISM Band Spectrum -- 11.3 Packet Collision -- 11.4 Possible Solutions -- 11.5 IEEE 802.15 TG2 -- 11.6 Interference Source Oriented Adaptive Frequency Hopping -- 11.7 Interference Source Oriented Master Delay MAC Scheduling -- 11.8 Performance Issues -- 11.9 Practical Illustration: Bluetooth and Wi-Fi Colocate Transmissions -- 11.10 Summary -- Problems -- 12. Competing Technologies -- 12.1 Introduction -- 12.2 IrDA -- 12.3 HomeRF -- 12.4 HIPERLAN -- 12.5 Practical Illustrations?Implementation of HIPERLAN -- 12.6 Summary -- Problems -- PART IV. PROTOCOL ADAPTATIONS FOR WIRELESS NETWORKING -- 13. Mobile IP -- 13.1 Introduction -- 13.2 Advertisement Mechanisms -- 13.3 Registration -- 13.4 Tunneling Approaches -- 13.5 Route Optimizations -- 13.6 Practical Illustrations-Hierarchical Mobility Management -- 13.7 Summary -- Problems -- 14. IPv6 -- 14.1 Introduction -- 14.2 Design Goals -- 14.3 Mobility Support -- 14.4 Home Agents Discovery -- 14.5 Practical Illustrations-IPv6 Based VTHD Network -- 14.6 Summary -- Problems. 15. Wireless Application Protocol (WAP) -- 15.1 Introduction -- 15.2 WAP Service Model -- 15.3 WAP System Architecture -- 15.4 WAP Protocol Stack -- 15.5 WAP Profiles and Caching -- 15.6 Practical Illustrations-Location-Aware Advertising System -- 15.7 Summary -- Problems -- 16. TCP over Wireless -- 16.1 Introduction -- 16.2 TCP Congestion and Error Control -- 16.3 Deficiencies and Overview of Solution -- 16.4 Link Layer Approaches -- 16.5 Split Connection Approaches -- 16.6 End-to-End Approaches -- 16.7 Practical Illustrations-Wireless WAN -- 16.8 Summary -- Problems -- PART V. WIRELESS RESOURCES MANAGEMENT -- 17. Wireless Packet Scheduling -- 17.1 Introduction -- 17.2 The Scheduling Problem -- 17.3 System Model -- 17.4 Fairness Notions -- 17.5 Fair Queueing Approaches -- 17.6 Practical Illustrations-HSDPA -- 17.7 Summary -- Problems -- 18. Power Management -- 18.1 Introduction -- 18.2 Characterization of Power Consumption -- 18.3 Power Conservation Schemes -- 18.4 Performance Issues -- 18.5 Practical Illustrations-The pcMAC Scheme

-- 18.6 Summary -- Problems -- 19. Ad Hoc Routing -- 19.1 Introduction -- 19.2 Application Scenarios -- 19.3 System Model -- 19.4 Performance Metrics -- 19.5 Routing Protocols -- 19.6 Practical Illustrations-WLAN Based Ad Hoc Routing -- 19.7 Summary -- Problems -- 20. Wireless Data Caching -- 20.1 Introduction -- 20.2 Application Scenarios -- 20.3 System Architecture -- 20.4 Performance Metrics -- 20.5 Data Caching Approaches -- 20.6 Practical Illustrations-Proactive Key Caching -- 20.7 Summary -- Problems -- 21. Security Issues -- 21.1 Introduction -- 21.2 Security Considerations -- 21.3 Cellular Wireless Security -- 21.4 Short-Range Wireless Security -- 21.5 Practical Illustrations-Wireless LAN Security Auditing -- 21.6 Summary -- Problems -- PART VI. MOBILE COMPUTING APPLICATIONS -- 22. VoIP on Wireless -- 22.1 Introduction -- 22.2 iGSM VoIP Approach -- 22.3 iGSM System Architecture. 22.4 iGSM Call Processing -- 22.5 Practical Illustrations-Problems and Solutions for VoIP over IEEE 802.11 -- 22.6 Summary -- Problems -- 23. Wireless Video -- 23.1 Introduction -- 23.2 Real-Time Service Goals -- 23.3 System Constraints -- 23.4 Error Concealment Techniques -- 23.5 Joint Source Channel Coding Techniques -- 23.6 Practical Illustrations?Rate Adaptation for MPEG-4 Video -- 23.7 Summary -- Problems -- 24. Wireless File Systems -- 24.1 Introduction -- 24.2 File System Service Model -- 24.3 General Principles for the Design of a Distributed File System -- 24.4 Replication Services and Mechanisms -- 24.5 Disconnected Operations and Caching -- 24.6 Weakly Connected Operations -- 24.7 Practical Illustrations-Mobile Distributed Database -- 24.8 Summary -- Problems -- 25. Location Dependent Services -- 25.1 Introduction -- 25.2 Mobile Location Service Model -- 25.3 Spatial Analysis Techniques -- 25.4 Mobile Positioning Techniques -- 25.5 Practical Illustrations-The Cricket Location Support System -- 25.6 Summary -- Problems -- 26. Trust Bootstrapping in Wireless Sensor Networks -- 26.1 Introduction -- 26.2 Key Predistribution -- 26.3 Key Predistribution with Deployment Knowledge -- 26.4 Key Establishment -- 26.5 Discussions and Future Work -- 26.6 Summary -- Problems -- 27. Peer-to-Peer Computing over Wireless -- 27.1 Introduction -- 27.2 A Taxonomy of P2P Systems -- 27.3 Wired P2P Systems -- 27.4 Topology Control in Wireless Ad Hoc Networks -- 27.5 Media Objects Replication Techniques -- 27.6 Practical Illustrations - Localized Topology Control -- 27.7 Summary -- Problems -- 28. Incentives in Peer-to-Peer Computing -- 28.1 Introduction -- 28.2 Incentive Issues in P2P Systems over the Internet -- 28.3 Incentive Issues in Wireless P2P Systems -- 28.4 Discussion and Future Work -- 28.5 Summary -- Problems -- Appendix A: Optimality of Minimum Distance Decoder -- References -- Topic Index.

## Sommario/riassunto

This book describes the technologies involved in all aspects of a large networking system and how the various devices can interact and communicate with each other. Using a bottom up approach the authors demonstrate how it is feasible, for instance, for a cellular device user to communicate, via the all-purpose TCP/IP protocols, with a wireless notebook computer user, traversing all the way through a base station in a cellular wireless network (e.g., GSM, CDMA), a public switched network (PSTN), the Internet, an intranet, a local area network (LAN), and a wireless LAN access point. The information bits, in travelling through this long path, are processed by numerous disparate communication technologies. The authors also describe the technologies involved in infrastructure less wireless networks.