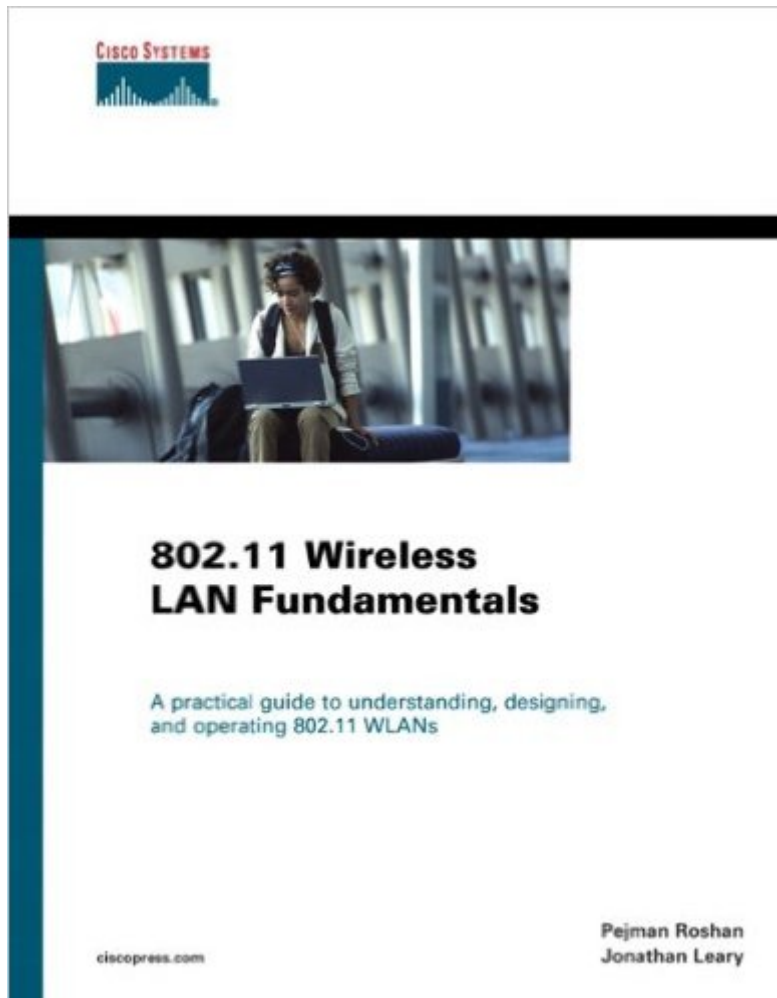


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# 802.11 Wireless LAN Fundamentals



## Synopsis

Master the basics in designing, building, and managing a Cisco Aironet WLAN. Master the basics of Wireless LANs with this concise design and deployment guide. Understand implementation issues for a variety of environments including vertical, SOHO, and enterprise networks. Learn design and troubleshooting advice from real-world case studies. 802.11 Wireless LAN Fundamentals gives networking engineers and IT professionals the knowledge they need to design, deploy, manage, and troubleshoot their own wireless local-area networks (WLANs). Starting with an overview of the technology and architecture of WLANs, the book goes on to explain services and advanced features that such applications can provide. Most importantly, it provides practical design guidance and deployment recommendations. Wireless LANs connect computer networks via radio transmissions instead of traditional phone lines or cables. Benefits to these systems go well beyond getting rid of all the cables and wires. Campus networks can grow geographically larger while still retaining all their efficiency and speed. Additionally, cost savings can be realized when third-party phone lines are no longer necessary, saving the cost of line rental and equipment upkeep. Finally, flexibility in campus network design increases significantly for the networking professional, while the network accessibility and usefulness increases for the individual users. 802.11 Wireless LAN Fundamentals helps networking professionals realize these benefits by helping them understand how to design, build, and maintain these networks, as well as how to justify their value within organizations.

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## Customer Reviews

Great things sometimes really do come in small packages. I confess I had my doubts when I picked up this book: it seems very small to actually cover the fundamentals of a topic, any topic. But it surprised me. In only about 250 pages, it succeeds in covering how wireless data networking - aka 802.11, or WiFi - actually works. There is even a professional level of detail. When it comes down to it, what makes wireless different is the use of a radio instead of a physical wire. That means, for those familiar with the OSI Model, the differences are all in the bottom two layers, the Physical and the Data Link layers. As an effect of using a radio, of course, anyone with an appropriate antenna can listen in, and maybe join the conversation if they wish, which makes security both important and a little trickier to implement. Now you know the focus of this book. To make sure that the reader understands the data network wireless connects to, as well as to provide a good comparison, the authors start with a review of Ethernet and how the data is exchanged over it, and on out to the Internet. From there, they patiently take you through how WiFi does the same thing, only with a radio instead of a Cat 5 cable. The explanation of how the Physical layer works in this environment is not as long as its thoroughness makes it appear; though less than 25 pages, you will finish that chapter with a decent understanding of the differences in connection establishment and management among the various flavors of WiFi: 802.11, 802.11a, 802.11b, and 802.11g. These standards use different means of manipulating the radio waves, with effects (I think) not unlike the differences in data passage among Ethernet and Token Ring.

I recently read the title "802.11 Wireless LAN Fundamentals" by Pejman Roshan and Jonathan Leary. ISBN: 1587050773. You've heard the saying that good things come in small packages. Well, this title reinforces that statement. The book is packed with information regarding 802.11 Wireless LAN's. Don't be thrown by the title into thinking that this book only covers the basics. In fact, this book covers the basics and much, much more. The book starts off with fundamental concepts of Ethernet Technologies. Not enough to be a great Ethernet reference, but enough to refresh your memory or to get the flavor of Ethernet once again. The book then explains the essential concepts

of Wireless LAN's. After some needed high level concepts are covered the book dives into the bits and bytes of Wireless networking, leaving nothing for the imagination. The physical layer details are covered extremely well in this book. There are great depictions that show the different modulation types, frame formats and field definitions of 802.11a, 802.11b and 802.11g. An extremely important topic on Wireless security is cover better in this book than any other source that I've found. A chapter has been dedicated to the topic. The author's first breaks down the weaknesses in wireless networks then explain how to secure the Wireless network. This chapter is loaded with supporting diagrams and figures. The other challenging topic of Roaming is covered in this book. The chapter goes into the protocol codes that allow mobility to be successful and the author's show a few ways in which mobility can be accomplished from a technical perspective. QoS for 802.11, or 802.11e, is a great section pertaining to QoS in a shared media wireless environment.

At a total of 281 pages covering 10 chapters of material, this book is very compact, but every page is filled with relevant information. The first chapter of the book quickly delves into Ethernet technologies - 802.3 ethernet frame formats, addressing, CSMA/CD, 10Mb, 100Mb and 1000Mb. The second and third chapters cover the physical and MAC layers of 802.11 technology extensively. Chapter 2 starts from service sets (IBSS, BSS and ESS), CSMA/CA and how it differs from CSMA/CD, and moves to 802.11 MAC layer operations. MAC layer operations include station connectivity - how 802.11 clients connect to the access point, power save operation and the different 802.11 frame formats. Chapter 3 covers the physical layer of the 802.11 protocol - the sublayers, PMD (Physical Medium Dependant) and PLCP (Physical Layer Convergence Procedure); FHSS (Frequency Hopping Spread Spectrum) and DSSS (Direct Sequence Spread Spectrum) and the different modulation techniques used in 802.11, 802.11a, 802.11b and 802.11g. Wireless LAN security is covered to a reasonable depth. The authors give a brief overview of encryption and then cover encryption in the 802.11 standard which is basically WEP (Wired Equivalent Privacy). Authentication mechanisms - Open and Shared Key authentication and the security vulnerabilities in the 802.11 standard are discussed in detail. One of the most important tasks during the deployment of a wireless network is the site survey. The decisions made during this phase are critical to the optimal performance of the WLAN. Chapter 8 points to the questions that must be asked during a site survey and the necessary tools required to successfully conduct a survey. For a Cisco press book this volume is not very Cisco-centric. There are few references to Cisco devices.

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