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<<计算机网络与因特网>>

图书基本信息

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前言

Previous editions of Computer Networks And Internets have received incrediblypositive reviews; I especially thank readers who have taken the time to write to me per-sonally. In addition to students who use the text in courses, networking professionalshave written to praise its clarity and describe how it helped them pass professional cer-tification exams. Many enthusiastic comments have also arrived about foreign transla-tions. The success is especially satisfying in a market glutted with networking books.This book stands out because of its breadth of coverage, logical organization, explana-tion of concepts, focus on the Internet, and appeal to both professors and students.In response to suggestions from readers and recent changes in networking, the newedition has been completely reorganized, revised, and updated. Descriptions of oldertechnologies has been reduced or eliminated. Material on data communications, whichis becoming an essential staple of networking courses, has been expanded and placed inPart II of the text. The networking chapters build on the data communication basics,and describe both wired and wireless networking. In addition, to emphasize the new802.11 wireless standards, the discussion of wireless includes cellular telephone techno-logies because cellular systems currently offer data services and will soon be adoptingInternet protocols.Recent discussions about networking courses have engendered a debate about thebottom-up or top-down approach. In bottom-up, a student learns the lowest-level de-tails, and then learns how the next higher levels use the lower-levels to provide expand-ed functionality. In top-down, one starts with a high-level application and only learnsenough of the next lower layer to understand how the application can operate. This textcombines the best of each. The text begins with a discussion of network applicationsand the communication paradigms that the Internet offers. It allows students to under-stand the facilities the Internet provides to applications before studying the underlyingtechnologies that implement the facilities. Following the discussion of applications, thetext presents networking in a logical manner so a reader understands how each newtechnology builds on lower layer technologies.The text is intended for upper-division undergraduates or beginning graduate stu-dents, who have little or no background in networking. It does not use sophisticatedmathematics, nor does it assume a knowledge of operating systems. Instead, the textdefines concepts clearly, uses examples and figures to illustrate how the technologyoperates, and states results of analysis without providing mathematical proofs.

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内容概要

本书由畅销书作者和网络领域的权威专家Douglas Comer教授编著，全面而系统地介绍了计算机网络知识。
全书分5大部分共32章，涵盖的内容广泛，包括网桥、交换、路由与路由协议、多媒体协议与IP技术，以及Web浏览等。
本书第5版在前几版的基础上进行了重新组织和全面修订，新增了无线网络协议、网络性能等最新技术主题。
本书适合作为高等学校计算机、通信、电子等专业的教材或参考书。

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章节摘录

插图：File Scanning. The most straightforward approach to analyze content operates onentire files. File scanning is a well-known technique used by the security software in-stalled on a typical PC. In essence, a file scanner takes a file as input and looks for pat-terns of bytes that indicate a problem. For example, many virus scanners look forstrings of bytes known as a fingerprint. That is, a company that sells a virus scannercollects copies of viruses, places each in a file, finds sequences of bytes that are uncom-mon, and creates a list of all sequences. When a user runs virus scanner software, thesoftware searches files on the user's disk to see if any file contains sequences of bytesthat match items on the list. File scanning works well to catch common problems. Ofcourse, file scanning can produce a false positive if an ordinary file happens to contain astring on the list, and can produce a false negative if a new virus exists that does notcontain any of the strings on the list.Deep Packet Inspection （DP1）. The second form of content analysis operates onpackets instead of files. That is, instead of merely examining the headers in packetsthat pass into the site, a DPI mechanism also examines the data in the packet payload.Note that DPI does not exclude header examination —— in many cases, the contents of apayload cannot be interpreted without examining fields in the packet header.As an example of DPI, consider an attack where a slight misspelling of a domainname is used to trick a user into trusting a site. An organization that wants to preventsuch attacks can black-list a set of URLs that are known to be a security risk. Theproxy approach requires every user at the site to configure their browser to use a webproxy （i.e, an intermediate web system that checks a URL before fetching the requestedpage）. As an alternative, a Deep Packet Inspection filter can be set up to inspect eachoutgoing packet and watch for an HTTP request to any of the black-listed sites.The chief disadvantage of DPI arises from computational overhead. Because apacket payload in an Ethernet frame can be over twenty times larger than a packetheader, DPI can require twenty times more processing than header inspection. Further-more, the payload is not divided into fixed fields, which means that DPI mechanismsmust parse contents during an inspection.

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