



TCP/IP Illustrated, Volume 1: The Protocols (2nd Edition) (Addison-Wesley Professional Computing Series)

By Kevin R. Fall, W. Richard Stevens

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“For an engineer determined to refine and secure Internet operation or to explore alternative solutions to persistent problems, the insights provided by this book will be invaluable.”

—Vint Cerf, Internet pioneer

***TCP/IP Illustrated, Volume 1, Second Edition*, is a detailed and visual guide to today’s TCP/IP protocol suite. Fully updated for the newest innovations, it demonstrates each protocol in action through realistic examples from modern Linux, Windows, and Mac OS environments. There’s no better way to discover why TCP/IP works as it does, how it reacts to common conditions, and how to apply it in your own applications and networks.**

Building on the late W. Richard Stevens’ classic first edition, author Kevin R. Fall adds his cutting-edge experience as a leader in TCP/IP protocol research, updating the book to fully reflect the latest protocols and best practices. He first introduces TCP/IP’s core goals and architectural concepts, showing how they can robustly connect diverse networks and support multiple services running concurrently. Next, he carefully explains Internet addressing in both IPv4 and IPv6 networks. Then, he walks through TCP/IP’s structure and function from the bottom up: from link layer protocols—such as Ethernet and Wi-Fi—through network, transport, and application layers.

Fall thoroughly introduces ARP, DHCP, NAT, firewalls, ICMPv4/ICMPv6, broadcasting, multicasting, UDP, DNS, and much more. He offers extensive coverage of reliable transport and TCP, including connection management, timeout, retransmission, interactive data flow, and congestion control. Finally, he introduces the basics of security and cryptography, and illuminates the crucial modern protocols for protecting security and privacy, including EAP, IPsec, TLS, DNSSEC, and DKIM. Whatever your TCP/IP experience, this book will help you gain a deeper, more intuitive understanding of the entire protocol suite so you can build better applications and run more reliable, efficient networks.

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Editorial Review

Review

"What makes this book unique, in my estimation, is the level of detail and attention to history. It provides background and a sense for the ways in which solutions to networking problems have evolved. It is relentless in its effort to achieve precision and to expose remaining problem areas. For an engineer determined to refine and secure Internet operation or to explore alternative solutions to persistent problems, the insights provided by this book will be invaluable. The authors deserve credit for a thorough rendering of the technology of today's Internet."

—Vint Cerf

Praise for the First Edition of *TCP/IP Illustrated, Volume 1: The Protocols* . . .

"This is sure to be the bible for TCP/IP developers and users. Within minutes of picking up the text, I encountered several scenarios that had tripped up both my colleagues and myself in the past. Stevens reveals many of the mysteries once held tightly by the ever-elusive networking gurus. Having been involved in the implementation of TCP/IP for some years now, I consider this by far the finest text to date."

—Robert A. Ciampa, network engineer, Synneretics, division of 3COM

"While all of Stevens' books are readable and technically excellent, this new opus is awesome. Although many books describe the TCP/IP protocols, Stevens provides a level of depth and real-world detail lacking from the competition. He puts the reader inside TCP/IP using a visual approach and shows the protocols in action."

—Steven Baker, networking columnist, Unix Review

"*TCP/IP Illustrated, Volume 1*, is an excellent reference for developers, network administrators, or anyone who needs to understand TCP/IP technology. *TCP/IP Illustrated* is comprehensive in its coverage of TCP/IP topics, providing enough details to satisfy the experts while giving enough background and commentary for the novice."

—Bob Williams, vice president, Marketing, NetManage, Inc.

". . . [T]he difference is that Stevens wants to show as well as tell about the protocols. His principal teaching tools are straightforward explanations, exercises at the ends of chapters, byte-by-byte diagrams of headers and the like, and listings of actual traffic as examples."

—Walter Zintz, UnixWorld

"Much better than theory only. . . . W. Richard Stevens takes a multihost-based configuration and uses it as a travelogue of TCP/IP examples with illustrations. *TCP/IP Illustrated, Volume 1*, is based on practical examples that reinforce the theory—distinguishing this book from others on the subject, and making it both readable and informative."

—Peter M. Haverlock, consultant, IBM TCP/IP Development

"The diagrams he uses are excellent and his writing style is clear and readable. In sum, Stevens has made a complex topic easy to understand. This book merits everyone's attention. Please read it and keep it on your bookshelf."

—Elizabeth Zinkann, sys admin

“W. Richard Stevens has produced a fine text and reference work. It is well organized and very clearly written with, as the title suggests, many excellent illustrations exposing the intimate details of the logic and operation of IP, TCP, and the supporting cast of protocols and applications.”

—Scott Bradner, consultant, Harvard University OIT/NSD

About the Author

Kevin R. Fall, Ph.D., has worked with TCP/IP for more than twenty-five years, and served on the Internet Architecture Board. He co-chairs the Internet Research Task Force’s Delay Tolerant Networking Research Group (DTNRRG), which explores networking in extreme and performance-challenged environments. He is an IEEE Fellow.

W. Richard Stevens, Ph.D. (1951-1999), was the pioneering author who taught a generation of network professionals the TCP/IP skills they’ve used to make the Internet central to everyday life. His best-selling books included all three volumes of *TCP/IP Illustrated* (Addison-Wesley), as well as *UNIX Network Programming* (Prentice Hall).

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