

ter
Technology Electronic Reviews
Formerly *Telecommunications Electronic Reviews*

Volume 8, Issue 2, June 2001

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REVIEW OF: Gary N. Higginbottom. (1998). Performance Evaluation of Communication Networks. Boston: Artech House.

by Stephen Marvin

Gary Higginbottom clearly and succinctly describes a variety of mathematical methods to use for evaluating network performance. The term "traffic" is consistently and appropriately used to explain activity on the network, such as, transmission rates related to teletraffic systems. Readers may be concerned there are no references to wireless services, but the applications and explanations would apply equally, and do not detract from this very useful tool. By using mathematics and simulations, help is provided to analyze the traffic on a network.

Higginbottom makes apologies for not discussing topics in further detail. Certainly, the reader may accept the apology, because the examples are short, detailed, and suggest other forms of measurement or referral to more thorough and extensive coverage. The intent of this work is to bring out many ways to measure for customer performance improvements. There is a service orientation to this work, which could almost be considered an essential part of a library reference collection. Divided into three broad sections, the first describes performance measures, the second and third describe methods of analysis and ways to create simulations. Each section explains very clearly what the directive of the measure is, how it can be applied,

and why it is important to use. Some sections carry very brief explanations with specific methods of analysis, while others are more descriptive. The book is wonderfully clear in its progression and explanation. Though targeted for upper-class or graduate audiences, the clarity makes this work accessible for any person who may need to explore and get a broad appreciation about network performance measurements. With slightly more effort, the work can easily be adopted as a course textbook. Exercises, in fact, are included in each chapter with this apparent purpose in mind.

References are also supplied for each chapter, making this work with its combined well organized sections and chapter subdivisions, an invaluable addition as reference material for an academic collection. The material contains multiple methods of analyzing a variety of traffic measures, which makes the content timeless. The measures, description, and application will be useful for some time to come. The reader may sense some of the material as dated with reference to Turbo Pascal programming examples and a single reference that the activity was developed on a 486 computer. However, the methods, analysis and simulations will be useful no matter what type of computer system is in use. Higginbottom is very candid, as well, with some examples being more or less practical to apply for traffic analysis. Performance Evaluation of Communication Networks is a refreshingly clear and succinct collection to basic tools that are useful to improve or identify areas to improve for customer satisfaction. Higginbottom's clarity, description and focus on customer service are exemplary, making this work an important resource to provide systems operators as well as support personnel.

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REVIEW OF: Dejan Milojcic, Frederick Douglass, and Richard Wheeler (Eds.). (1999). *Mobility: Processes, Computers, and Agents*. Reading, MA: Addison-Wesley.

by James L. Van Roekel

Mobility. Everyone is talking about it. Who can carry the smallest device with the most options and greatest access? This 680+ page volume is a collection of papers that track the technological developments influencing mobility. It is divided into five parts and contains 16 chapters, a good list of references, and an index. Each chapter, made up of several papers, begins with an introductory section by the editors and ends with a summary by the editors and some of the original authors.

Part I, Introduction, discusses mobility as migration: "While a mobile agent might migrate anywhere on the Internet in pursuit of its specific goals [i.e., movement towards resources or away from scarcity], active applications (known as processes) typically migrate only within a local cluster of computers (p. 3)." This section describes the order of the book and topics.

Part II, Process Migration, describes the benefits, challenges, applications, myths, and facts of process migration; including social issues, system communication, system architecture, algorithms, user-space migration, distributed programs, policies, and a list of books, journals, conferences, and Web sites related to process migration.

Part III, Physical Mobility, is organized like Part II (i.e. benefits, challenges, and the like). While anyone who has used mobile technology will find much of this section familiar, at least in practice, those without such experience will find it useful in definition and application. Much of the specific technology listed is now outdated or substantially improved, but the issues remain the same: capacity, access, wired and wireless communications, networking, proxies and protocols. Again, the section ends with a list of other information sources.

Part IV, Mobile Agents, is organized as previously discussed. Mobile agents are small programs that run over a network (in this section, principally dealing with the Internet via Java code) executing tasks on behalf of the user. These are repetitive tasks that are typically run several times on a schedule, very often used in e-commerce, Web site administration, and software distribution. Web-spiders are agents. This section's list of other sources of information also includes mailing lists, standards, and sources of funding.

Part V is the volume's summary that describes how each area is classified thematically and how each of these areas speaks to the common elements of the systems, especially in free systems, such as Linux.

The book, as a whole, is quite technical, though not beyond the layperson. Many of the chapters have differences in page formatting; this does not detract from the presented information, but makes browsing a bit more difficult. Also, several of the graphics did not reproduce well and are very difficult to read. These difficulties notwithstanding, the volume lends great insight into mobility as a whole -- where we have been and where we can expect to go. This work would be a valuable resource for librarians who are offering, or beginning to offer, access to on-line materials. Web adaptive, dynamic content needs to be included on library sites. Patrons, students (especially distance learning students), faculty, and staff will need to be able to reach content all the time, everywhere, on every device. *Mobility: Processes, Computers, and Agents* offers a technical introduction into how these things work and how to think about the utilization of these technologies.

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REVIEW OF: Jochen H. Schiller. (2000). *Mobile Communications*. Harlow: Addison-Wesley.

by Wilfred (Bill) Drew

The stated purpose of *Mobile Communications* is as an "introduction to the field of mobile communications and focus on digital data transfer." Its intended audience is made of up three groups: students in electrical engineering or computer science; network engineers; or managers needing an overview of mobile

communications technologies. The only thing for which the reader needs to use this book is a basic understanding of communications and the Internet. This title was originally developed from a course taught for computer science students at the University of Karlsruhe, Germany, where Schiller is an assistant professor of computer networks specializing in mobile communications. The text is well organized with 11 chapters, each covering a part of mobile communications in depth. Each chapter ends with a summary, review exercises, and references. The book is well indexed and contains a lengthy appendix of acronyms.

Chapter 1 is an introduction to the book and to the field of mobile communications. After a short history of mobile communications, Schiller examines the market vision of the potential of mobile communications technology. He points out one very important fact: The United States is driven by market forces, while the European area is standards driven. This has resulted in four incompatible systems in the U.S: analog, Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), and Personal Communications Service (PCS), which is the same as the European standard of Global System for Mobile Communications (GSM). Schiller bases much of the book on what he calls "the simplified reference model" from the field of communications -- physical layer, data layer, network layer, transport layer, and application layer.

Chapter 2, *Wireless Transmission*, examines the basics of wireless communications technology covering such topics as frequencies for radio transmission, regulations, signals, antennas, signal propagation, and more. It concentrates on why and how wireless is different from wired communications.

Medium Access Control, discussed in chapter 3, or MAC, is the set of "all mechanisms that regulate user access to a medium" used in mobile or wired communications. MAC is part of the data layer. Chapter 3 further explains why standard MACs for wired communications may not work for wireless. Schiller concentrates on Frequency Division Multiple Access (FDMA) and Time Division Multiple Access (TDMA) schemes.

Chapters 4, 5, 6, 7, and 8 look at specific types of mobile communications systems, including telecommunications (cellular), satellite, broadcast systems, wireless Local Area Networks (LANs), and wireless Asynchronous Transfer Mode (ATM) networks.

Each chapter gives an overview of the particular system looking at various alternatives and standards as well as a short history of that type of system. Of particular interest to the readers of *TER*, chapter 7 examines wireless LAN technology in great detail. Using the layer model, Schiller explains and analyzes the benefits and pitfalls of IEEE802.11, HIPERLAN, and Bluetooth. He comes to the conclusion that the "typical mobile device of tomorrow will comprise several technologies with the ability of connecting to different networks."

Chapters 9 and 10 examine in great detail two layers of the model, mobile network layer and mobile transport layer. It is essentially a discussion of Transmission Control Protocol/ Internet Protocol (TCP/IP) in the mobile environment. Many of the topics discussed here will be familiar to most network managers: IP packets delivery, optimization, Dynamic Host Configuration Protocol (DHCP), routing, congestion control, retransmit and recovery, and many other topics.

Perhaps of greatest interest and import to librarians, chapter 11 discusses "support for mobility." Schiller examines files systems, protocols (HyperText Transfer Protocol (HTTP) and Wireless Access Protocol (WAP)), and markup languages including HyperText Markup Language (HTML) and wireless markup language. The concentration in this chapter is on WAP and all of its various pieces.

While this work is highly technical, it provides a sound theoretical and practical background to the growing field of mobile communications. The only "problem" is a decidedly European focus, but that can be refreshing. It is highly recommended for all network managers, systems librarians, and should be in every library's technology section.

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