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Selecting the Best Tool for the Test

Edited by Al-Sakib Khan Pathan

Muhammad Mostafa Monowar • Shafiullah Khan



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The Editors

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Preface

Simulation is a widely used mechanism to validate the theoretical model of networking or communication systems. It is believed that claims made based on simulations are more or less reliable—at least in the sense that something *beyond theory* is provided. But, how reliable simulation technologies really are is a question asked when the practicality is evaluated with real-world implementation trials. It is a fact that all simulators for the same system do not have the same inherent working method. Different simulators developed for networking and communications technologies have different underlying mechanisms that may significantly affect the simulation scenarios. The same scenario could give different results if different simulators are used for evaluation. Hence, the question “which one is the best for which situation?” is raised. There is no clear verdict on this issue. Therefore, the selection of a particular simulator should be left for the researcher to decide, if that shows relatively better results for his system or model or proposed solution. From this perspective, simulation is considered as *something better than nothing* to validate a claim or to show something to establish a ground for the proposal. A practical scenario could be, again, very much different and a theoretical model may often be a more solid proof than simulations in the sense that theory would prove the core idea with a solid foundation, and then it would be left for practical testing and performance measurement.

The core objective of this book is to compile different perspectives about the simulation of various networking and communications technologies. Some contributors argue that theoretical modeling is preferable while some show with case studies how simulation could help evaluate different scenarios. The book is divided into five sections based on the topics the 22 chapters deal with, which were selected for inclusion in this book after a rigorous review process of a total of 37 proposals. Sections I to III contain five chapters each, Section IV has four chapters, and Section V three chapters.

To understand the content of the book, it should be noted that we have not provided any verdict on the best suitable tool for simulation but have provided analyses of different kinds of networks and systems from different perspectives. The book provides answers from different vantage points: what to simulate, where to simulate, whether to simulate or not, when to simulate, and how to simulate for various issues. Such a book cannot provide exhaustive information about simulation technologies for every communication- or networking-related field but we hope that the content would guide the readers in finding specific directions for some research topics.

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We are very much grateful to the Almighty Allah to have allowed us the time to complete another work of this kind. The entire process has been lengthy, demanding nonstop working hours, interaction with several people in various ways, and firm determination. We are thankful to all the authors, reviewers, and critics who helped us shape the book in the best way possible. Apart from the 3 editors of this book, 57 authors from 16 different countries have contributed the chapters, which shows that there were responses from around the globe. We thank all of them for their valuable contributions.

Editors



Al-Sakib Khan Pathan earned his PhD in computer engineering in 2009 from Kyung Hee University, South Korea. He earned his BSc in computer science and information technology from Islamic University of Technology (IUT), Bangladesh, in 2003. He is currently an assistant professor in the computer science department at International Islamic University Malaysia (IIUM), Malaysia. Until June 2010, he was assistant professor at the computer science and engineering department in BRAC University, Bangladesh. Prior to holding this position, he worked as a researcher at the Networking Lab, Kyung Hee University, South Korea, until August 2009. His research interests include wireless sensor networks, network security, and e-services technologies. He is a recipient of several awards, including best paper awards, and has several publications in these areas. He has served as a chair, organizing committee member, and technical program committee member in numerous international conferences/workshops such as GLOBECOM, GreenCom, HPCS, ICA3PP, IWCMC, VTC, HPCC, and IDCS. He was awarded the IEEE Outstanding Leadership Award and Certificate of Appreciation for his role in the IEEE GreenCom'13 conference.

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