Capacity Planning For WEB PERFORMANCE

METRICS, MODELS, & METHODS

DANIEL A. MENASCÉ • VIRGILIO A.F. ALMEIDA

Capacity Planning for Web Performance

Metrics, Models, and Methods

Daniel A. Menascé
Department of Computer Science, George Mason University, Fairfax, Virginia
menasce@cs.gmu.edu

Virgilio A.F. Almeida
Department of Computer Science, Federal University of Minas Gerais, Brazil
virgilio@dcc.ufmg.br

Prentice Hall, PTR
Upper Saddle River, New Jersey 07458
http://www.phptr.com

CONTENTS

INTERNET
Client/Server

Capacity Planning For

WEB PERFORMANCE

DANIEL A. MENASCÉ • VIRGILIO A.F. ALMEIDA

As more and more businesses rely on distributed client/server and Web-based applications, performance considerations become extremely important. **Capacity Planning for Web Performance** uses quantitative methods to analyze these systems. It leads the capacity planner, in a step-by-step fashion, through the process of determining the most cost-effective system configurations and networking architectures. The quantitative methods lead to the development of performance-predictive models for capacity planning. Instead of relying on intuition, ad hoc procedures, and rules of thumb, **Capacity Planning for Web Performance** provides a uniform and sound way for dealing with performance problems. A large number of numeric and practical examples help the reader understand the quantitative approach adopted here.

Includes a CD-ROM containing several Microsoft Excel® workbooks supported by Visual Basic® modules, samples of http logs, and programs to process them. The Excel workbooks allow the reader to immediately put into practice the methods and models discussed here.

About the Authors

DANIEL A. MENASCÉ
is a Professor of Computer Science at George Mason University, VA. He has published extensively in the area of performance modeling, client/system performance evaluation, and software performance engineering. Menascé was elected a Fellow of the Association for Computing Machinery (ACM) in recognition of outstanding contributions to information technology.

VIRGILIO A.F. ALMEIDA
is a Professor of Cornputer Science at the Federal University of Minas Gerais (UFMG), Brazil. He has published extensively in the area of distributed systems and World Wide Web performance. Almeida held visiting faculty and research positions at Boston University and XEROX PARC.

PRENTICE HALL
Upper Saddle River, NJ 07458
http://www.phptr.com

"This book takes the mystery out of analyzing Web performance. The authors have skillfully culled through more than 25 years of research, and selected the results most critical to Web performance, and developed important new material that deals directly with the special properties of applications that run on the Web. With everything together in a single volume, Menascé and Almeida have created a superb starting point for anyone wishing to explore the world of Web performance."

Jeffrey P. Buzen
Chief Scientist and CoFounder, BGS Systems

"Many have said that the Web is too amorphous and chaotic to permit meaningful performance forecasts. Menascé and Almeida demolish this myth. Throughput, response time, and congestion can be measured and predicted, all using familiar tools from queueing networks that you can run on your own computer. There is no other book like this. It is a first."

Peter J. Denning
Professor of Computer Science, George Mason University and former President of the ACM

"This excellent book presents a new way to model, analyze, and plan for these new performance problems associated with the Web's bursty and highly-skewed load characteristics. A valuable resource for students and for Web administrators."

Jim Gray
Senior Researcher, Microsoft Research

"This is a welcome approach to the performance analysis of today's Web-based Internet. It is a useful and practical treatment that is eminently accessible to the non-mathematical professional. An impressive feature the authors provide is to deal directly with the fractal nature of Web-based traffic; no simple and practical treatment has been offered before, and theirs is a timely contribution."

Leonard Kleinrock
Professor of Computer Science, UCLA

ISBN 0-13-693822-1
90000
9 780136 938224