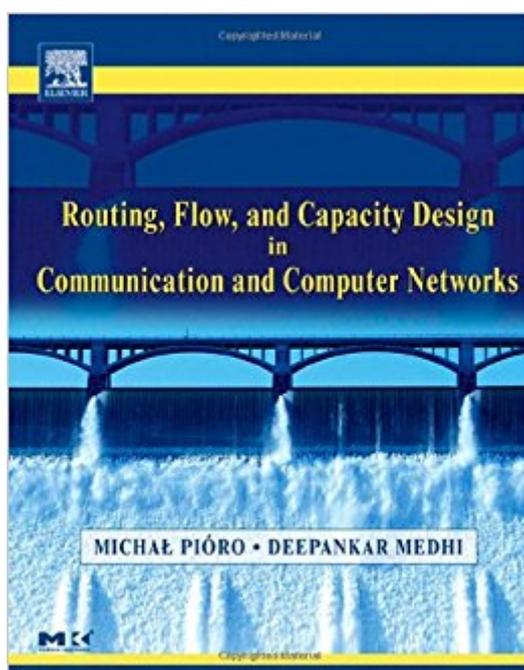


The book was found

Routing, Flow, And Capacity Design In Communication And Computer Networks (The Morgan Kaufmann Series In Networking)



Synopsis

In network design, the gap between theory and practice is woefully broad. This book narrows it, comprehensively and critically examining current network design models and methods. You will learn where mathematical modeling and algorithmic optimization have been under-utilized. At the opposite extreme, you will learn where they tend to fail to contribute to the twin goals of network efficiency and cost-savings. Most of all, you will learn precisely how to tailor theoretical models to make them as useful as possible in practice. Throughout, the authors focus on the traffic demands encountered in the real world of network design. Their generic approach, however, allows problem formulations and solutions to be applied across the board to virtually any type of backbone communication or computer network. For beginners, this book is an excellent introduction. For seasoned professionals, it provides immediate solutions and a strong foundation for further advances in the use of mathematical modeling for network design.

- Written by leading researchers with a combined 40 years of industrial and academic network design experience.
- Considers the development of design models for different technologies, including TCP/IP, IDN, MPLS, ATM, SONET/SDH, and WDM
- Discusses recent topics such as shortest path routing and fair bandwidth assignment in IP/MPLS networks
- Addresses proper multi-layer modeling across network layers using different technologies—for example, IP over ATM over SONET, IP over WDM, and IDN over SONET.
- Covers restoration-oriented design methods that allow recovery from failures of large-capacity transport links and transit nodes.
- Presents, at the end of each chapter, exercises useful to both students and practitioners.

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Customer Reviews

A variety of technologies for telecommunication networks is overwhelming. There is no single well-known recipe, telling how to design telecommunication networks. And therefore modelling and comparison of different approaches is very important before choosing the right solution to be implemented. This is especially true for backbone telecommunication networks because there stakes are very high and many factors that have to be taken into account make the design process very complex. The network design models based on optimization theory are probably most commonly encountered in the field. And that's exactly what this book teaches the reader- how to model different telecommunication networks with a help of optimization theory. Most of the material in the book concerns multi-commodity flow networks. In my opinion, the book is the most up-to-date and comprehensive collection of network design problems, methods and algorithms, illustrated with extensive examples and accompanied with a right amount of theoretical background and information on existing networking technologies. It covers all the spectrum of problems and design methods- from the most simple to the most advanced, presenting even "hot" research topics. Personally I learned a lot from chapters on multi-layer network design and advanced decomposition methods. Also I think the book is rather universal and can be used either as a course book (it includes a lot of exercises at the end of each chapter), or as a reference manual (well defined notation makes it easy to find and understand the desired design problem even without reading a chapter from beginning). This book is a good choice for everyone studying or actively working with network design. Highly recommended!

The book covers a broad range of network design/optimization problems in a comprehensive way, and contains a state-of-the-art discussion of a lot of hot topics, e.g., on multi-layer resilient networks, on shortest-path routing (of the OSPF-type) networks, and on fair networks. The reader can also find useful appendices on general optimization methods, generalized shortest-path algorithms, and the notion of NP-completeness, which makes the book well-suited also for beginners. For this reason the book is very helpful for operators in the process of training their network planning staff, as we have found out in our organization, Telekomunikacja Polska. In the case the authors prepare the second edition of the book, I hope they will continue to cover the up-to-date applications and the

current optimization methods in the network planning domain, in the way they did in this first edition.

Literature that considers communication system problems, tends to be either too practical (not general enough, providing only "ad hoc-solutions"), or theoretical to the extent that the desired "real-world property" is lost (or hopelessly hidden...). This book is a true exception, giving a well-balanced mix of theory and practice, presented in a most understandable and inspiring way. A broad range of relevant communication system problems (for the taken approach, probably all (?)) are discussed, practically all of which are dealt with in a multi-commodity, network optimization fashion. The book is self-contained in the sense that the prerequisites are covered by its appendices. In my opinion, a book of this type (there are not many!) is essential whether you are an engineer or a researcher in this field, simply because that it constitutes a "missing link" between theory and practice.

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