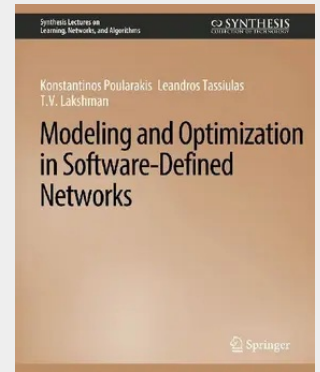


Modeling and Optimization in Software-Defined Networks

This book provides a quick reference and insights into modeling and optimization of software-defined networks (SDNs). It covers various algorithms and approaches that have been developed for optimizations related to the control plane, the considerable research related to data plane optimization, and topics that have significant potential for research and advances to the state-of-the-art in SDN. Over the past ten years, network programmability has transitioned from research concepts to more mainstream technology through the advent of technologies amenable to programmability such as service chaining, virtual network functions, and programmability of the data plane. However, the rapid development in SDN technologies has been the key driver behind its evolution. The logically centralized abstraction of network states enabled by SDN facilitates programmability and use of sophisticated optimization and control algorithms for enhancing network performance, policy management, and security. Furthermore, the centralized aggregation of network telemetry facilitates use of data-driven machine learning-based methods. To fully unleash the power of this new SDN paradigm, though, various architectural design, deployment, and operations questions need to be addressed. Associated with these are various modeling, resource allocation, and optimization opportunities. The book covers these opportunities and associated challenges, which represent a "call to arms" for the SDN community to develop new modeling and optimization methods that will complement or improve on the current norms.

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