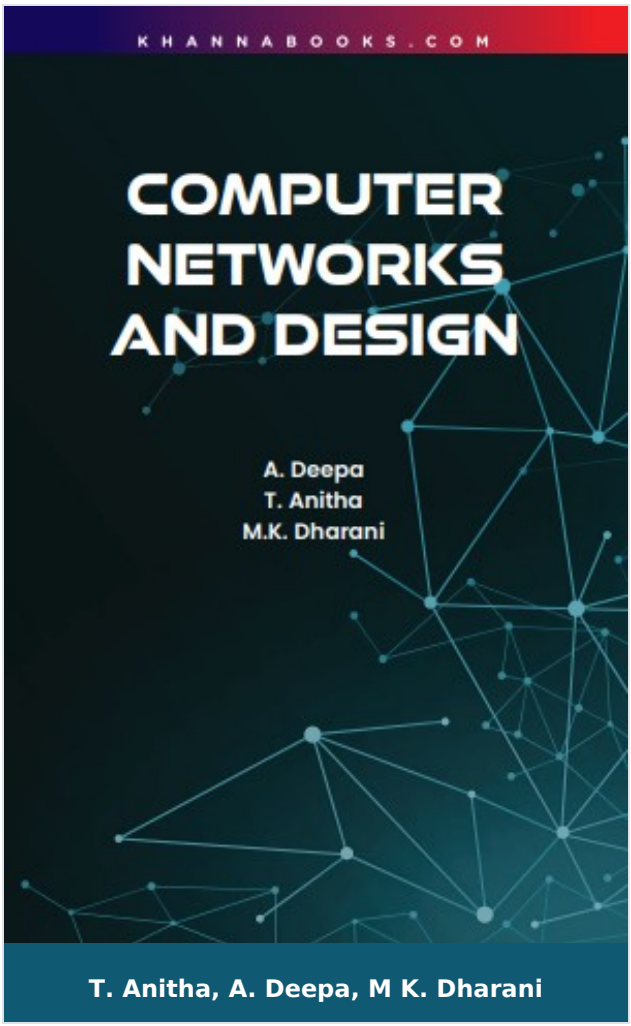

T. Anitha, A. Deepa, M K. Dharani

Computer Networks and Design

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Product Description

Computer Networks and Design

In the current era, where network infrastructure is the fundamental backbone of modern enterprises, this book serves as a comprehensive and practical guide to understanding the principles of effective computer network design and implementation. It addresses the ever-increasing need for well-designed, secure, and highly efficient network architectures across businesses of all sizes.

The core theme of the book is a structured, top-down approach to mastering the entire network lifecycle, moving from determining requirements and analyzing existing infrastructure to completing the final design, deployment, and long-term maintenance. It provides detailed coverage of fundamental design methodologies, including modular and hierarchical network design strategies that ensure scalability and efficiency. Beyond foundational concepts like LAN connectivity (Ethernet, Token-Ring) and the OSI model, the text delves into critical modern topics such as Virtual Private Networks (VPNs), Intranets, and Extranets for secure remote communication.

This resource is an ideal tool for a target audience including students of computer science and engineering, network professionals, and IT managers seeking to enhance their expertise in building and managing robust network infrastructures effectively. By bridging theoretical concepts with practical insights on networking tools (simulation, baselining) and evolving technologies (IP PBX, FoIP, xDSL), the book equips readers with the essential skills to design and optimize future-proof, high-performance network solutions.

Salient Features:

- **Modular Design Focus**: Details modular and hierarchical network design methodologies to improve scalability, management, and fault tolerance across complex LAN and WAN environments.

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- L**AN to Mainframe**: Covers underlying LAN concepts like Ethernet and InterLAN Switching, and provides specialized guidance on secure connectivity and integration with legacy Mainframe systems.
- **Virtual Security Architectures**: Dedicated unit on VPNs, Intranets, and Extranets, focusing on planning, management, and secure remote access implementation using technologies like IPSec VPNs.
- **Network Optimization Tools**: Introduces practical tools and techniques for network analysis, including network baselining as an effective planning tool and simulation methods for designing multimedia networks.
- **Real-time Communication**: Explores the integration of Voice over IP (VoIP) and Video over IP networks, detailing the setup of IP PBX telephony and Videoconferencing systems over IP networks.
- **Broadband Access Technologies**: Discusses emerging technologies in data communications, including the merits of xDSL technology and necessary preparations for utilizing high-speed cable modems.
- **Layered Design Analysis:** Provides a foundational review of the OSI model and various network topologies (Bus, Star, Mesh), offering a strong theoretical background for practical design decisions.

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