

Understanding Data Communications & Networks

W I L L I A M A . S H A Y

S E C O N D E D I T I O N

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UNDERSTANDING DATA COMMUNICATIONS AND NETWORKS

SECOND EDITION

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PURPOSE

The first edition of this book first appeared 15 years ago, much in the fields of data communications and computer networks were changing since then. Probably most visible is the emergence of the World Wide Web (WWW) and the many applications it supports. Perhaps less visible is the impact the Web has had on underlying network protocols to support these applications and the increased importance of issues involving privacy and security. In just a few years the scope of network users has changed forever. Not long ago most network users were primarily professionals who might use email occasionally to talk to colleagues or access stock market information. Now network users number in the tens of millions and their user range from professional needs to purely recreational activities.

Although much of this book's content has changed, its purpose is not fundamentally the same. It is designed for junior-level students of a computer science program who have a minimum of two semesters of programming and a knowledge of precalculus and discrete mathematics. It covers standard topics found in a typical introductory course in data communications and computer networks, such as transmission media, analog and digital signals, data transmission, compression and encryption, network topologies, data security, internets, and token ring protocols, and World Wide Web applications. This book is designed to be easy to understand.

- The differences, advantages, and disadvantages of different transmission media
- Analog and digital signals, modulation and demodulation techniques, and how modems work
- The effect of noise on transmissions and the need for error detection and correction