

PREFACE

Over the past few years, many fundamental changes have occurred in data communications and networking that will shape the future for decades to come. Networking applications such as the Internet and World Wide Web have exploded into the business world. High-speed modems providing megabit data rates (millions of bits per second) over regular telephone lines and cable TV circuits are widely available. New local area network (LAN) and backbone technologies providing gigabit (billions of bits per second) speeds are now available. Metropolitan area network (MAN) and wide area network (WAN) technologies providing terabit (trillions of bits per second) to petabit (quadrillions of bits per second) speeds are on the horizon. The integration of voice and data communication is moving rapidly.

Perhaps the most important change has been the recognition of the strategic importance of communications and networking in both the public and private sector. Today, almost all computers are networked. As we look back on the 1990s, we realize that the importance of the computer was surpassed by the importance of the network.

PURPOSE OF THIS BOOK

Our goal is to combine the fundamental concepts of data communications and networking with practical applications. Although technologies and applications change rapidly, the fundamental concepts evolve much more slowly; they provide the foundation from which new technologies and applications can be understood, evaluated, and compared.

This book has two intended audiences. First and foremost, it is a university textbook. Each chapter introduces, describes, and then summarizes fundamental concepts and applications. Management Focus boxes highlight key issues and describe how networks are actually being used today. Technical Focus boxes highlight key technical issues and provide additional detail. Mini case studies at the end of each chapter provide the opportunity to apply these technical and management concepts. Moreover, the text is accompanied by a detailed Instructor's Manual that provides additional background information, teaching tips, and sources of material for student exercises, assignments, and exams. Finally, our Web page will continue to update the book.

Second, this book is intended for the professional who works in data communications and networking. The book has many detailed descriptions of the technical aspects of communications, along with illustrations where appropriate. Moreover, managerial, technical, and sales personnel can use this book to gain a better understanding of fundamental concepts and trade-offs not presented in technical books or product summaries.

WHAT'S NEW IN THIS EDITION

The ninth edition has four major changes from the eighth edition. First, it includes numerous updates to technologies that have evolved and changed since the eighth edition went to press. The biggest change has been to the chapter on wireless LANs, as this has undergone major changes in just 2 years.

Second, we have added new hands-on activities to each chapter. The activities are designed to reinforce the key concepts in each chapter, as well as to provide an interesting, practical use of network technology. These activities could be used as demonstrations in class, lab exercises, or activities given as homework. In any event, we believe they will help students better understand key concepts.

Third, this edition includes updates to examples, questions, and exercises throughout the book. We believe these items help to improve students' understanding of key topics. We've also added three crossword puzzles to the book because we've found that students enjoy puzzles, even those that help them learn.

Finally, what is just as important as what has been added is what has been removed. As new technologies arrive it is important to reduce complexity and bulk by removing older technologies that are fading from use. This edition has omitted legacy technologies such as FDDI, SNA, and token ring, and has reduced the coverage of dial-up modems in favor of cable modems and DSL modems.

ONLINE ANIMATIONS www.wiley.com/college/fitzgerald

For students and instructors, we're offering online animations that help students visualize basic data communications processes. These animations can be used in the classroom or as a study aid for students. To access the animations, go to the Student Resources site.

ONLINE SUPPLEMENTS FOR INSTRUCTORS www.wiley.com/college/fitzgerald

Instructor's supplements include an Instructor's Manual that includes teaching tips, war stories and answers to end of chapter questions, a Test Bank that includes test questions for each chapter, and Lecture Slides in PowerPoint for classroom presentations. All are available on the Instructor's Resources site.

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