



DATA COMMUNICATIONS FOR BUSINESS

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**DATA
COMMUNICATIONS
FOR BUSINESS**

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and Information Systems Series**

Cohen-Alger-Boyd **Business BASIC for
the IBM PC with Cases**

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Lotus 1-2-3**

Spence-Windsor **Using Microcomputers:
Applications for Business**

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Design Methods**

PREFACE

THE INTENDED AUDIENCE FOR THIS BOOK

Data Communications for Business is intended for a one-term, first course in data communications as applied to business. It can be used in an undergraduate or MBA-level course at a four-year college or at a two-year college or technical school wherein business applications of the technology are emphasized. The audience for this book is not only information systems and business majors but also students and professionals who will be or are acting as users, staff, and managers involved with communications-based systems. In preparation and writing, we followed the recommendations of the IEEE, the ACM, and the DPMA curricula.

WHY WE WROTE THIS BOOK

Electronic communications is changing the way corporations function and are organized. A modern enterprise cannot survive without an extensive communications network to keep in touch with suppliers, customers, employees, and managers, as well as other entities. Because of organizations' dependence on communications and because of the rapid increase in the spread of communications systems, the communications field should interest all of us. It is

important to become more aware both of communications concepts and the way communications-based systems are analyzed, designed, built, tested, and installed. And we cannot stop at installation. When a system is placed into operation, the operations life cycle begins. Controls, enhancements, maintenance, and just keeping a system running become critical to the organization.

Communications is an area where there are no observers—we are all participants and players. Data communications is no longer the domain of only technicians; managers and employees in many fields now use the latest communications technology every day. It is for these newest participants that we have written this book.

WHY WE THINK YOU SHOULD CONSIDER THIS BOOK

If you teach a *business* data communications course, we believe you should consider adopting this book because:

- *The coverage of technical concepts and managerial applications is more clearly balanced than in any other text.* Students learn not only how the technology works but how it is applied in the business environment.
- *Our management coverage is practical and real-world.* The examples in our

book are based on our personal experiences as communications consultants.

- *The breadth and depth of coverage is geared for the business-oriented student.* Our coverage of technology will not “overwhelm” the nontechnical student. In addition, this book includes chapters on management, planning, and implementation—knowledge that is essential for today’s data communications manager.
- *Our book is more up-to-date than other texts.* We cover the latest communications innovations, including microcomputers, fiber optics, local area networks, satellites, cellular radio, and wide area networks.
- *Our book offers a more comprehensive pedagogy than other texts.*
 - *Introductions* begin each chapter to set the stage for the forthcoming material.
 - *Definitions* of key terms are provided first in brief, and then later they are expanded in the appropriate context.
 - *Checklists* are included throughout. Students may use these as a basis for completing any exercises or problems that are assigned.
 - *Examples* are numerous and realistic. We have made an effort to give the concepts and methods life by drawing on our experience in designing and implementing systems over the last twenty years. We have included examples of failure as well as success. In communications, as in other fields, one tends to learn more and learn faster from encountering and solving problems and overcoming failures than from merely reading about rules and principles.
 - *Summaries* conclude each chapter.
 - *Chapter Exercises* draw directly on the chapter material and test students’ mastery of the concepts in the chapter.
 - *Chapter Problems* illustrate issues that students are likely to encounter when they attempt to use the con-

cepts they have learned in a business environment. These problems may require data collection and additional reading and research.

- *References and Bibliographic Material* are included for additional reading and research. This appendix may be particularly useful for completing the Chapter Problems.
- A *Glossary* of terms is included as an appendix and for future reference value. (Terms bold faced in the text are defined in the glossary.)
- *Acronyms and Abbreviations* are in the third appendix. This list includes many of the common terms used by data communications professionals

HOW TO USE THIS BOOK

What should data communications students learn? First, students must gain some familiarity with the concepts and terminology of electronic communications. They must learn how communications systems operate, the purposes and features of their various components, and the areas where managers and technicians must focus their attention. Finally, they must apply this knowledge to specific problems and issues that organizations face in using electronic communications.

To that end, this book is divided into two parts. Part I covers the technical aspects of communications technology. Specifically, it explores:

- Voice communications (Chapter 2)
- Three major components of data communications:
 - Data transmission (Chapter 3)
 - Communications hardware (Chapter 4)
 - Software and protocols (Chapter 5)
- Local area networks (Chapter 6)

These chapters should be read in sequence. Although the second chapter addresses voice and telephone communications in

particular, it also introduces basic concepts that will be used in later chapters.

In Part II we employ the concepts discussed in Part I as a basis for learning about implementing, installing, and operating communications-based systems. It focuses on management and technical concerns associated with the analysis, design, development, installation, and operation of a data communications system. The chapters in this part cover:

- Systems analysis for voice communications systems (Chapter 7)
- Requirements and specifications for data communications system (Chapter 8)
- Systems planning for communications-based systems (Chapter 9)
- Design of on-line systems (Chapter 10)
- Installation of a communications-based system (Chapter 11)
- Management control, audit, and security (Chapter 12)
- Operation of a communications system and network (Chapter 13)

Chapters 7 and 8 follow up on the technology presented in Part I. They should be read in sequence after Part I. Chapter 9 addresses more general issues associated with the planning of communications-based systems; for less advanced or shorter classes, this chapter may be deferred until the end of the course.

The remaining chapters deal with life-cycle activities after the requirements have been developed. Many data communications books do not address these areas at all, yet it is in installation and operations that many graduating students will find rewarding jobs and careers.

SUPPLEMENTS

We have written an *Instructor's Guide* to accompany our text in the hopes of assisting our colleagues. This Guide includes:

- *Answers* to Exercises in the text
- *Solutions* to Problems in the text

- *Chapter outlines* to use as lecture guidelines
- *Conversion notes* to help you convert from your present text
- *Teaching suggestions* for the instructor
- *Alternative course syllabi* for planning courses of various lengths and levels

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Bennet P. Lientz
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