

"Frontmatter"

The CRC Handbook of Modern Telecommunications

Ed. Patricia Morreale and Kornel Terplan

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THE
CRC HANDBOOK
OF
**MODERN
TELECOMMUNICATIONS**

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EDITORS-IN-CHIEF

**Patricia Morreale
Kornel Terplan**



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Foreword

In the preparation of this book, our objective was to provide an advanced understanding of emerging telecommunications systems, their significance, and the anticipated role these systems will play in the future. With the help of our talented associated editors and contributors, we believe we have accomplished this. By addressing voice, Internet, traffic management, and future trends, we feel our readers will be knowledgeable about current and future telecommunications systems.

In Section 1, the techniques of voice communication systems are outlined, with attention paid to both basic and advanced systems. Advanced intelligent networks (AIN) and computer telephony integrated (CTI) are key building blocks for future voice systems. Finally, voice over IP, and the anticipated integration of voice and IP data is closely examined. The second part of this section concentrates on state-of-the-art solutions for local area networks. In addition to data communication capabilities, multimedia attributes of LANs are also addressed.

Section 2 provides a detailed explanation of the Internet, including elements of its structure and consideration of how future services will be handled on the Internet. Internet management and security are discussed. A detailed discussion of virtual private networks (VPNs) is provided, as well as presentation of web design and data warehousing concepts. Electronic commerce and Internet protocols are presented in detail, permitting the reader to understand and select with insight from the available web-based technology choices.

Section 3 continues the exploration of advanced telecommunications concepts, focusing on network management and administration. As the services and features provided the network become larger in scale and scope, network management will become even more crucial and important than it is today. Telecommunications network management (TNM) and Telecommunications Information Networking Architecture (TINA) are presented. The telecommunications support process is outlined, including management frameworks and customer network management. A detailed consideration of outsourcing options, which will become even more frequent, is presented. The performance impact of network management is detailed.

Finally, in Section 4, future trends and directions are considered, with a view toward satisfying user needs in parallel with application trends, which will require system and service integration. While we know the future will hold new products and services, accounting for these services is a challenge, and an examination of telecommunications tariffing is also provided.

We hope our readers find this book an excellent guide to emerging telecommunications trends.

Patricia Morreale
Advanced Telecommunications Institute
Stevens Institute of Technology
Hoboken, NJ

Editors-in-Chief

Patricia Morreale, Ph.D., is Director of the Advanced Telecommunications Institute (ATI) and an Associate Professor in the School of Applied Sciences and Liberal Arts at Stevens Institute of Technology. Since joining Stevens in 1995, she has established the Multimedia Laboratory at ATI and continued the work of the Interoperable Networks Lab in network management and performance, wireless systems design, and mobile agents.

Dr. Morreale holds a B.S. from Northwestern University, a M.S. from the University of Missouri, and a Ph.D. from the Illinois Institute of Technology, all in Computer Science. She holds a patent in the design of real-time database systems and has numerous journal and conference publications. With Dr. Terplan, she co-authored *The Telecommunications Handbook*, published by CRC Press.

Prior to joining Stevens, she was in industry, working in network management and performance. She has been a consultant on a number of government and industrial projects.

Dr. Morreale's research has been funded by the National Science Foundation (NSF), U.S. Navy, U.S. Air Force, Allied Signal, AT&T, Lucent, Panasonic, Bell Atlantic, and the New Jersey Commission on Science and Technology (NJCST). She is a member of the Association for Computing Machinery (ACM) and a senior member of the Institute of Electrical and Electronic Engineers (IEEE). She has served as guest editor for *IEEE Communications* magazine, special issue on active, programmable, and mobile code networking. In addition, she is an editorial board member of the *Journal of Multimedia Tools and Applications* (Kluwer Academic).

Kornel Terplan, Ph.D., is a telecommunications expert with more than 25 years of highly successful multinational consulting experience. His book, *Communication Network Management*, published by Prentice-Hall (now in its second edition), and his book, *Effective Management of Local Area Networks*, published by McGraw-Hill (now in its second edition), are viewed as the state-of-the-art compendium throughout the community of international corporate users. He has provided consulting, training, and product development services to over 75 national and multinational corporations on four continents, following a scholarly career that combined some 140 articles, 19 books, and 115 papers with editorial board services.

Over the last 10 years, he has designed five network management-related seminars and given some 55 seminar presentations in 15 countries. He received his doctoral degree at the University of Dresden and completed advanced studies, researched, and lectured at Berkeley, Stanford University, University of California at Los Angeles, and Rensselaer Polytechnic Institute.

His consulting work concentrates on network management products and services, operations support systems for the telecommunications industry, outsourcing, central administration of a very large number of LANs, strategy of network management integration, implementation of network design and planning guidelines, products comparison, selection, benchmarking systems, and network management solutions.

His most important clients include AT&T, AT&T Solutions, Georgia Pacific Corporation, GTE, Walt Disney World, Boole and Babbage, Salomon Brothers, Kaiser Permanente, BMW, Siemens AG, France Telecom, Bank of Ireland, Dresdner Bank, Commerzbank, German Telecom, Unisource, Hungarian Telecommunication Company, Union Bank of Switzerland, Creditanstalt Austria, and the State of Washington.

He is Industry Professor at Brooklyn Polytechnic University and at Stevens Institute of Technology in Hoboken, NJ.

Contributors

John Amoss
Lucent Technologies
Holundel, New Jersey

James Anderson
Alcatel
Richardson, Texas

John Braun
Weston, Connecticut

Karen M. Freundlich
TCR, Inc.
Princeton, New Jersey

Joe Ghetie
Telcordia
Piscataway, New Jersey

Michel Gilbert
Hill Associates, Inc.
Colchester, Vermont

Takeo Hamada
Fujitsu Laboratories America
Sunnyvale, California

Stephanie Hogg
Telsta Research
Victoria, Australia

Hiroshi Kamata
OKI Electric
Red Bank, New Jersey

Matthew Kolon
Hill Associates, Inc.
Colchester, Vermont

Carel Marsman
CMG
The Netherlands

Patricia Morreale
Stevens Institute of Technology
Hoboken, New Jersey

Dermot Murray
Iona College
New Rochelle, New York

Mihir Parikh
Polytechnic University
Brooklyn, New York

Teresa Piliouras
TCR, Inc.
Weston, Connecticut

Andrew Resnick
Citicorp
New York, New York

Endre Sara
Goldman, Sachs & Co.
New York, New York

Endre Szebenyi
Industry Consultant
Budapest, Hungary

Kornel Terplan
Industry Consultant and Professor
Hackensack, New Jersey

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