

# Telecommunications Technology Handbook

by Daniel Minoli

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The book is a comprehensive guide to the telecommunication and data communication domains.

The author works for Bell Communications Research (Bellcore) as a strategic planner. He is associate professor at New York University Information Technology Institute, and a lecturer at Rutgers Center for Management Development. He has published more than 150 technical and trade articles and acts as a reviewer for IEEE; he is a frequent speaker and chairman at conference sessions.

Although the text of his book has been compiled from lecture notes of a period of more than seven years of teaching at New York University, it is not a mere student's bibliographic material.

Reader is supposed to have left the skimming over phase and to have entered the special knowledge field.

The **first Chapter** is a general presentation of the basic concepts of the two domains, to be referred in all the following chapters. Two main parts of the book are dedicated to the telecommunication field and the data communication field.

At the beginning 24 most important standards-setting bodies for telecommunications are presented. **Chapters to come** tell about digital transmission systems, ISDN and BISDN, transmission media and radio services, satellite and microwave transmission systems, fiber optics technology and transmission systems, free space infrared optical communication systems, switching and signalling systems, private branch exchanges technology and networking.

Among the topics presented in the first part, it is worth mentioning:

- high-speed communication techniques, including the new digital hierarchies: fractional T1 (DS1), T1 (DS1), T3 (DS3), SONET, ATM;
- high-speed digital equipment such as T1 multiplexers and digital cross-connect systems;
- ADPCM technology, transcoders;
- ISDN and BISDN applications, including frame relay;
- VSAT systems and issues, and discussion of WARC-92;
- wireless communication, including FM subcarrier, cellular radio, packet radio, and "cordless telephone 2";
- detailed user-to-network and user-to-user signalling issues, including CCSS 7 information;
- testing and monitoring of highly integrated corporated networks;
- PBX network design, including practical information on SMDRs and computer-to-PBX links;
- high speed dial-up V.32 and V.42 modems.

A general presentation of data communication issues opens the **second part of the book**; a chapter is reserved for standards, with an emphasis on the OSI reference model and its related standards. Other three chapters deal with three different types of data communication:

- channel-to-channel computer communication;
- LANs;
- MANs (and fiber distributed data interface).

The last two chapters of this section cover the problems of data communication management:

- networking management and evolving standards,
- network security and evolving standards.

Given the subjects of the second part, one has to remark:

- the extended OSI reference model perspective, with an emphasis put on upper layer standards and on network security and management standards;
- the drive to LAN and WAN internetworking, including OSI methods, TCP/IP, bridges, and routers;
- the coverage of FDDI issues and standards, DQDB MAN systems, IEEE 802.9 integrated voice-data LAN interfaces.
- the presentation of IEEE 802.10 security standard.

The book keeps a balance between a theoretical and formal approach (e.g.: *Chapter 4 on ISDN and Chapter 13 on OSI reference model*), and a practical orientation (e.g. *Chapter 10 on PBX networking, Chapter 14 on LAN management*).

The author's quick perception of the consequences of the theory of data transmission and switching, is catching on the reader too (an

example: half a page will be enough to learn the maximum transfer speed of a modem on a switched line, starting from Shannon's equation for the maximum digital capacity of an analog communication channel, and from some considerations about the data coding and compression).

The presentation not being confined to the now situation is obvious to everyone. Given its first publication in 1991, the book has been meant for at least a three-to- four- year window of the industry, with the newest theoretical developments of the moment, yet to be implemented, being referred.

In the reviewer's opinion this eight hundred pages handbook makes a very profitable reading for students, computer scientists and telecommunication specialists, company managers, etc.

However, potential readers need have in mind that some of the references made in the book are to specific US regulations in the communication field, that may not apply to their context, be it the European context or other contexts.

**Dana Trifanescu**