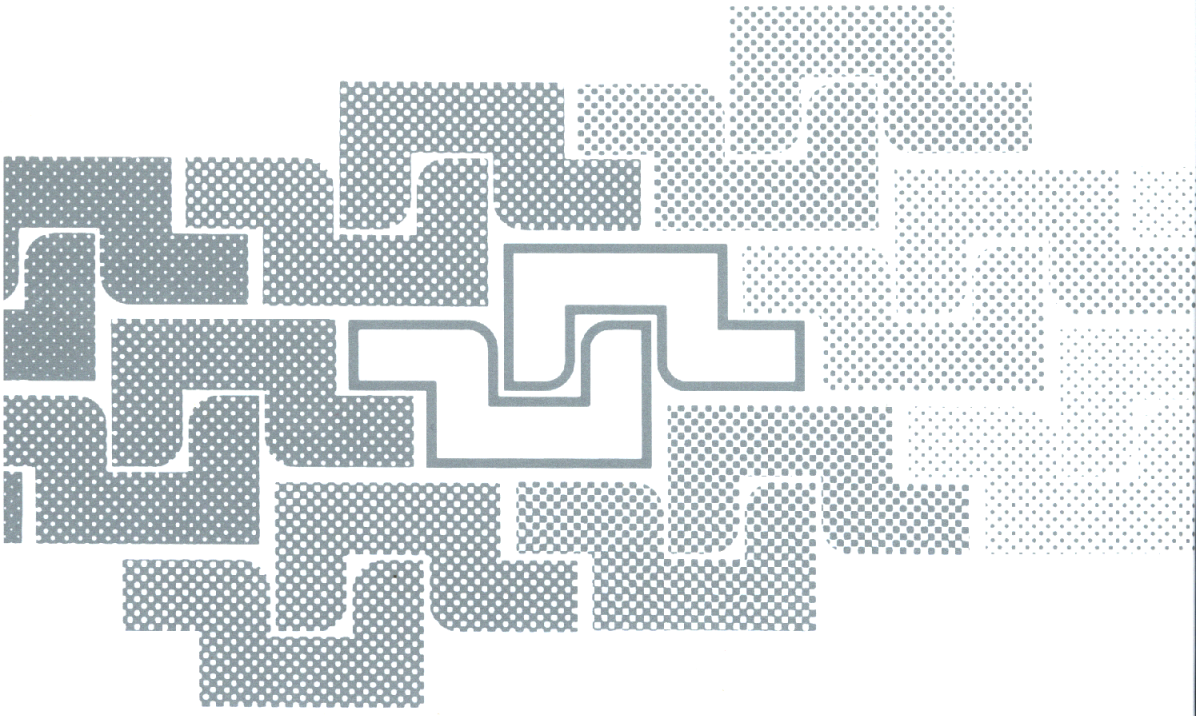

Advanced Security Technologies in Networking

Edited by
Borka Jerman-Blažič
Wolfgang S. Schneider
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Series III: Computer and Systems Sciences - Vol. 178

ADVANCED SECURITY TECHNOLOGIES IN NETWORKING

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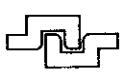

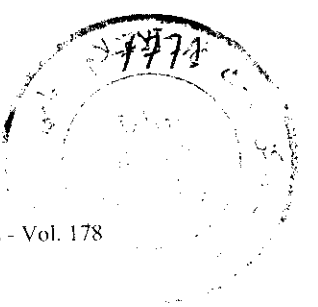

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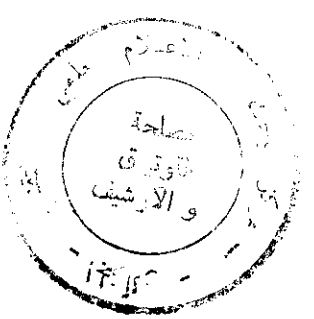

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Foreword

Security in telecommunications and networking, especially when electronic commerce is involved, is one of the most crucial services offered in the global networks. For the most part, interconnected networks all over the world use a common set of protocols (i.e. the protocol suite TCP/IP), making up the Internet. In general, users of the computer network services are largely unaware of the potential threats to their information, or they choose to ignore such threats. However, the increasing usage of Internet services in all levels of business, education, information, entertainment and every day life has brought the importance of the protection of data, resources and identities to the fore. New applications built up within the paradigm of e-commerce are offering different level of protection and security. Recently, the Internet has started to spread "over the air" to merge with mobile communication network, thus making a new broad range of services available to the new e-conomy. Since these new services take place in a public and therefore in un-trusted networks, there are many security issues involved that are of concern to different communities e.g.:

- Commercial companies and their clients who want to do business over open networks need protection of resources and exchanged data,
- Administrations, public medical and social services, for whom it is vital that only approved groups are able to participate in their operations,
- Organisations for their external and internal network communication,
- The research community, and institutions involved in provision of digital contents related to the cultural heritage.

All these users need security services within an established infrastructure and applications, such as secured e-mail, secured Directory, secured file transfer, or secured World Wide Web applications. Lack of established security infrastructure, and the knowledge of how to set it up and use it, are the major obstacles in better proliferation of secured applications in open networks, such as tele-medicine, tele-working, business-to-business e-commerce and distance education. This book provides a broad overview of the basic aspects of technology, services and applications that enable safe and secured data exchange in un-trusted network as well as verification of identities of the participants taking part in the ubiquitous e-conomy and e-business.

The first part of the book address the basic concept of security in networking and cryptography. The second introduces the notion of security infrastructure in mobile and terrestrial networks. The next part of the book gives overview of the security provided at network levels and introduces virtual private networks (VPNs); VPN deployment has been made possible by the utilisation of security techniques. The next parts of the book deal with security provision in applications like World Wide Web, Videoconferencing, Tele-medicine and Secure Directories and Firewalls. The last parts of the book is dedicated to specific secure electronic commerce applications such as electronic payments systems and protocols, digital signature techniques and the legal aspects of secure electronic communication.

Most of the papers in this book were presented in the NATO Advanced Workshop on Security in Networking that took place in Portorož, Slovenia, from May 29 to June 2, 2000. In that context I want to express my deep appreciation to all lecturers that made this event success due to their excellent talks and papers. Special thanks go also to the Organizing Committee members and to the other two co-editors of this book.

Borka Jerman-Blažič

Co-director of NATO Advanced Workshop on Security in Networking

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