Chapter XI

Security, Privacy, and Trust in Mobile Systems and Applications

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Abstract

Mobile systems and applications are raising some important information security and privacy issues. This chapter discusses the need for privacy and security in mobile systems and presents technological trends which highlight that this issue is of growing concern.
Introduction

Access to general purpose Information and Communication Technology (ICT) is not equally distributed on our planet: developed countries represent about 70 percent of all Internet users while its percentage of Internet hosts has raised from 90 percent in 2000 to about 99 percent in 2002. Things change dramatically if we look at mobile and wireless technology: developing countries already represented about 40 percent of mobile connections in 2000, with a foreseen growth rate that is faster for developing countries than that for the developed one in the period 2000-2005 (mainly due to India and the People’s Republic of China). This trend depends on the new perspectives mobile electronic technology applications offer, making in principle possible to do business with partners located anywhere on the globe by-passing the poor telecommunication infrastructure still common in many developing countries. On the other hand, in the developed world the set of techniques going under the name of e-Mobile is becoming more and more important in e-Business transactions. The use of smart mobile terminals will allow new kind of services and new business models, overcoming time and space limitations. The technological evolution in wireless data communications is introducing a rich landscape of new services relying on three main technologies:

- Proximity (or personal) area networks (PANs), composed by personal and wearable devices capable of automatically setting up transient communication environments (also known as ad-hoc networks);
- Wireless local area network technology (WLAN);
- 3rd Generation of mobile telecommunications (3G), gradually replacing General Packet Radio Service (GPRS) and the related set of technologies collectively called “2.5 Generation” (2.5G). 3G services are made available through technologies such as Wideband Code-Division Multiple Access (WCDMA), offering high data speeds.

PANs is a new technology bringing the “always connected” principle to the personal space. On the other hand, 3G systems and WLANs have coexisted since long; what is new is their interconnection, aimed at decoupling terminals and applications from the access method. While 3G is generally considered applicable mainly to fully mobile wireless devices (such as operating from a car), WLAN is more relevant to fixed and portable wireless devices (such as operating from an elevator). 3G mobile networks already provide video-capable bandwidth, global roaming for voice and data, and access to the Internet rich online content. Thanks to their increasing integration, PANs, WLANs, and 3G