Chapter 14
Mitigation of Security Concerns of VoIP in the Corporate Environment

Fernando Almeida
University of Porto, Portugal
José Cruz
University of Porto, Portugal

ABSTRACT
The convergence of the voice and data worlds is introducing exciting opportunities to companies. As a consequence, Voice over IP (VoIP) technology is attracting increasing attention and interest in the industry. Flexibility and cost efficiency are the key factors luring enterprises to transition to VoIP. However, voice services also introduce a new level of vulnerability to the network. This chapter categorizes and analyzes the most common security threats of a VoIP solution in a corporate environment. Besides that, the authors discuss the most relevant security policies that could have been adopted to mitigate the security vulnerabilities introduced by VoIP. These new policies and practices can have a positive impact on the security of the whole network, not just voice communications.

INTRODUCTION
The business environment has changed dramatically within the last decade. Globalization and market liberalization has altered the way a firm competes within this environment and how the firm interacts both with its customers and suppliers. Currently, both customers and competition have become global. To cut costs and to ensure easy access to customers, production and sourcing have shifted overseas. On the other hand, more firms than ever are using technology for a variety of tasks and several options exist for technology procurement. The technology has become complex and sophisticated and, simultaneously, the use of communication networks is widely available at many parts of the world.
To compete during this new economy corporations are considering several strategic choices. Recent IT studies, conducted by Kaufman (2008) and Biggs (2009) agree that corporations, in several activities domains, are exploring the adoption of Voice over Web Protocol (VoIP) as a way to cut prices, to enhance productivity and, consequently, alter the firm’s strategic position.

VoIP is a technology that enables voice communication on a high speed Internet interconnection. It includes the software, a hardware and network protocol that enable the delivery of reliable service through the Internet instead of the local phone company. As shown in Figure 1 the communication can be initiated from a computer or a telephone to either a computer or to a phone via Internet. If an analog phone is used, a phone adapter is needed to convert the analog signal into a digital signal for transmission via the Internet. In many instances, the service comes with a special phone, VoIP phone, which does not require an adapter. This technology is cheap compared to the traditional phone service as international calls can be charged as local calls in some service packages.

Unlike Public Switched Telephone Network (PSTN), an IP network is packet switched. In PSTN, when a phone call between two parties is initiated, there exists a physical circuit connecting the two parties. After the call is established, the parties communicated and the circuit is reserved until the parties finish the communication. In contrast, on an IP network, all communication is carried out using IP packets. When a calling party communicated with a called party, the analog signals are digitized, encoded, and packed into an IP packet at the transmitting end and converted back to analog signals at the receiving end (Wallingford, 2005).

With VoIP, widespread acceptance by telecommunication markets of all sizes, advanced features integrated in unified communications solutions, have started emerging (Ransone &

Figure 1. Structure of a VoIP communication schema (Kumar, 2011)