University of Macau

Abstract

SMART CARD-BASED IDENTIFICATION AND ACCESS CONTROL MODEL WITH REAL-TIME SUSPICIOUS ACTION DETECTION MECHANISM

by António Leong

Thesis Supervisor: Assistant Professor Simon Fong
Master of Science in E-Commerce Technology

Smart card-based solutions have been widely adopted in different applications areas and fields, from telecommunications to user identification, access control systems to electronic payment systems. Apart from its convenient and simple user interface, smart card is regarded as a highly secure environment, which is ideal for user identification and access control purposes.

This work describes a smart-card based solution that further extends the concept of static access control list by performing real-time analysis over user's access patterns, thus allowing early detection of abnormal card usages. A list of irregular behaviors are identified and classified to formulate a logical model that quantifies abnormal usage behaviors. Based on this model, a real-time suspicious action detection prototype is developed, allowing rapid alert and reaction towards irregular behaviors. This paper also focuses on scalability and performance issues and introduces a cost-effective solution by integrating the concept of a security agent called SMITH (SMart Intrusion Tracing and Hunting) into the model.

KEYWORDS

Smart-card, contact-tracing, real-time system, intrusion detection.