

Chapter 50

Security Management in Mobile Cloud Computing: Security and Privacy Issues and Solutions in Mobile Cloud Computing

Basudeo Singh

R. V. College of Engineering, India

Jasmine K.S.

R. V. College of Engineering, India

ABSTRACT

Mobile cloud computing is a technique or model in which mobile applications are built, powered and hosted using cloud computing technology. In Mobile Cloud computing we can store information regarding sender, data and receiver on cloud through mobile application. As we store more and more information on cloud by client, security issue will arise. This chapter presents a review on the mobile cloud computing concepts as well as security issues and vulnerabilities affecting Cloud Systems and the possible solutions available to such issues within the context of cloud computing. It also describes the pros and cons of the existing security strategy and also introduces the existing issues in cloud computing such as data integrity, data segregation, and security.

INTRODUCTION

The mobile cloud computing is a combination of three main parts; they are mobile device, cloud computing and mobile internet. With the help Mobile Cloud Computing, a mobile user gets a rich application delivered over the Internet and powered by cloud-backed infrastructure. The importance of Cloud Computing is increasing and it is receiving a growing attention in the scientific and industrial communities. A study by Gartner as per *Top 10 strategic technologies for 2011* considered Cloud Computing as the first among the top 10 most important technologies and with a better prospect in successive years by companies and organizations. Now a day's the top most popular concern for mobile user or any business

DOI: 10.4018/978-1-5225-5634-3.ch050

is Security and protection. Major Security and protection concern are mainly for mobile computing, social networks and cloud computing. Mobile cloud computing refers to the availability of cloud computing services in a mobile environment. It incorporates the elements of mobile networks and cloud computing, thereby providing optimal services figure for mobile users.

MOBILE CLOUD COMPUTING

Mobile cloud computing at its simplest refers to an infrastructure where both the data storage and the data processing happen outside of the mobile device. Mobile cloud applications move the computing power and data storage away from mobile phones and into the cloud, bringing applications and mobile computing to not just smart-phone users but a much broader range of mobile subscribers.

Another definition given as per *Mobile Cloud Computing Solution Brief, AEPCON (2010)* “Mobile cloud computing is a model for transparent elastic augmentation of mobile device capabilities via ubiquitous wireless access to cloud storage and computing resources, with context-aware dynamic adjusting of offloading in respect to change in operating conditions, while preserving available sensing and interactivity capabilities of mobile devices.” by mobile computing, we mean that a set of users who conduct some joint computational and communication tasks based on their mobile devices.

Mobile cloud computing = mobile computing + cloud computing;

END TO END SECURITY ARCHITECTURE OF MOBILE CLOUD COMPUTING

Protecting user privacy and data/application secrecy from adversary is a key to establish and maintain consumers’ trust in the mobile platform, especially in MCC. A general architecture in a broader sense was as depicted in Figure1.

In the following, the security related issues in MCC are introduced in two categories: the security for mobile users and the security for data.

1. **Security for Mobile Users:** Mobile devices such as cellular phone, PDA, and smartphone are exposed to numerous security threats like malicious codes (e.g., virus, worm, and Trojan horses) and their vulnerability. In addition, with mobile phones integrated global positioning system (GPS) device, they can cause privacy issues for subscribers.
2. **Securing Data on Clouds:** Although both mobile users and application developers benefit from storing a large amount of data/applications on a cloud, they should be careful of dealing with the data/applications in terms of their integrity, authentication, and digital rights.

TYPES OF SECURITY BREACHES AND ISSUES

Data Ownership

Cloud computing provides the facility to store the personal data and purchased digital media such as e-books, video and audio files remotely. For a user, there is a chance of risk to lose the access to the

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/security-management-in-mobile-cloud-computing/203546

Related Content

Exploring the Franchisor-Franchisee Relationship: A Logistical Service-Oriented Perspective

Thierry Allègre, François Fulconis and Gilles Paché (2018). *Multidisciplinary Approaches to Service-Oriented Engineering* (pp. 1-26).

www.irma-international.org/chapter/exploring-the-franchisor-franchisee-relationship/205291

A Detailed Study on Single Electron Transistors in Nano Device Technologies

S. Darwin, E. Fantin Irudaya Raj, M. Appadurai and M. Chithambara Thanu (2023). *Energy Systems Design for Low-Power Computing* (pp. 67-99).

www.irma-international.org/chapter/a-detailed-study-on-single-electron-transistors-in-nano-device-technologies/319990

Review of Applications of Energy Harvesting for Autonomous Wireless Sensor Nodes

Wilma Pavitra Puthran, Sahana Prasad and Rathishchandra Ramachandra Gatti (2023). *Energy Systems Design for Low-Power Computing* (pp. 143-165).

www.irma-international.org/chapter/review-of-applications-of-energy-harvesting-for-autonomous-wireless-sensor-nodes/319994

Ontological Description and Similarity-Based Discovery of Business Process Models

Khalid Belhajjame and Marco Brambilla (2012). *Computer Engineering: Concepts, Methodologies, Tools and Applications* (pp. 846-866).

www.irma-international.org/chapter/ontological-description-similarity-based-discovery/62483

A Test-Driven Approach to Behavioral Queries for Service Selection

Laura Zavala, Benito Mendoza and Michael N. Huhns (2013). *Agile and Lean Service-Oriented Development: Foundations, Theory, and Practice* (pp. 116-133).

www.irma-international.org/chapter/test-driven-approach-behavioral-queries/70732