

Chapter 44

Enhanced Security for Electronic Health Care Information Using Obfuscation and RSA Algorithm in Cloud Computing

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ABSTRACT

Recently, the electronic health record (EHR) has become the chosen method to maintain a patient's health information. The advancement of cloud computing enables users to access their data with flexibility, providing large storage capability at low costs, which encourages EHR maintainers to consider shifting from their own storage to the cloud. In cloud computing, it is no doubt that securing EHRs poses a gigantic challenge. Various security properties like access control, data privacy, and scalable access between different clouds needs to be satisfied. This article presents a secure and efficient blueprint for securing data confidentiality on cloud computing storage. The proposed framework is carried out for EHR confidential data on cloud storage. Moreover, the proposed approach combines the obfuscation and RSA encryption together to enforce confidentiality and authentication. Through this framework, the data confidentiality and authentication scheme on EHR information can be enforced on clouds storage.

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INTRODUCTION

Cloud computing is visualized as the next-generation prototype. Cloud computing provides applications and computing resources (software and hardware) dynamically over the internet as services to its clients. Cloud computing has become a promising and efficient computing model and engrossed extensive attention and support in several fields. Moreover, cloud computing environment provides many services such as application hosting, service outsourcing and resource renting which demonstrates the core perception of an on-demand service in the IT field. National Institute of Standards and Technology (NIST) (Mell & Grance, 2011) defined cloud computing as “cloud computing permits universal, expedient, and on-demand network access to a shared pool of configurable computing resources that can be quickly indulged and released with minimum effort.” The cloud service provider provides three types of services which are shown in figure 1.

Figure 1. Cloud computing service model

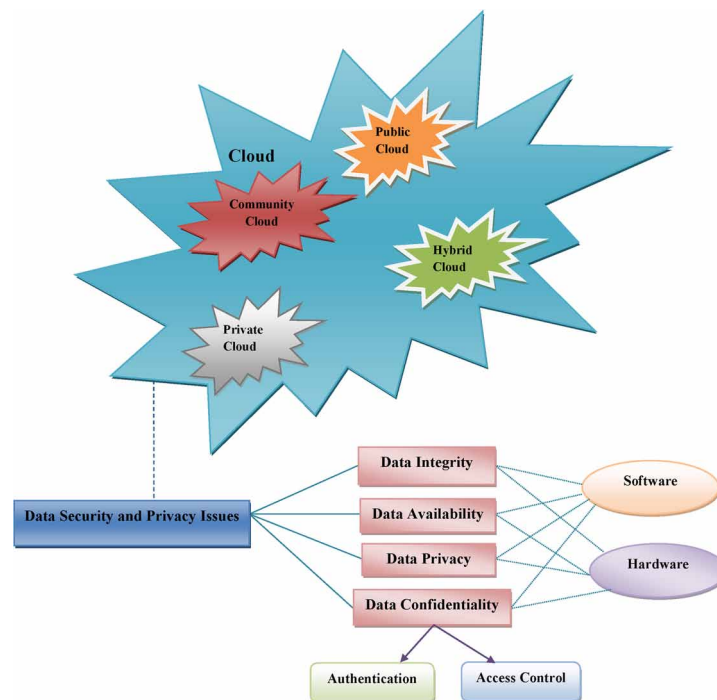


Figure 1 shows cloud services which are categorized as 1) Software as a Service (SaaS): It provides access to web applications (File storage, email, social networking, etc.) running on their web servers. Examples of such kind of cloud providers are Zoho, Salesforce.com and Google Apps. 2) Platform as a Service (PaaS): It provides an environment where users can run their applications without worrying about managing the hardware, tools, network storage as they all are managed by the cloud service provider. The Google APP Engine, Windows Azure are examples of these service providers. Google App Engine, Aptana cloud. 3) Cloud Infrastructure as a Service (IaaS): It provides raw computing storage space and power and user can also manage the intrinsic virtual machines as well as network, storage space and

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