Chapter 109
Cloud Security Using Face Recognition

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ABSTRACT

Establishing identity has become very difficult in the vastly crowded cloud computing environment. The need for a trustworthy cloud authentication phenomenon has increased in the wake of heightened concerns about authentication and rapid advancements in cloud computing, database access, and Internet communication. Face recognition is a non-intrusive method, and facial characteristics are probably most common biometrics features used by humans to identify others. Authentication for cloud computing using face recognition is based on security issues related to data access and cloud database in a cloud. It can provide a satisfactory level of security measures to users and service providers, cloud consumers, and different organizations. In this chapter, the authors cover different research aspects related to cloud security.

1. INTRODUCTION

In the computing world, clouds have always served a metaphorical approximately supernatural role. It has been used traditionally to represent the internet in a networked environment in diagramming and mapping operations (Hartig, 2009). Cloud security is an evolutionary offshoot of computer security, information security and security of internet based computation, whereby shared resources, different relevant software and information is provided to computers and other devices on demand. The cloud

computing security is also known as cloud security. In October 2009 paper representation "Effectively and Securely using the cloud computing paradigm" by Peter Mell and Tim Grance of United States National Institute of Standards and Technologies (NIST) has given the definition of cloud computing: "Cloud computing is a model for enabling ubiquitous, convenient, on demand network access to shared pool of configurable computing resources(e.g., networks, servers, storage, applications, and services) and applications as services that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011). Cloud computing technology is a new idea, which provides a great opportunities in many areas. It is a collection of computers and servers that are publically accessible via internet (Senthil, Boopal and Vanathi, 2012). Cloud computing allows consumers and businesses to exfoliate different applications without installation and access their personal files at any computer with internet access. Cloud promises to create computing and storage of large-scale analysis knowledge a lot of economical, less time devastating and quite presumably cheaper (Menon, Anala, Gokhale & Sood, 2012). These benefits additionally apply to scientific research knowledge and bioinformatics tools. It provides the variety of internet based on demand services like software, hardware, server, infrastructure and data storage (Ganesh, Sapkal & Korade, 2013). On the other hand, cloud computing could be an important platform to run such tools in parallel because it provides on-demand, elastic computational resources. On the other hand, cloud computing could be an important platform to run such tools in parallel because it provides on-demand, elastic computational resources (Karlsson, Torreño, Ramet, Klambauer, Cano, & Trelles, 2012).

1.1 Characteristics of Cloud Computing Model

The shared pool of different type of cloud resources is included through virtualization or job scheduling techniques in cloud computing environment. Virtualization is a process to make the set of logical resources whether it may be operating system, hardware platform, network resources and other shared resources usually implemented by the software based components acting like physical resources. Particularly software resources are known as hypervisor which imitates as a set of resources and gives permission to the operating system software (logical resources) running on a virtual machine separated from the underlying hardware resources. The National Institute of Standards and Technology (NIST)'s definition of cloud computing identifies "five essential characteristics".

- **On-Demand Self-Service:** On demand self–service enables consumer to use the cloud computing as needed without human interaction between users and service providers. With the help of on demand self service characteristics, consumer can schedule the different cloud services such as computation and storages as their requirement. In addition to valuable and satisfactory to the consumer, the self service interface must be user friendly to access the different cloud resources and effective means to manage the service offerings. The main advantage of on-demand self-service provides better and eases and elimination of human interaction provides efficiencies to both the consumer and vendor of cloud service (Mell & Grance, 2009).
- **Broad Network Access:** For cloud computing to be successful alternative to the in house data centre it requires the high bandwidth communication internet communication links and capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations). One of the principal economics explanations for cloud computing is that lowered cost of

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