Chapter 51
Identification of Various Privacy and Trust Issues in Cloud Computing Environment

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ABSTRACT

Cloud computing is a rising paradigm in today's world. In this, users can send his or her request to any CSP, i.e., cloud service provider, of their choice. In return, the CSP reverts him back with that particular service. Now, while communicating from various two locations, the data transferred is not passed through that much amount of security and privacy as expected. So, there are lots of parameters in the environment that are taken care of while sending, receiving or just passing data over the network. This chapter presents various security issues that are underlying in cloud computing. This chapter has illustrated various issues such as Trust, Encryption, Authenticity, Confidentiality and Multi Tenancy. Also, some of the proposed solutions have also been discussed later in the chapter.

INTRODUCTION

Cloud Computing has emerged as a latest domain in terms of technology as well as research. It works basically on the principle of 'pay as per the use model". Cloud computing is a fifth generation computing truly based on service provisioning based on virtualization. This model believes in providing various benefits like speedy deployment, pay as per the usage, economical in costs, scalable, rapid in approving requests, long lasting network access, greater resiliency, hypervisor security against system assaults, lower in cost in context of disaster recovery on-request security controls, continuous recognition of framework altering and quick re-constitution of administrations (Armbrust, et al, 2010).

Cloud computing services can be categorized into three categories: Software as a Service (SaaS), Platform as a Service (PaaS) and infrastructure as a Service (IaaS).

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Here, SaaS facilitates to the clients that wants to access provider's software applications which is going to run on a cloud infrastructure (Aljawarneh,et al, 2016). Applications are managed and controlled by cloud service provider. Customersneed not to buy the software but instead they can use those services by using web API. For example, Google Docs purely relies its working on JAVA Script, which further runs in the Web browser (Bonatti et al, 2000).

One of thecategories of cloud service is Platform-as-a-service (PaaS). It is a service that delivers application.In this, the client can utilize the cloud specialist co-op's applications to send their applications by utilizing different programming dialects and devices bolstered by the supplier. The service provider does not need to deal with the basic cloud framework but rather shows the control over the sent application (Aberer, et al., 2001). A common example of PaaS is Google App Engine that facilitates the developer to run program on Google's Infrastructure.

Another type of cloud service model is known as Infrastructure-as-a-service (IaaS). In this, virtual machine images are provided as a service and machines generally contains what developers actually want. Rather than acquiring servers, programming, server farm assets, arrange hardware, and the skill to work them, clients can purchase these assets as an outsourced benefit conveyed through the system cloud. Also, the user can increase or decrease the quantity of virtual machines as per their increasing or decreasing requirements. For example, host firewalls.

CLOUD COMPUTING ARCHITECTURE

The working of Cloud computing is generally divided into two parts: backend and frontend (Armbrust, et al., 2009). Here, Frontend is basically a "user section" and backend is a "cloud section".Also, there is a server which works in centralized manner which is further helpful in administering the system and checks whether the system is running smoothly or not, by fulfilling the client's demands. The proper functioning of the environment is taken under some set of rules and protocols that uses special software known as middleware (Singh et al, 2014).

Figure 1. Architecture of high-level cloud middleware