Data Security , Isolated access to data in Cloud :A Review

M.Sirisha

Assistant professor , Computer science and engineering department, Mallareddy college of Engineering and technology,Telangana state,India

Abstract :

Cloud Computing is one of the popular techniques due to its ability to minimize the cost of computing when scalability and flexibility of computer process get increased. Cloud Computing provides shared resources and services via internet. Services are delivered through data center. Cloud Computing allows an interesting business proposal for IT industries to provide IT services without any extra investment. Client is able to perform heavy computer processes with low capable device (like mobile) which has resource to run the web browser. But cloud computing is crowded with many security related issues. When client saves his data to the company's cloud, there may be chance of data breaching. As information exchange plays an important role in today's life, information security becomes more important. This paper is focused on the security issues of cloud computing and techniques to overcome the data privacy issue. Before analyzing the security issues, the definition of cloud computing and brief discussion to under cloud computing is presented, then it explores the cloud security issues and problem faced by cloud service provider.So the purpose of this paper is to search out various issues in cloud computing where all computing is done on the server side and both data & tasks are stored on the data centers. It is very difficult for the customers to switch from one Cloud Service Provider (CSP) to another. It results in dependency on a particular CSP for service.This risk involves the failure of isolation mechanism that separates storage, memory, routing between the different tenants.

Keywords: *Cloud computing,Iaas,Paas,Saas,Types of clouds,Cloud security Issues and challenges,Virtualization,Lock In, Isolation Failure.*

1. Introduction

The term Cloud refers to a Network or Internet. In other words, we can say that Cloud is something, which is present at remote location. Cloud can provide services over network, i.e., on public networks or on private networks, i.e., WAN, LAN or VPN. Applications such as e-mail, web conferencing, customer relationship management (CRM),all run in cloud.Cloud Computing refers to manipulating, configuring, and accessing the applications online. It offers online data storage, infrastructure and application.We need not to install a piece of software on our local PC and this is how the cloud computing overcomes platform dependency issues. Hence, the Cloud Computing is making our business application mobile and collaborative.

2. Cloud models and services

There are certain services and models working behind the scene making the cloud computing feasible and accessible to end users. [5],[6]Following are the working models for cloud computing:

- Deployment Models
- Service Models

2.1 DEPLOYMENT MODELS

Deployment models define the type of access to the cloud, i.e., how the cloud is located? Cloud can have any of the four types of access: Public, Private, Hybrid and Community.

P U B L I C C L O U D: The Public Cloud allows systems and services to be easily accessible to the general public. Public cloud may be less secure because of its openness, e.g., e-mail.

P R I V A T E C L O U D :The Private Cloud allows systems and services to be accessible within an organization. It offers increased security because of its private nature.

 C O M M UN I T Y C L O U D :The Community Cloud allows systems and services to be accessible by group of organizations.

H Y B R I D C L O U D :The Hybrid Cloud is mixture of public and private cloud. However, the critical activities are performed using private cloud while the non-critical activities are performed using public cloud.
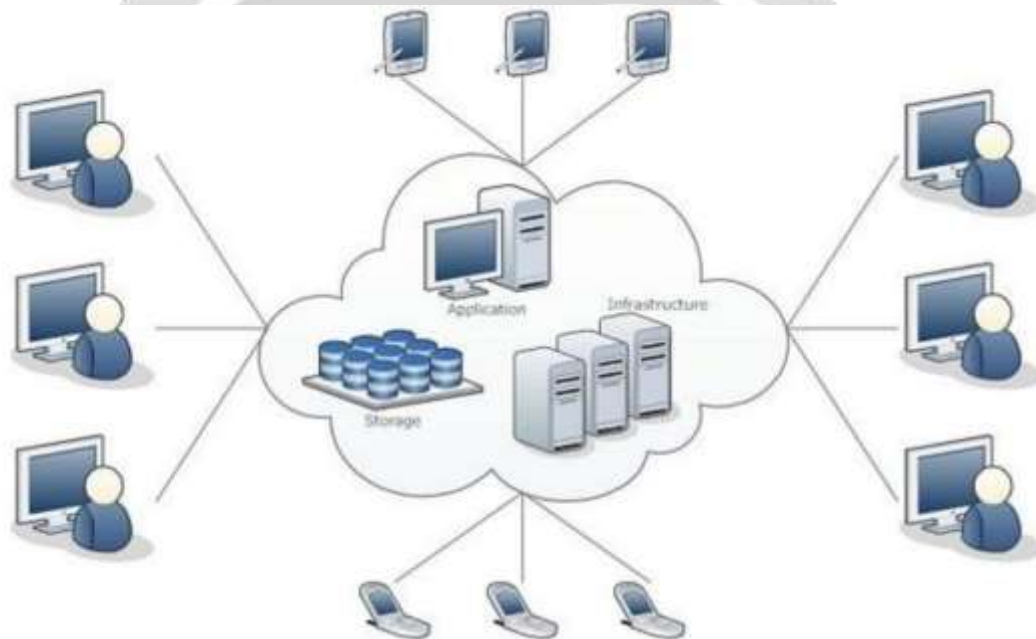

Fig: Brief overview of cloud computing

2.2 SERVICE MODELS:

Service Models are the reference models on which the Cloud Computing is based. These can be categorized into three basic service models as listed below:[7]

1. Infrastructure as a Service (IaaS)

 2. Platform as a Service (PaaS)

3. Software as a Service (SaaS)

There are many other service models all of which can take the form like XaaS, i.e., Anything as a Service. This can be Network as a Service, Business as a Service, Identity as a Service, Database as a Service or Strategy as a Service.

The Infrastructure as a Service (IaaS) is the most basic level of service. Each of the service models make use of the underlying service model, i.e., each inherits the security and management mechanism from the underlying model, as shown in the following diagram:
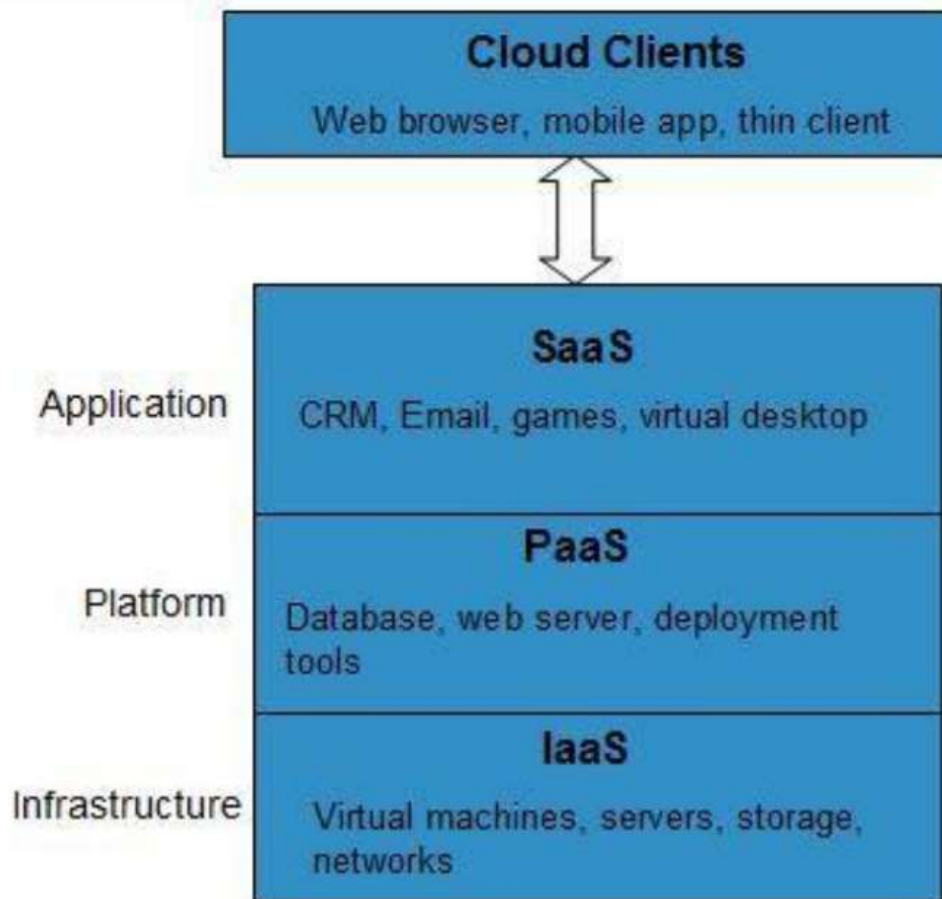

Fig security and management mechanism

INFRASTRUCTURE AS A SERVICE (IAAS)

IaaS provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.

PLATFORM AS A SERVICE (PAAS)

PaaS provides the runtime environment for applications, development & deployment tools, etc.

SOFTWARE AS A SERVICE (SAAS)

 SaaS model allows to use software applications as a service to end users.

3. Virtualization

Virtualization is a stage that gives the financially savvy conveyance to clouds and server farms. It gives a choice to Virtual Machine Introspection (VMI) by means of hypervisor. VMI is a situation to screen the movement of a Virtual Machine (VM). Virtualization innovation technique is utilized to effectively or inactively screen remotely and undetected frameworks[8].

4.Advantages of serives offered by cloud

Cloud computing has various points of interest. Some of them are recorded beneath[9]:

1. One can get to applications as utilities, over the Internet.
2. Manipulate and design the application online whenever.
3. It doesn't require to introduce a particular bit of programming to get to or control cloud application.
4. Cloud Computing offers online advancement and organization apparatuses, programming runtime condition through Platform as a Service show.
5. Cloud assets are accessible over the system in a way that gives stage autonomous access to any kind of customers.
6. Cloud Computing offers on-request self-benefit. The assets can be utilized without connection with cloud specialist co-op.
7. Cloud Computing is exceptionally savvy since it works at higher efficiencies with more noteworthy use. It just requires an Internet association.
8. Cloud Computing offers stack adjusting that makes it more dependable.

5. Security Issues and challenges in cloud

Security in cloud computing is a major concern. Data in cloud should be stored in encrypted form. To restrict client from direct accessing the shared data, proxy and brokerage services should be employed. Security Planning Before deploying a particular resource to cloud, one should need to analyze several attributes about the resource such as: Select which resources he is going to move to cloud and analyze its sensitivity to risk.Consider cloud service models such as IaaS, PaaS, and SaaS. These models require consumer to be responsible for security at different levels of service. Consider which cloud type such as public, private, community or hybrid[3]. Understand the cloud service provider's system that how data is transferred, where it is stored and how to move data into and out of cloud. Mainly the risk in cloud deployment depends upon the service models and cloud types. Understanding particular service model defines the boundary between the responsibilities of service provider and consumer. Cloud Security Alliance (CSA) stack model defines the boundaries between each service model and shows how different functional units relate to each other[1]

It is the greatest worry about cloud computing since information administration and foundation administration in cloud is given by outsider, it is dependably a hazard to handover the delicate data to such suppliers[2].Despite the fact that the cloud computing merchants guarantee more secure secret key ensured accounts, any indication of security rupture would bring about loss of customers and organizations.

5.1 Lock In

It is extremely troublesome for the clients to change from one Cloud Service Provider (CSP) to another[4]. It brings about reliance on a specific CSP for benefit.

5.2 Isolation Failure

This hazard includes the disappointment of disconnection instrument that isolates stockpiling, memory, steering between the distinctive inhabitants .

6. Conclusion

Cloud computing is a method for registering which exhausts the limits of equipment and programming. But when security and protection appears then such a significant number of difficulties furthermore, issues showed up as per programmers, saltines furthermore, security scientist's proposal that cloud figuring isn't hundred percent safe due to data can be spill at any level of cloud. So this paper tries to examine different difficulties and issues identified with the security of a cloud and need to chip away at those issues to ensure control of data.

7. References

[1]Hubert Ritzdorf, Nikolaos Karapanos, Srdjan Capkun "Assisted Deletion of Related Content"ACM, 2014.

[2] Cloud Computing and Its Security Issues - A Review Jitender Grover1 , Shikha, Mohit Sharma, Department of Computer Science & Engineering, M. M. University, Sadopur, Ambala, India

[3] Wentao Liu, "Research on Cloud Computing Security Problem and Strategy", 2nd International Conference on Consumer Electronics, Communications and Networks, pp. 1216-1219, April 2012.

[4] Cloud Computing Security Issues and its Solution: A Review Randeep Kaur M.Tech Scholar, Department of CE Punjabi University, Patiala, India, Jagroop Kaur Assistant Professor, Department of CE Punjabi University, Patiala, India

[5]Jaonie M. Wexler, Apple bonjour just yet, http://www.webtorials.com/content/2012/04/dont-rush-to-bid-adieu-toapple-bonjour-just-yet.html

[6] David Maxwell, Cloud Lounge, http://www.cloud-lounge.org/why-use-clouds.html References 14106075100640

[7] Amit Kumawat, Cloud Service Models, http://www.cmswire.com/cms/information-management/cloud-servicemodels - --iaas -saas-paas-how-microsoft-office-365-azure-fit-in- 021672.php

[8]Cloud Tweaks, Cloud deployment Models, http://cloudtweaks.com/2012/07/4-primary-cloud-deployment-models/

[9] Openstack, OpenStack command-line interface cheat sheet, http://docs.openstack.org/user-guide/cli_cheat_sheet.html