# Cloud Computing : Issues and Challenges

Vaibhav Mishra
M. Tech. Scholar
Computer Science and Engineering
Jodhpur Institute of Engineering and Technology
vaibhav.mishra071@gmail.com

Kavita Choudhary
Assistant Professor (Sr.) and Head
Computer Science and Engineering
Jodhpur Institute of Engineering & Technology
kavita.choudhary@jietjodhpur.com

***Abstract*— In recent scenario cloud computing is an emerging technology which is adopted by various institutions and organizations. The new establishing companies might preferring this technology for their office automation and making logs and databases of their employees due to its variant features like pay per use, availability of the services. There are some of the issues and challenges are present in this technology which is important to consider so that data can be made secure and safe. These issues told that what are the different types of methods and techniques are present so by using them malicious attacker attacks on the network to get the precious data.**

***Keywords—cloud,cloud computing, malicious attacks,cloud –itit musecurity.***

## I. INTRODUCTION

Computing can be explained as any activity of using or developing computer hardware and software. It contains everything from computation power to storage capabilities. Cloud computing ties together all these entities and delivers them as a single integrated entity under its own sophisticated management. It is used as a metaphor for the wide area networks like internet or any such large networked environment. The cloud-like symbol came in the existence to represent the complexities of the networks in the schematic diagrams. This symbol shows the complexities of the network which may includes cables, routers, servers, data centers and all such other devices. It is defined as an emerging computer paradigm where data and services reside in massively scalable data centers in the cloud and can be accessed from any connected devices over the internet. Cloud computing is a technique of providing different services on virtual machines allocated on top of a large physical machine pool which resides in the cloud.

## II. RELATED WORK

### A. *Service models of cloud computing*

There are three types of service models:

*Software as a Service:*

The providers commercially available applications running on a cloud infrastructure are provided to the costumers. The applications are accessible by the web enabled devices with the help of web browser. So the applications remain available to end users when needed via the Web. The common use of software as a service is for Web-based email services. Software as a service enables enterprises to obtain the use of such commercially available software on demand without the need to invest in IT resources knowledgeable in its support.

*Platform as a service:*

Resources provided by the Platform as a Service are applications and infrastructure. There are many cases in which data will be stored in the cloud and the end users terminal may contain only an operating system and Web browser. It also provides a service in which end users can write their own code which will be uploaded by the Platform as a Service provider on the web like SalesForce.com. This model increases the resources on the demand of end user within the same cloud. This is known as multi-tenant cloud computing.

*Infrastructure as a Service*:

This model outsources the equipment to organization which is used to support operations like hardware, storage, virtual servers, databases, and networking components. The service provider has equipments which are responsible for housing, maintaining and running it. The client pays on a per-use basis.

### B. *Deployment models of cloud computing*

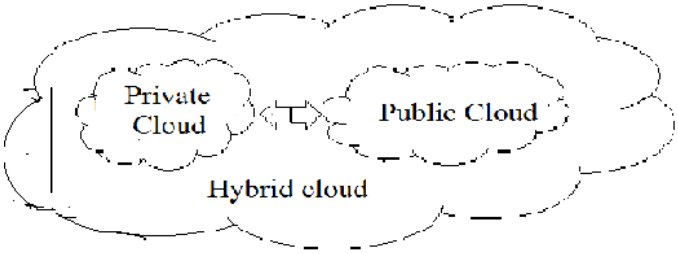


Fig. 1: Types of Cloud.

There are three types of deployment models of cloud computing which are described below:

*Public cloud:*

These clouds are hosted by the third parties and their applications for different customers are mixed together on the clouds servers, networks and storage systems. These clouds are hosted at a distance apart from customer premises, and these types of clouds reduce the customer risk and cost by

providing a flexible and temporary extension to enterprise infrastructure. If these clouds are implemented with security, data locality and performance, the existence of those applications which are running in the cloud should be transparent to both end users and cloud architects.

*Private cloud:*
These types of clouds are only for the exclusive use of one client which provides the utmost control over service quality and control of data. The company has its own infrastructure and control over the deployment of the applications. These clouds are deployed on a data centre of enterprise and they also deployed on a collocation facility. These clouds are built and managed by a cloud provider or IT organization of the company.

*Hybrid cloud:*
These clouds are the combination of both private and public cloud models .They helps us to provide externally provisioned scale and on demand services. The private cloud augments with the resources of a public cloud which will be used to maintain levels of service in the face of rapid workload fluctuations. This will be seen when the storage clouds supports the web 2.0 applications. These clouds are used to handle extensive workload spikes. A public cloud can be used to perform periodic tasks that can be deployed easily on a public cloud. The distribution of the applications across both a public and private cloud is determined by the hybrid cloud. The issues related to the relationship between data and processing resources have to be considered. If the data is small then the application is stateless, a hybrid cloud is much more successful when large amount of data are transferred into a public cloud for small amount processing.

## III. ISSUES IN CLOUD COMPUTING

Cloud computing is an emerging technology which are used in very wide manner. There are various issues present in the cloud computing which are described below:

*1) Privacy*
Cloud service provider (CSP) can complicate privacy of data due to the extension for virtualization of cloud processing and cloud storage is used to implement cloud service. The important thing is that cloud service provider operations, tenant data and customer may not reside in the same system and in the same data center or even within the same cloud provider. Therefore jurisdiction is the legal concern.

*2) Compliance*
There are many providers which obtain as a Software as a Service, which has been criticized on the grounds that the desired set of goals and standards which are determined by the auditor and the audited are often not disclosed and can vary widely. Providers available this information on request in non-disclosure agreement.

*3) Legal*
There are many changes in the landscape of computing. There are certain legal issues arise with cloud computing like trademark infringement, security concerns and sharing of propriety data resources.

*4) Open standards*
Many cloud providers expose application interfaces that are well-documented but their implementation procedure is different and not interoperable. Therefore some vendors have adopted others application interfaces and there are many number of open standards are under developing phase, which delivers the portability and interoperability.

*5) Security*
Cloud computing is a new technology used very widely therefore its increased popularity raises various concerns about its security issues. The security issues are classified into sensitive data access, data segregation, accountability, malicious insiders, privacy, bug exploitation, recovery, management console security, account control, and multi-tenancy issues. There are various solutions to the security issues which vary from cryptography, particularly public key infrastructure, to use of multiple cloud providers, standardization of application interfaces, and improving support of virtual machine and legal support. The wide use of the cloud computing attracts more criminals to find new ways to exploit vulnerabilities in the system. There are different risks and challenges in cloud computing that increases the threat of compromising the data. To remove these threat cloud computing stakeholders should invest heavily in the assessment of the risk to ensure that the system encrypts to protect data establishment of trusted foundation will secure the platform and infrastructure; and builds higher assurance into auditing to strengthen compliance. There are various concerns in security must be addressed to establish trust in cloud computing technology.

*6) Sustainability*
There are various environmental effects of cloud computing which came in existence when the servers will be placed. There are some areas where natural cooling and renewable electricity is readily available, the environmental effects are more moderate. In the distributed clouds there are data centers with different source of energies including renewable source of energies, a small compromise on energy consumption reduction could result in high carbon footprint reduction.

*7) Abuse*
When the customer purchases the hardware for its private use, he can purchase the services of cloud computing for nefarious purposes. This contains launching attacks and cracking of password by using the purchased services.

*8) IT governance*

Cloud computing has a necessary and appropriate IT governance model for a secured computing environment which comply all the relevant organizational information technology and policies. There are various needs of capabilities in organizations that are essential when effectively implementing and managing cloud services, including demand management, management of relationship, data security management, risk and compliance management.

## IV Challenges in Cloud Computing

The challenges of cloud computing is described below:

*1) Adequate Security*

Cloud computing is a new technology which is used by many new establishing companies due to its varous feature therefore it attracts a group of people to maliciously attack on the network and get the precious data. Security of a data is one of the big challenge. The security issues like data loss, botnet, phishing pose a great problrm to the organization data and software.

*2) Adequate Performance*

There are some of the inherent issues of the internet which are applied on the cloud computing. This will create the limitation in the effective service of the cloud. Some of the malicious attacker present in the network which increases the traffic in the network therefore the performance of the cloud is hindering in effective working.

*3) Competitive cost of Cloud Computing*

One of the important feature of the cloud computing is to pay per use service. Today most of the organizations are moving their data to the cloud. The cost to move the data into private cloud is more costly because here the cost depends on the per unit transfer of the data.

*4) Service level agreement*

The consumer of the cloud computing does not know about the quality of service, performance, availability. It is the duty of the service provider to make available best services of the cloud to its consumer. Therefore there is agreement between service provider and consumer for the availability of the good services. so here the challenge arises that sometimes agreement is not clear. Therefore the agreement is very clear and appropriate which fulfills all the needs of consumer.

*5) Charging Model*

Conventionally data centers charge, consumer according to the consumption of the computing resources. But in cloud computing the flexibility of resource pool makes it complex. Even for the software as a service (SaaS) provides the cost of developing multitenancy within their offering can be very substantial. Therefore, a strategic and viable charging model for SaaS provider is crucial for the profitability and sustainability of SaaS cloud providers.

## CONCLUSION

Cloud computing is an emerging technology which is mostly used by IT sector companies. There are various issues and challenges are present which will be considered when using this technology. Its various features like pay per use and scalability makes it robust.

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