

## A Survey on Cloud Computing

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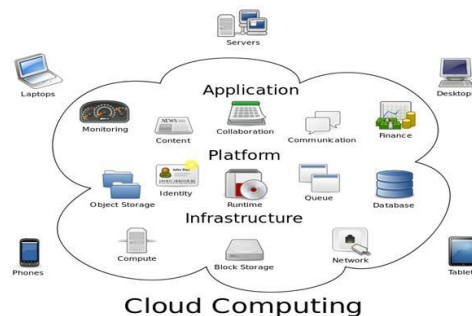
**Abstract:** Cloud computing allow the users to take benefit from all of these technologies, it enable the user to access the shared resources through internet. Most of the IT industries today are moving on to cloud to meet their computational requirements with reduced cost. This paper gives an idea about various concepts and it covers the growing trends in the field of cloud computing.

**Keywords:** Cloud Computing, Cloud Service models, Cloud deployment models, Characteristics, Challenges.

### I. Introduction

Cloud computing is rapidly changing the internet service and enabling the small organization to build mobile application for users. Cloud computing builds technologies such as grid computing, clustering, server virtualization and dynamic provisioning, as well as SOA shared services and large-scale management automation. It can be defined based upon by the kind of service to the end-users.

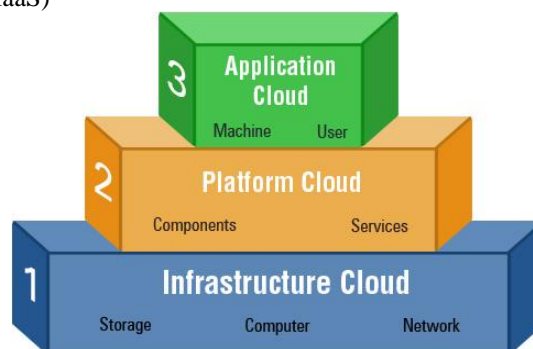
Cloud computing is referred to a model of network computing where program or application runs on a connected servers rather than on a local computing device. Today there are various service providers like Amazon, Google.



### II. Service Models Of Cloud Computing

Cloud is a collection of services, organizations choose where, when, and how they use cloud computing. It offers three high-level cloud service models.

1. Software as a Service (SaaS)
2. Platform as a Service (PaaS)
3. Infrastructure as a service (IaaS)



**A. Software as a Service (SaaS):**

In this model where the software and the associated data are hosted in a cloud environment by a third party such as Cloud Service Provider (CSP). It is mainly accessed through web portal and service oriented architecture based on some of the web service technologies.

**B. Platform as a Service (PaaS):**

PaaS service provider provides creation of web applications for maintaining the software. (CSP) provides an online software development platform for an organization. Cloud flexibility that allows the applications to be implemented quickly and loaded in the cloud without much configuration.

**C. Infrastructure as a Service (IaaS):**

This model is used to access essential IT resources. The service provider includes resource of computing, virtualization, network, data storage. CSP provide the hardware and software require to setup computing environment in an organization. This manages an applications, data operating system, middleware and runtime.

**III. Charachertistics Of Cloud Computing**

The National Institute of Standards and Technology’s definition of cloud computing identifies five essential characteristics:

**1. On-demand self service:**

On-demand network is to access a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.

**2. Broad network access:**

Cloud capabilities are available over the network and accessed through business management solution using their tablets, smart phone, laptops, and office computers.

**3. Resource pooling:**

The provider’s computing resource are pooled to serve multiple consumers using a multi tenant model, with different physical and virtual resources dynamically assigned and reassigned according to the consumer demand.

**4. Rapid elasticity:**

The capabilities available for provisioning often appear unlimited and can be appropriate in any quantify at any time.

**5. Measured service:**

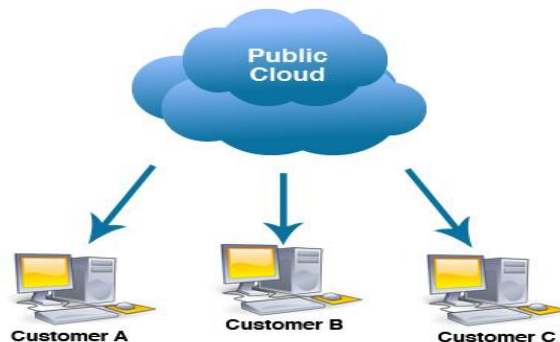
Cloud computing resource usage can be measured, controlled, and reported providing transparency. Cloud systems automatically control and optimize resource use.

**IV. Cloud Deployment Model**

Based on the location where the cloud is hosted, it classifies clouds into three types-private, public and hybrid cloud.

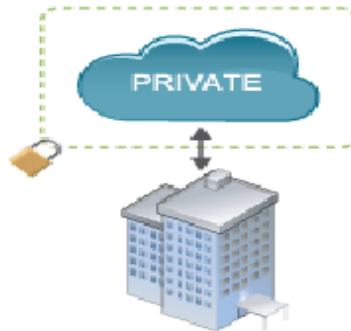
**A. Public Cloud:**

In this model cloud infrastructure is fully controlled by the third party cloud service providers (CSP) like Amazon, Google and opens for the usage of public based on pay-per-use model. But it offers poor security and hence the data is prone to malicious attacks.



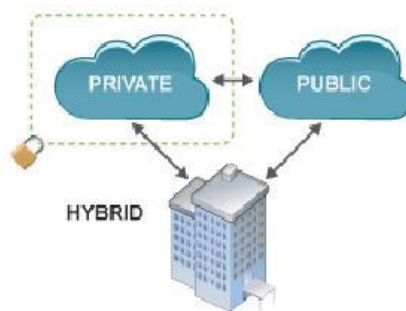
**B. Private Cloud:**

Cloud implementation is fully controlled by the organization and security will be enhanced. A Private cloud is to meet the internal computational needs with an organization. It offers security as it is implemented within the internal firewall.



**C. Hybrid Cloud:**

In this deployment model the combination of private and public clouds forms the hybrid cloud. The organization uses the public cloud services along with its own cloud to perform resource intensive applications.



**C. Community Cloud:**

A Community Cloud is designed to meet the needs of a community. Such communities involve people or organization that have shared interests. This includes industrial groups, research groups, standards groups, and so on. So, a Community Cloud is not so much a type of Cloud as it is a way to look at how Clouds could be used. The data center supporting the Community Cloud could be one of the member organizations or it could be in a location separate from all member organizations.

**V. Cloud Computing Architecture:**

It refers to the components and subcomponents required for cloud computing. These components typically consist of a front end platform (fat client, thin client, mobile device), back end platforms (servers, storage), a cloud based delivery, and a network (Internet, Intranet, Intercloud). Combined, these components make up cloud computing architecture.

**VI. Cloud Computing Challenges**

Cloud computing has placed many challenges in different aspects. Some of the challenges are:

**1. Security and Privacy:**

This aims to provide data security protection through cloud. This security and privacy issues can be overcome by employing encryption, security hardware and security application.

**2. Portability:**

It is the ability to move applications and its associated data between one clouds to another private cloud environments.

**3. Interoperability:**

Application on one platform should be able to incorporate services from another platform. The incorporation is made possible through web services.

**4. Performance and Bandwidth:**

In order to deliver data intensive applications on cloud requires high network bandwidth, which results in high cost. If delivery of data is done at low bandwidth, then it does not meet the required computing performance of cloud application.

### **5. Reliability and Availability:**

It is necessary for cloud systems to be reliable and robust because most of the businesses are now becoming dependent on services provided by third-party.

## **VII. Conclusion**

Cloud computing is an emerging technology which can bring changes in usage of internet, data transfer and communication. In this paper a survey of various security and privacy issues associated with cloud models are presented. Additionally, more industries are turning to cloud technology as an efficient way to improve quality services due to its capabilities to reduce overhead costs, downtime, and infrastructure deployment.

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