

# Cloud Computing-Basics

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**Abstract:** Cloud computing is an emerging technology. It consists of large pool of IT resources. Anyone can access these resources with the help of internet. The main advantage of cloud computing is its ease of use and cost effectiveness. According to this feature it is an innovative driver for small companies, partially in the developing world. This idea can be used in different areas like medical applications, mobile applications etc. This paper explore some of the basics of cloud computing like

- Characteristics of Cloud Computing
- Cloud deployment strategy
- Cloud delivery model

Finally, some of the issues happened in this field is discussed.

**Keywords:** Cloud Computing, Saas, Paas, Iaas

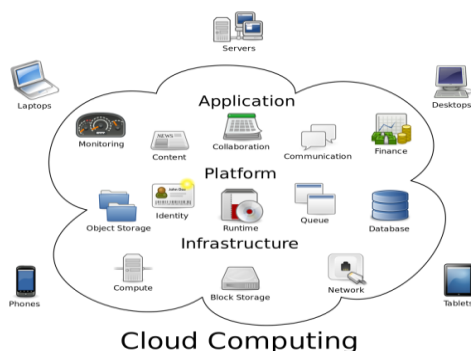
## I. INTRODUCTION

Cloud computing is really a computing paradigm. It is an internet based pool of IT resources. In simple words we are storing our photos online instead of our home computer; we are doing this for ease of access. The same concept is elaborated to little higher versions. That is cloud computing. In cloud computing a large collection of resources is stored as online. Any client can access resources from the pool. Availability and access is control by service provider [1].

Suppose a small company need high cost resource but in the beginning they cannot purchase all the resources due to financial constraints. If they get online resources with minimal cost they can improve their work. This facility is provided by cloud computing.

Anybody can access resources from the pool with minimal management effort or service provider interaction. But we pay a small amount for the resource utilization. Fundamental principle behind the cloud computing is 'reusability of IT Capability'. Cloud computing is service oriented system [6],[7].

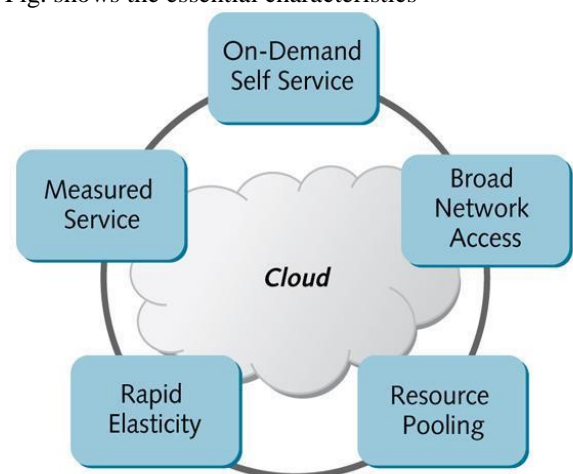
Cloud computing shown in the [Figure 1](#)



The reminder of this paper discussed characteristics, types of cloud, services etc. At the end we discuss the future scope of the paper.

## II. ESSENTIAL CHARACTERISTICS.

Fig. shows the essential characteristics



The essential characteristics of cloud computing

### Figure 1

#### A. On Demand Self Service

Customers can get cloud services, without requiring significant assistance. All these services must be paid for. The buyer can typically set up an account with the seller, establish security and billing credentials, and then select and schedule the use of the cloud computing resources on sale. This is generally done using an easily accessible and user-friendly online system.

In some situations, particularly with private cloud, payment is not needed. The service provider will still give the consumer the ability to configure resources and schedule their use.

Each service are created, started, run, and stopped in accordance with the consumer's instructions. Use of a service by a consumer might last only for minutes, or for weeks, months, or years.

#### B. Broad Net work access

Customers are accessing resources from an online storage medium. So high network access is needed between customer and Service provider. Any network available resource like mobile, PDA etc.. can be used by the customer

#### C. Resource pooling

Service provider generates the resource pool. But these resources are accessed by the customers of different

country & industry. Resource utilization is varies between user to user. So the pool should be flexible.

#### D. Rapid Elasticity

One of the key benefits of cloud computing is the ability to have a flexible computing service which can expand or contract in line with business demand, giving you capacity which would be impossible to generate from an in-house implementation without significant investment in resources.

Elasticity has three major features:

- Linear scaling

The service can scale, independent of the number of users or workload size (subject to operating condition limits). The performance experience for one of a thousand users is the same as for a single user. This is not the case for most traditional systems, which have non-linear scalability rather than elasticity.

- On-demand utilization

Allocation of virtual resources follows the demand profile exactly, so that the user appears to have 100% utilization of the service.

- Pay-as-you-go

Payment for IT resources is on a per-use basis. This means that the asset ownership is with the service provider, and the user pays for consumption of the service on the basis of the resource units consumed. Typically, a cloud service has logical units of resource defined by the service provider based on a standard configuration.

#### E. Measured Service

If services are to be charged on a per-use basis, it is immediately obvious that usage must somehow be measured. Consumers require sufficient measurements from their cloud computing service providers to enable them to make purchasing and operational judgments. First, they want to select the optimum service to meet their needs. Then, they want to know whether it is performing in accordance with their SLAs<sup>1</sup>, and whether their use of it is as expected.

Sellers of cloud services must provide sufficient information about their charging scheme and also allow purchasers to make informed choices. On an ongoing basis, they must provide accurate accounting information to support their bills, and give sufficient usage information to allow solutions to be managed operationally.

Usage of different components may need to be measured separately. In IaaS, charges are often calculated for storage occupied, network data transfers, IP addresses, virtual servers, etc. Each of these components will require measurement to ascertain number, size, quantity, and usage over time as appropriate to the charging regimes in place. Similar measures will be required for PaaS. Measures for SaaS might include per-user and per-software-function values, which might in turn be calculated from measures of infrastructure occupancy.

### III. DELIVERY MODELS

Service models can be classified in to three category.

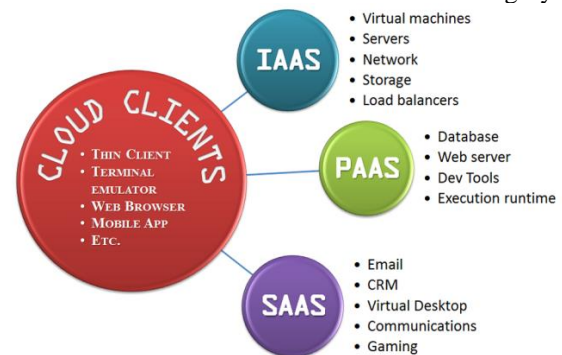


Figure 2

#### 3.1 SaaS: Software as a Service

Suppose customer different soft-ware for their smooth working. But all of these soft-wares are owned by different parties. So they should purchase all the soft ware. But in the case of cloud computing, it provides SaaS service. Here provide integrate all the required soft-wares and give it to the customers with minimal pay per use mechanism. That means organization need not purchase all soft-wares.

#### 3.2 PaaS: Platform as a Service

This kind of “as a service” determines the division of responsibility between consumer and provider. The PaaS definition implies that the service provider is responsible for run-time monitoring and management. (The consumer defines configurations, but it is then up to the provider to follow them.) This requires middleware. Furthermore, there has to be a deployment mechanism for applications as part of PaaS.

#### 3.3 IaaS: Infrastructure as a Service

Instead of owning, managing, and operating our own computer hardware, we can use computers that someone else owns, manages, and operates. Service providers give all the necessary infrastructure facilities to the customer. Then they can easily work on this platform. The main advantage of this model is reuse of IT resources [2].

All of these models reduce e-waste.

### IV. DEPLOYMENT MODEL.

Mainly four deployment models

#### A. Public

Client can access resource from a third party. That means they can access resource from outside provider. Public access is not free. But it is cost effective. In any programming language public means anybody can access that portion. The same way in public deployment model any type of client can access resource but client's data is not public.

#### B. Private

Private means the resource pool is provided by certain organization for the smooth working of the organization. It cannot access by the outside client. Need of this model is, organization require same type of resources for their work. They should purchase same resource for each time. If they

<sup>1</sup> SLA- Service Level Agreement

generate a cloud all the client in the organization can access it easily.

#### C. Community Cloud

Community cloud similar to public and private cloud. Private cloud avoids network bandwidth, security exposures, and legal issues that arise from using external resources, and its use can be controlled and managed. Like public cloud, it makes set-up easy for individual organizations, and it provides more efficient use of pooled resources for the whole community than any of its members could achieve individually. In community cloud service is provided by each members of the

#### D. Hybrid cloud

The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).

### V. CHALLENGES

After studying cloud computing I found some challenges. Just describe some challenges which I feel most important solve all the mentioned challenges is my future work.

#### A. Data protection

In this system everything is stored in a common area. Anybody can access resource from this region. So there is a chance of data loss. So security is necessary.

#### B. Scheduling of Resources

Different customers access same type of resource for their work. So high scheduling is require.

#### C. Deadlock

Everybody feels cloud contain infinite resources. But provider assign the resources in certain manner. So there is a chance of deadlock.

### VI. CONCLUSION

For reducing digital divide between layman and technologist our Hon. Prime Minister Sri Narendra Modi announced 'Digital India Week' celebration. We should use latest technologies like cloud computing to reduce the gap. This paper contain the basics of cloud computing. Characteristics, service model, deployment models are described in this paper. Some challenges are mentioned in it. Counter measures of such challenges are my future enhancement

### VII. FUTURE SCOPE

In this paper some issues are highlighted like security, scheduling, and deadlock. These are major research topics.

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