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## Cloud Computing: A Review

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**ABSTRACT:** Cloud refers to a Network or Internet. Cloud Computing used to access the applications as utilities over the internet. It allows to create, configure and customize applications online. Cloud can provide services over public and private networks. Cloud computing allows shared computer processing resources on demand. The cost for buying the services of different service providers may lead to increase in budget and time. Cloud computing provides platform independency. Thus, Cloud Computing is making our business applications collaborative.

**KEYWORDS:** Cloud computing; deployment models; service models; services; architecture.

### I. INTRODUCTION

Cloud computing has come into existence in recent years. Aim of cloud computing is that everyone on the globe to be interconnected and can access programs ,data from anywhere. Cloud Computing uses the internet and central remote servers to maintain data and applications. Cloud computing allows consumers and businesses to use applications without installation and access their data on any computer with internet access. It enables on-demand access to shared computing resources. Clients follow a pay-as-you-go model that provides access to computing resources as needed from anywhere [1].The main technology used for cloud computing is virtualization. So, cloud aims to minimize costs, and helps the users focus on their core business [2].

### II. CLOUD COMPUTING: 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: Private, Community, Public and Hybrid. Following fig. 1 shows the deployment model.

Type	Properties
1. Private cloud	<ul style="list-style-type: none"> <li>• Outsource or own</li> <li>• Lease or buy</li> <li>• Separate or virtual data center</li> </ul>
2. Community cloud	<ul style="list-style-type: none"> <li>• Private cloud for a set of users with specific demands</li> <li>• Several stakeholders</li> </ul>
3. Public cloud	<ul style="list-style-type: none"> <li>• Mega scaleable infrastructure</li> <li>• Available for all</li> </ul>
4. Hybrid cloud	<ul style="list-style-type: none"> <li>• Combination of two clouds</li> <li>• Usually private for sensitive data and strategic applications</li> </ul>

Fig.1. Deployment Model



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## A. PRIVATE CLOUD:

The private cloud allows systems and services to be accessible within an organization and it is more secure [3].

## B. COMMUNITY CLOUD:

In this, setup is mutually shared between many organizations that belong to a particular community. It may be owned, managed, and operated by group of the organizations in the community, a third party, or combination of them.

## C. PUBLIC CLOUD:

The public cloud allows systems and services to be easily accessible to Public. This cloud is less secure.

## D. HYBRID CLOUD:

The hybrid cloud is a combination of public and private cloud; here the critical activities are performed using private cloud while the non-critical activities are performed using public cloud. (e.g., cloud bursting for load balancing between clouds)[4].

### III. CLOUD COMPUTING: SERVICE MODELS

#### A. SOFTWARE AS A SERVICE (SaaS):

Uses software applications as a service to end-users. The applications are accessible from various client devices through a client interface i.e. a web browser, or a program interface. In SaaS, all clients are running the same software version and new functionality can be easily integrated by the provider and is therefore available to all clients [5].

#### B. PLATFORM AS A SERVICE (PaaS):

- PaaS Cloud providers offer an application platform as a service, for example Google App Engine. This enables clients to deploy custom software using the tools and programming languages offered by the provider [6].
- PaaS provides the runtime environment for applications, development and deployment tools etc.
- It is a platform for the creation of software, delivered over the web.
- It allows users to create software applications using tools supplied by the provider.
- It is used where multiple developers will be working on a development project or where other external parties need to interact with the development process.
- It is used for automate testing and deployment services.

#### C. INFRASTRUCTURE AS A SERVICE (IaaS):

It is used when the highest levels of performance are required and where demand is very volatile. The consumer does not control the underlying cloud infrastructure but has control over operating systems [7].

### IV. CLOUD COMPUTING :SERVICE EXAMPLES

Cloud services are designed for easy access to applications, resources and services which are managed by a cloud services provider. Some of the examples are as follows:

- **Google Docs**- In this Google allows you to open Microsoft Office documents as well as share them with other users with Internet access.
- **Google Calendar** -It is used to organize your schedule, synchronize and share events with your friends.
- **Websites**-It includes social networking sites such as Facebook, Picasa, and YouTube are often considered as parts of cloud computing.

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- **Web-based e-mail**- services such as Gmail, Yahoo email, Hotmail etc.
- **Online backup** - Important information is stored in the cloud. Mozy and Dropbox are examples of cloud storage and online storage backup solutions that store information in the cloud.
- **Windows Azure** -It is a solution by Microsoft that allows companies to develop and run services from their cloud [8].
- **Amazon Web Services**- Amazon.com provides a variety of cloud computing services.
- **Dashlane** - Online password service to synchronize and manage passwords between all devices.
- **Google App Engine** - It provides users the ability to create scalable web services that use Google's resources.
- **Microsoft OneDrive**- It is also known as SkyDrive. OneDrive is an online storage service for Windows 8 and Windows 10 users to store Windows related files, Office documents and other files [9].

## V. CLOUD COMPUTING: ARCHITECTURE

The cloud computing architecture is divided into two parts:

- 1) *Front End-Client, mobile devices.*
- 2) *Back End-Server, storage [10].*

Each of the ends is connected through a network, usually Internet. Following fig.2 shows cloud computing architecture.

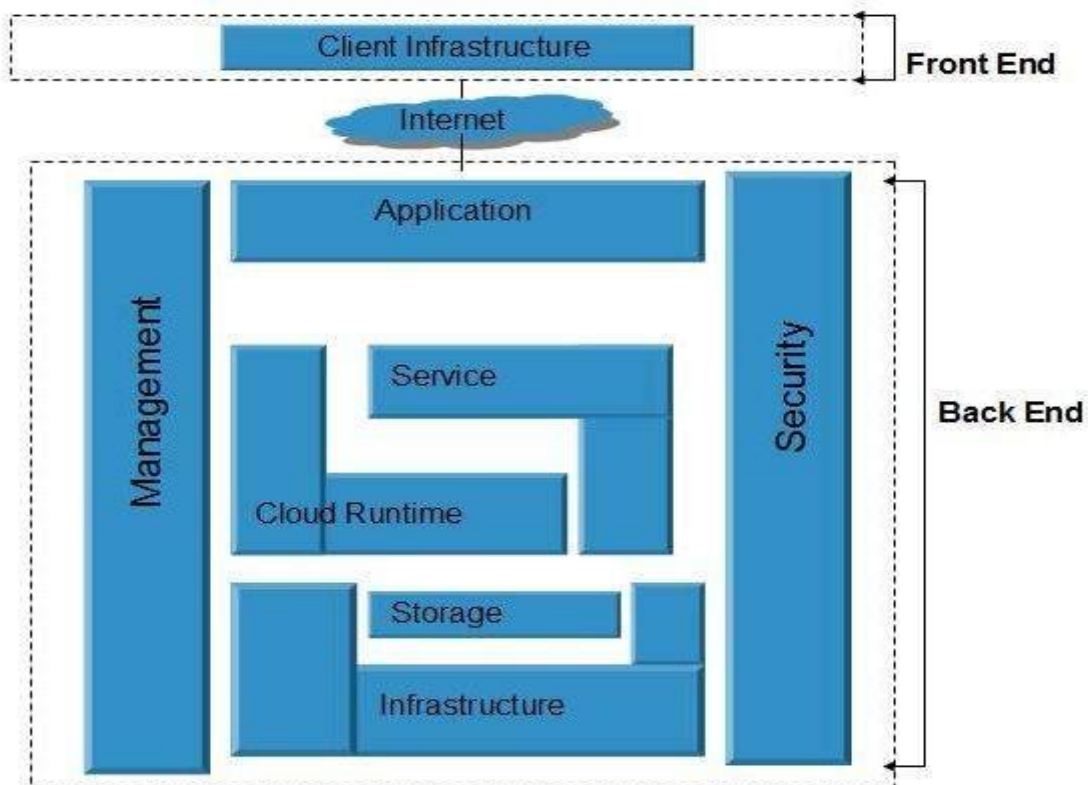


Fig.2. Cloud Architecture



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1) *Front End:*

- The Front End refers to the client part of cloud computing system.
- It consists of interfaces and applications which are required to access the cloud computing platforms.
- eg. - Web Browser.

2) *Back End:*

- The Back End refers to the cloud itself.
- It consists of all the resources required to provide cloud computing services.
- It comprises of huge data storage, virtual machines, security mechanism, services, deployment models, servers etc [11].
- It provides built-in security mechanism, traffic control and protocols.

I) *Cloud Infrastructure:*

It consists of management software, deployment software, network, servers, Cloud storage and hypervisor [12].

- **Management software:** It maintains and configures the infrastructure.
- **Hypervisor:** It allows physical resources to share among customers. It acts a Virtual Machine Manager.
- **Network:** It connects cloud services through internet.
- **Server:** Performs computation and provides services like resource allocation, deallocation and monitoring etc.
- **Storage:** It uses file distributed system.
- **Deployment Software:** It helps in deploying and integrating applications on the cloud.

II) *Cloud Storage:*

We can save data which is maintained by a third party. The storage devices are classified into:

- **Block Storage Devices:** Raw storage is offered to the clients and allows to create volumes using raw storage.
- **File Storage Devices:** In this storage is in the form of NAS (Network Attached Storage). Clients can save data in the form of files.

## VI. CONCLUSION

Cloud is becoming need in our day to day life. We are using cloud at each moment e.g. Uploading files, checking bank balance on phone, updating Facebook status, interacting with public using Twitter. Using cloud, we can store data and access data from anywhere. We can remotely wipe data from lost machines. IT infrastructure updates and maintenance are eliminated, as all resources are maintained by the service provider. Thus, Cloud computing increases efficiency, reliability and efficiency.

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