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Cloud Computing Review

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***Abstract* - Cloud computing is the delivery of hosted services through the internet. Cloud computing is the hosted on internet to remote server that are used to storing and accessing the data and programs. These tools and applications of resources include software, databases, data storage, networking and servers. There are three types of cloud computing services: Infrastructure-as-a-service, Platform-as-a-service and Software-as-a-service. The bandwidth consumed, transactions carried out, processing power, storage space occupied or data transferred are the efficiency of services to provide the resources. The major issues of security are to hamper the growth of cloud. The ARPANET and CSNET are the computing equipment to represent the network of cloud symbol.**

Keywords: Cloud computing, SaaS, PaaS, IaaS, cloud architecture.

I. INTRODUCTION

The cloud computing means storing and accessing the programs and data to the internet. Cloud computing is the web-based service. The internet for cloud is known as metaphor, the shared pool of computing resources such as networks, services, storage, servers and applications are the on demand access for the model of cloud computing [1]. It is very cost effective concept in cloud architecture; neither has to install nor to maintain the servers. Cloud has three working models are public cloud, private cloud and hybrid cloud. The features of cloud computing are:

- Resources Pooling
- On-Demand Self-Service
- Availability
- Automatic System
- Measured Service
- Security [2]

II. CLOUD COMPUTING

Cloud computing is the delivery of hosted services through the internet. It is a platform independent, no need to install in the local PC [3]. It refers to accessing, manipulating and configuring the applications online. The users can access the services accessible in a cloud having an internet connection [4]. Databases, software, networking, servers and data storage are the tools and applications of cloud computing. Cloud computing has both public and private. Public cloud services to provide the service over the internet for fee. Private cloud services to provide only service to the certain number of people.

III. SERVICE MODELS

Cloud computing is based on service models. These are categorized into three basic service models which are:

- Software-as-a-service (SaaS)
- Platform-as-a-service (PaaS)
- Infrastructure-as-a-service (IaaS)

Figure 1: Cloud computing service

3.1 Software-as-a-service (SaaS)

Cloud application services or software-as-a-service (SaaS) is the delivering services and applications over the internet. The cloud can provide the user with the access is already developer applications are running in the cloud. So the access is achieved by the cloud users and cloud clients do not manage the infrastructure [5]. The most of the SaaS applications are run directly from the web browser without any downloads or installations required [6]. It is the topmost layer of the complete application to give the service on demand. SaaS is also known as web-based software, on-demand software, or hosted software. It has two types of servers: The Domain Consistence Server (DCS) and Main Consistence Server (MCS) [3]. SaaS examples: Google Apps, SalesForce.com, Drop box.

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3.2 Platform-as-a-service (PaaS)

Cloud platform services or platform-as-a-service (PaaS) it provide the environment and platform to allow developers to build the services and applications. Platform-as-service (PaaS) is the middle layer, to pass the platform oriented services. It provides the host for software and hardware on its own infrastructure [7]. It is maintaining two ways such as private cloud service and public cloud service. The capability provided to the consumer is to deploy the acquired application are created or cloud infrastructure consumer are created. PaaS examples: Google App Engine, Force.com, Windows Azure.

3.3 Infrastructure-as-a-service (IaaS)

Cloud infrastructure services or Infrastructure-as-a-service (IaaS) it provides virtualized computing resources through the internet. IaaS is one of the main components of cloud computing along with the platform as a service (PaaS) and software as a service (SaaS). IaaS is more cost efficient and easier faster [7]. Infrastructure-as-service (IaaS) is the lowest layer to provide the basic infrastructure support service. IaaS is also called as Hardware as a service (HaaS). The hardware, servers, storage and network components or data center space and also include software to provide the IaaS. The virtual machines, virtual storage, physical machine are the fundamental resources access to provide the IaaS. IaaS examples: Amazon EC2.

IV. DEPLOYMENT MODEL

There are three fundamental deployment models of cloud computing:

- Private cloud
- Public cloud
- Hybrid cloud

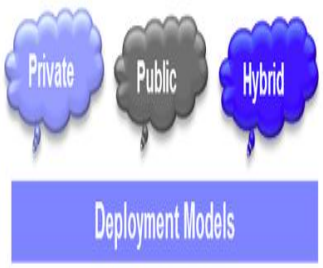

Figure 2: Types of clouds

4.1 Private cloud

Private cloud is also called as internal cloud. Services and systems are allowed to access the organization. Private cloud offers greater control over security. Private clouds are more expensive and secure than public clouds [1]. The private cloud services are provide to the user greater control of improving security and cloud infrastructure because user can access the networks are used in designated and restricted. The deployment for one particular organization in computing resources [8]. This is more useful for the intra-business interactions. Example for private cloud: Eucalyptus.

4.2 Public cloud

It is a most common and popular cloud system. The general public clouds are easily accessible in a public cloud to allow the services and systems. The public cloud services are delivered mostly on demand. Public cloud is also known as external cloud or multi-tenant cloud. The resources like applications and storage are accessible in a multiple consumers by service providers to a web service or web application through the internet. Amazon web and Google apps are the most well-known public cloud computing service [1]. Cloud is used for B2C (Business to Consumer) type interactions. Example for public cloud: Microsoft Azure, Google app engine.

4.3 Hybrid cloud

It is a mixture of private and public cloud. Hybrid cloud is to provide more secure application and data and allows to access information over the internet. B2B (Business to Business) or B2C (Business to Consumer) are the both type of interactions used in cloud. The private and public storage clouds are used to the combination of hybrid storage cloud [6]. The scalability, flexibility and security are the ideal for hybrid cloud. Example for hybrid cloud: Windows Azure.

TABLE 1
Comparison of cloud deployment model

Characteristic	Private	Public	Hybrid
Scalability	Limited	Very high	Very high
Reliability	High	Medium	Medium to high
Security	High security	Low security	Medium security
Performance	Very good	Low to medium	Good

V. CLOUD ARCHITECTURE

Cloud computing architecture refers to components and subcomponents required for cloud computing. It consists of two types front-end and back-end. Front end consist of client

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part cloud computing systems like thin clients, mobile devices and fat clients. Cloud computing platforms required to access the applications and interfaces to comprise it. Back end refers to the cloud.

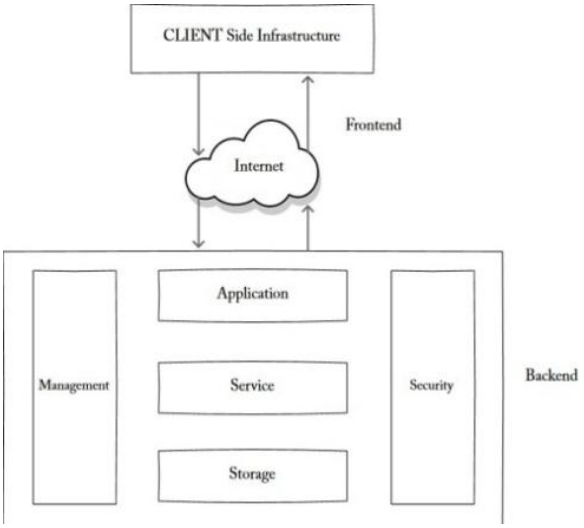

Figure 3: Cloud architecture

In cloud computing service are required to comprise the resources. It consists of security mechanism, data storage, virtual machines and servers. Each end is connected in a network, usually internet [4]. Cloud computing architecture has many loosely coupled cloud components. Applications, capabilities, database, software are the various components of cloud architecture. The user and cloud are the two cloud computing Services. To provide the service for user and the user sends the requests to the cloud [3].

VI. COMPONENTS OF CLOUD COMPUTING

There are three basic components of cloud computing:

- ***Data center:*** It is the combination of server.
- ***Client:*** The client computer are use to interact the cloud in end user.
- ***Distributed server:*** The servers are distributed with different places but they are working with each other [2].

VII. APPLICATIONS OF CLOUD COMPUTING

The applications of cloud computing are limitless. A cloud computing system could execute all the programs a normal computer could run.

- The data and applications are accessed by client in anywhere at any time. The cloud computing systems are accessed using any computer linked to the internet.
- It provides secure data storage center and dependable.
- It is easy to use but the user does not need high quality of equipment in cloud computing.
- It can realize the data sharing among different equipments.
- The cloud can provides nearly infinite possibility for the users can use the internet [9].

VIII. ADVANTAGES OF CLOUD COMPUTING

Cloud computing may be called as computing that is based on internet. The cloud computing advantages are:

- Cloud is a large resource pool that can buy on-demand service.
- It is highly cost effective because it operates at high efficiency. It requires an internet connection.
- Cloud computing offers online deployment and development tools, program runtime environment to the PaaS model.
- The cloud application are access or manipulate but does not required to install the software in cloud computing.
- It can reduce the run time and response time.
- Cloud computing can improved document format compatibility.
- It can reduce the software cost and improve the performance [10].

IX. DISADVANTAGES OF CLOUD COMPUTING

There are benefits from the Cloud computing usage but it is undeniable that this system also has some disadvantages:

- The constant internet connections are required.
- It does not work well with low-speed connections.
- The stored data can be lost.
- The stored data might not be secure.
- It can be slow.
- There are only limited features [7].

X. CONCLUSION

In this paper, I have discussed the basics of Cloud Computing, Service models, Applications of cloud, Advantages and Disadvantages of Computing. Besides of above topics are discussed some more topics Deployment models, Cloud Architecture, Components of cloud. Cloud Architecture, Deployment models of cloud is used to understand the working procedure of cloud and how the cloud is used to store, modify and retrieve the data. The application area of cloud computing will continuously increased. Today all small and big industries are using cloud computing.

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