A Survey on Cloud Computing

Shivam Shivhare[1], Anurag Upadhyay[2], Shwetav Sharad[3]

[1,2]Student, Department of Computer Science and Engineering, BBDIT College, Ghaziabad, India
[3]Professor, Department of Computer Science and Engineering, BBDIT College, Ghaziabad, India

Abstract: **Cloud computing is a well-known technology in the IT sector. Cloud computing opens the new gateway for the society of IT sector. Nowadays cloud computing is not limited to the IT sector it is used by everyone like military, government and social networking sites, etc. With the help of cloud computing, we can almost do everything from running application to storing the file or data online. The few things that make the cloud very impressive are - we can access it from anywhere at any time, like other storage media the cloud never cease. In this paper, we elaborate on cloud computing, deployment models and different services.**

Keywords: **Cloud computing, deployment models, Services.**

1. Introduction

Simply said cloud is the platform that provides the user to free from every breaker that they face at the time of developing the IT sector technology [1]. The cloud computing provides the networks, servers, storage, applications, and services on demand. The cloud technology solves the main problem of the organization of maintenance of the security and the storage of a large amount of the data. The cloud market is the most profitable market in the IT sector whose profit is growing day by day as the need of the cloud is increase day by day [2].
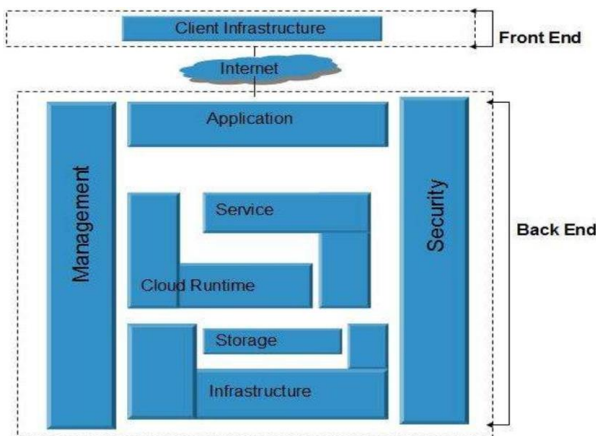
2. Architecture

Fig. 1. Architecture

The architecture of the cloud is basically divided into two part:

1) Front End: The front end refers to the client's computer (or computer network) and the application which we use to access the cloud computing system. All cloud computing systems don't have the same user interface like web-based e-mail programs leverage existing web browsers. Other systems have specific applications that provide network access to clients [3].

2) Back End: The back-end is the part of architecture which is used by the service provider. The back-end have a different type of servers, computers, data storage systems, virtual machines, and programs that together constitute the cloud of computing services. The back-end side is the main cause of providing security mechanisms, traffic control, and protocols that connect networked computers for communication [4].

Both parts of architecture are connected to the Internet. The given below diagram shows the graphical view of cloud computing architecture.

3. Deployment models

There is four type of deployment models are present in cloud computing. These different models have their specific and unique quality that make them different from each other. So, it totally depends upon the user how they want to use it in their work.

A. Public cloud

The public cloud is the basic deployment model of cloud computing. The Public cloud is available for all user which they can access by the internet browser. Some public cloud service is free of cost or for some offered on a pay-per-usage model are available to the user. Sometimes people miss understood the public cloud concepts. Let take the example of the google drive. Due to its first 15GB free storage user thinks it is a public cloud storage. But the google drive is the example of the hybrid cloud. The main examples of public clouds are - Amazon Elastic Compute Cloud (EC2), IBM's Blue Cloud, Sun Cloud, Google AppEngine, and Windows Azure Services Platform [5].

B. Private cloud

Private cloud is one of the types of deployment model and this cloud provide the privacy to their user. The private cloud overcomes all the disadvantages of the public cloud. The private cloud user has to pay for it. The user has not too worried about it privacy because of the third party or the service provider of the private cloud maintain the security. The private cloud is mainly used by independent companies who have a

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large amount of data to maintain and to protect. Thus this problem is easily solved by the private cloud [6].

C. Community cloud

The community cloud is the same as the private cloud. The private cloud is used by a single user and we can also say that it is used by individual organization. But the community cloud is used by the group of the individual organization. The cloud computing is the best or the first choice of companies nowadays. Approximate every big multination company have their own community cloud for their business purposes. To use the community, cloud the user must have to be a member of the community or have the permission from the community to use their cloud. The community cloud is also popular among the small organization. Because small organization make the group of the three or four organization and buy one community cloud and split the cost among them. This makes the community cloud cheaper for the small organization [7].

D. Hybrid cloud

The hybrid cloud structure is the combination of the infrastructures of private, community and public cloud. That makes the hybrid cloud unique and better than the other cloud. The combined property of the other cloud makes the hybrid cloud expensive [8]. According to the markets and markets report "the hybrid cloud market size is expected to grow from USD 38.27 billion in 2017 to USD 97.64 billion by 2023, at a compound annual growth rate of 17.0% during the forecast period". The hybrid cloud is frequently becoming a leading cloud solution for the user due to its dynamic, agility, mobility, and elasticity [22].

4. Service models

The service model of the cloud computing is mainly divided into three part:

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 software as a service, the users can use or operate the software directly from the cloud. The operator of SaaS will not have to worried about for installing the software in their system because the software installation and operation are the responsibility of the third party which providers it and already available by using IaaS and PaaS. [9]-[12]. The SaaS is the end-user application to use it the operator have to pay for it according to the service provider. This service is operated in "the cloud" and can be used in organizations and the single user can also use it. There are few examples of SaaS are: Dropbox, Salesforce, Cisco WebEx, Concur, GoToMeeting. [13]-[15], [20].

B. Platform as a Service (PaaS)

Platform as a Service is a type of cloud computing service

model that gives the power to the developers to build and use that application on the platform of the cloud. With the help of the web browsers, the operators can use the PaaS services by paying for it. In the PaaS model, the operators can also use the full-service which are provided by the IaaS service model. With the help of the PaaS, the user can be more creative. The user can develop the software according to their need and their requirement. The provider of the PaaS always updates the service according to the modern requirement of the user in the IT sector. The provider of the PaaS also manages and controls the infrastructure, network, servers, operating systems, and storage. The user has control over the deployed applications and configuration settings for the application hosting environment. The well-known example of PaaS is - AWS Elastic Beanstalk, Windows Azure, Heroku, Force.com, Google App Engine, Apache Stratos, OpenShift. [9], [11]-[13], [20], [21].

C. Infrastructure as a Service (IaaS)

The infrastructure as a service is one of the types of service models which we use in cloud computing. In this service model, cloud computing provides a virtualized computing resource environment to the user to run their software. Due to the IaaS, the user has not to spend money on the different hardware to run their software and the system failure is also decrease [16]-[18], [9], and [10]. The IaaS customers access resources and services through a wide area network (WAN), such as the internet, and can use the cloud provider's services to install the remaining elements of an application stack. One of the greatest benefits of IaaS is that IaaS providers generally have the latest, powerful storage, servers and networking technology to complete the needs of their operator. The well-known example of IaaS is - DigitalOcean, Linode, Rackspace, Amazon Web Services (AWS), Cisco Metapod, Microsoft Azure, Google Compute Engine (GCE). [19], [20].

5. Conclusion

In this paper, we discuss the different type of services which are provided by cloud computing and we also learn about the deployment model of cloud computing. The cloud computing is the fast-growing market in the industrial technology sector. In today world each will educate person know about cloud computing and how it works. But they don't know its full potential and it's limited.

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