A Review Paper on Cloud Computing

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Abstract: **Cloud computing is used by a large number of organizations now a days. It is as the biggest development of the decade in computing. This paper introduces review on cloud computing in detail.**

I. INTRODUCTION

Cloud computing is used to send an email using Gmail, Yahoo mail and Hotmail etc. now a days, we are using the email software on the computer infrastructure provided by Google, Yahoo, or Microsoft. These are 'free' cloud software services. But, the question arises first that "what is cloud computing?" the term cloud computing is universally used in this world now a days and moreover computing is becoming popular like c and c++.

Cloud computing reduces the cost with the help of services provided by cloud computing and IT companies prefer cloud computing because it is easy to use and maintenance of cloud computing applications is much easy then before. According to national Institute of standards and technology (NIST), "cloud computing unable convenient, own depend basis network access shared pool with configurable computing resources like services, storage, network and services that are rapidly located or relocated with interaction service provider and management effect".
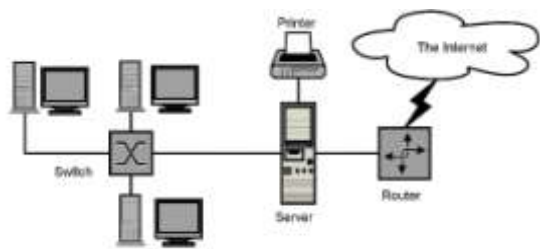

Fig 1. How cloud computing works

II. WHAT IS CLOUD COMPUTING?

Cloud computing is a method that is used in information technology (IT) which service resources are recover from the Internet through web based applications, as it connects directly to the server rather than keeping files in hard drives or local storage devices and cloud storage makes it possible to save them to a faraway or distant database.

Examples:

- A customer can avail any contracted computing resource such as processing power, storage space, or application programs from a service provider without human interaction.
- The computing resources can be accessed anywhere, anytime with any standard device which can access the web.
- The computing resources of a provider are pooled to provide the contracted service. The pooled resources may be geo graphically distributed across multiple data centres. The computing resources of a provider are shared by several customers. There sources are dynamically assigned to customers depending on the demand. Usually a customer has no knowledge of the location of there sources which may be any where in the world.
- Computing resources may be availed lastically by customers. A customer may request more resources when needed and release them when not required. From a customer's point of view the resources are unlimited. The customer pays only for the total resources used.
- Cloud computing systems are adaptive systems. They automatically balance loads and optimize the use of resources. A user is permitted to monitor and control resource usage there by providing transparency in bills.[1]

III. TYPES OF CLOUD COMPUTING

Fig 2. Types of cloud computing

3.1. Private Cloud:

The computing infrastructure is available for the exclusive use of a single organization. It may be a physically distributed set of interconnected computing systems belonging to the organization accessible to its members from anywhere.[1]Examples: HPE, IBM, Microsoft, Red Hat, OpenStack.

3.2. Public Cloud:

The computing infrastructure maintained by a provider is available to anyone. It is located usually in the provider's premises and controlled by the provider. As a consequence the infrastructure is shared simultaneously by many customers. [1]Examples: Google, Amazon.

3.3. Hybrid Cloud:

The computing infrastructure is a combination of two or more distinct entities, namely, private cloud, public cloud or community cloud. Each entity remains distinct but they are bound together by standardized protocols that permit data and application portability.[1] Examples: Google cloud platform, AWS, Microsoft Azure.
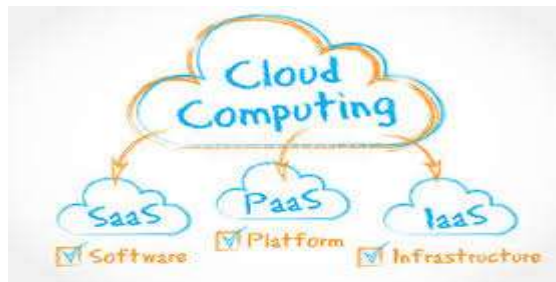
IV. SERVICE MODEL

Fig 3. Services of cloud computing

4.1. Infrastructure as a services (Iaas):

A model in which a third-party provider hosts servers, storage and other virtualized compute resources and makes them available to customers over the internet. Example: AWS, Microsoft Azure and Google Compute Engine.

4.2. Platform as a service (Paas):

A model in which a third-party provider hosts application development platforms and tools on its own infrastructure and makes them available to customers over the internet. Example: AWS Elastic Bean.

4.3. Software as a service (Saas):

A software distribution model in which a third-party provider hosts application and makes them available to customers over the internet. Example: Saleforce, netsuite and concur.

V. CHARACTERISTICS OF CLOUD COMPUTING

The characteristics of cloud computing are given below:

- **Agility**: The cloud works in the distributed computing environment. It shares resources among users and works very fast.
- **High availability and reliability**: Availability of servers is high and more reliable, because chances of infrastructure failure are minimal.
- **High Scalability:** Means "on-demand" provisioning of resources on a large scale, without having engineers for peak loads.

- **Multi-Sharing**: With the help of cloud computing, multiple users and applications can work more efficiently with cost reductions by sharing common infrastructure.
- **Device and Location Independence**: Cloud computing enables the users to access systems using a web browser regardless of their location or what device they use e.g. PC, mobile phone etc. As infrastructure is off-site and accessed via the Internet, users can connect from anywhere.
- **Maintenance:** Maintenance of cloud computing applications is easier, since they do not need to be installed on each user's computer and can be accessed from different places.
- **Low Cost:** cloud computing reduces the cost because the services of cloud computing that theIT companies need not to set its own infrastructure and pay-as-per usage of resources.
- **Services in pay-per-use mode:** Application Programming Interfaces (APIs) are provided to the users so that they can access services on the cloud by using these APIs and pay the charges as per the usage of services.

VI. WHERE CLOUD COMPUTING IS COMMONLY USED AND WHEN IT WAS STARTED?

Amazon in August 2006. (Elastic Compute Cloud (EC2))

Google in April 2008. (Google App Engine)

NASA in early 2008. (RESERVOIR European Commission-funded project)

Microsoft in February 2010. (Microsoft Azure)

Rackspace Hosting and NASA in July 2010. (OpenStack)

March 1, 2011, IBM announced the IBM SmartCloud framework to support Smarter Planet.

VII. ADVANTAGES

The rise of cloud software has preferred by companies from all sectors with lots of benefits, including the ability of software to use from any other device such as native app or a browser. As a result, users have acapability to take over their files and settings to another devices in a proper manner. Reduction in the cost of companies as they don't need to invest in large infrastructure. As it is available to host the software systems. Elastic and scalable computing infrastructure available on demand so that an organization can request more computing power and when they needed with the vision of multiple availability of processor power and storage. This means that it would be a great advantage for start up companies which don't have much money to invest. So, their business expands and they get the computing power from a provider and they have to pay only for what they use. A cloud service may be designed as self-healing because when the server on which an application is running fails, the

system automatically shifts the application to another server. This is possible in a cloud provider's infrastructure because the availability of hardware is infinite and the system is elastic. Companies can used cloud infrastructure as automatic backup their important data. This will allow quick recovery if data is to suborn. Companies scan the data which requires periodically for legal purposes of cloud computing. Disaster can be easy recovered if crucial applications are running simultaneously on the infrastructure of cloud provider which is located in different geographical areas. Cloud computing reduces the cost with the help of services provided by cloud computing and IT companies prefer cloud computing because it is easy to use and maintenance of cloud computing applications is much easy then before. Cloud has a capability to store a huge amount of data i.e., 2000 GB or more than that if it requires.

VIII. DISADVANTAGES

Standard languages are generally used to implement the platform services which may vary. For example, files or queue in which one platform may differ from another as it makes difficult to transfer workloads from one platform to another. The Paas applications are the event position in which resource presents the control on the applications, i.e., they have to answer the request which is given in interval of time. Since the Paas applications are dependent on network and its applications must used for cryptography and manage the security submission. According to Bruce Schneier, "The downside is that you will have limited customization options. Cloud computing is cheaper because of economics of scale, and — like any outsourced task — you tend to get what you get. A restaurant with a limited menu is cheaper than a personal chef who can cook anything you want. Fewer options at a much cheaper price: it's a feature, not a bug."

IX. CONCLUSION

Cloud computing will be used for long run. It has a bright future. Cloud computing is used by a large number of organizations now a days. For example: Every sector such business sector, educational sector and IT sector etc. all are enhancing every day. If this technology is to be used widely then the four major concerns which organizations have about shifting their applications to the cloud such as:

- Confused about the security of their programs and data if it is obtained to a cloud provider.
- Difficulty of shifting their applications from a provider if the qualityofitsservice gets worse ortheprovider finish the operation.
- Failure of communication to the cloud or failure of computing servers or storage maintained by a cloud seller.
- The distribution of the computers across national boundaries of multinational cloud providers which may lead to uncontrollable legal problems.
  Thus, in this paper I explained the cloud computing in detail.

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