Available Online at www.ijcsmc.com/journal

International Journal of Computer Science and Mobile Computing

A Monthly Journal of Computer Science and Information Technology

ISSN 2320–088X
IMPACT FACTOR: 7.056

IJCSMC, Vol. 11, Issue. 6, June 2022, pg.212 – 223

Cloud Computing - Data Center - Access from Anywhere

Vivek Shokeen
Student, M.Tech, Ganga Technical Campus, Soldha, Bahadurgarh
Department of Computer Science and Engineering
shokeenvivek55@gmail.com

Lalit Malik
Assistant Professor, Ganga Technical Campus, Soldha, Bahadurgarh
Department of Computer Science and Engineering
Malik.kabir22@gmail.com

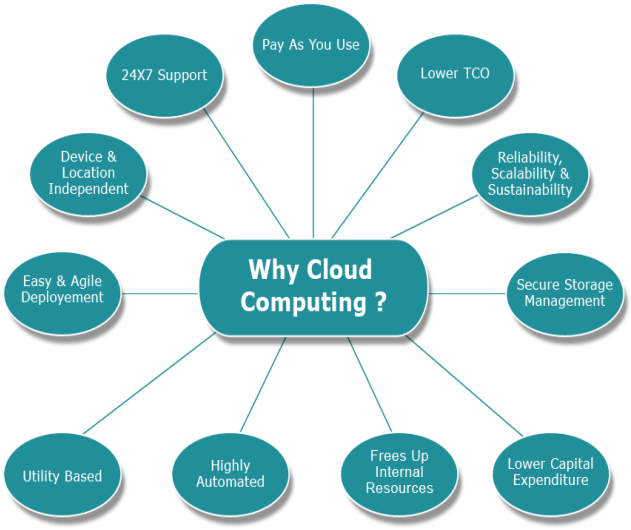
DOI: https://doi.org/10.47760/ijcsmc.2022.v11i06.015

Abstract:
Now days we are attached with our electronic gadgets either offline or online in such a way as we breathe, as without breathing we can't alive, same like these electronics have become a vital part of our daily life. As of now by growing demand of these gadgets either in office work, or in research work or in various technical fields. As the use of computers increases as in day in and day out, the relevant resources that we need also go up. For companies like Oracle, IBM and Microsoft, utilizing the resources and establishing a huge infrastructure or network is not a big issue for these big giants. But for the new startup and small enterprises But when it comes to smaller enterprises, expensiveness becomes a huge factor. At the user or developer end we are facing a lot of issues like hardware disruption, various bugs in software, network errors. So this was such a big hassle for the large community of computer science in all over the world. Cloud Computing offers a quick fix to this situation. This technology has been completely transformed the way in which computing is moved up from PCs and as well as for the single user to enterprise via various servers to a 'cloud' of computers e.g: web servers, application servers, database servers and so on. A cloud is a virtualized server grid which can provide the different computing resources through IAAS (Infrastructure as a service),PAAS(platform as a service),SAAS(Software as a service) of their clients. The underlying details of how it is implemented which is not direct to end user. The data and the services provided reside in extensively scalable data centers so anyone can use or access it from any part of the globe. Various big giants like Google, Microsoft, Yahoo, IBM and Amazon have started providing cloud computing services from the individual user either paid or free upto some extent or to other small enterprises, big businesses through various models like B2B,B2C,C2C etc. Amazon, salesforce is the trailblazer in the field of cloud computing. Every big and small enterprise, companies which are doing their businesses online using cloud services for the storing information so that later on they will extract some meaning full insights for the growth of businesses. Cloud Computing is finding use in various areas like web hosting, parallel batch processing, graphics rendering, financial modeling, web crawling, genomics analysis, etc.

KEYWORDS: Cloud computing, virtualized, Storage

INTRODUCTION:

Cloud computing is a springing Information Technology that changes the way IT works. Designing the new motive of business computing, by providing the various services supported by data centers that usually employ Virtual Machine (VM) technologies e.g: company supported such kind of service is very known named VMware.



With the development of the net and Web and the era of globalization, it is essential for masses to deal with different languages with various geo-graphic locations. These information resources with a variety of different languages are distributed in Web pages and the databases. Cloud computing utilizes large-scale virtualized data centers to manage such large volume of resources.

Cloud computing shares characteristics with:

- Client–server model—Client–server computing implies to any dispersed/distributed application that differentiates between service providers (servers) and service requestors (clients).
- Grid computing—A form of distributed and parallel computing, whereby a 'super and virtual computer' is composed of a cluster of networked, loosely couple computers acting in concert to perform very large tasks.
- Fog computing—Amazon is doing great in this scenario by using technology named edge computing by Distributed computing paradigm in which user take the services only by end application as the backend data, computation, storage is on abstract level but very close to end user so in the near future at the time of need, they will be getting fast service through nearby network facilities known as edge devices or network routers.
- Utility computing—As the power supply in many home appliances such as traditional utility of common man same like computer resources, database storage and other useful resources user can find from client side and communicate with server with ease at any

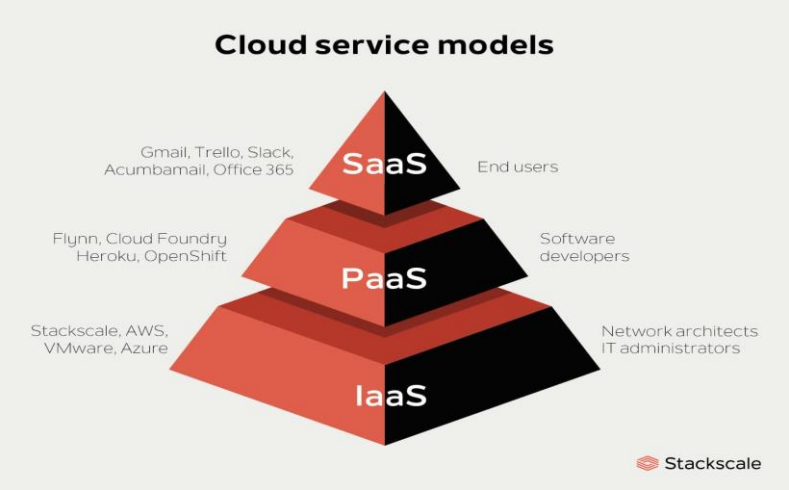
time to take the services without creating or installing any private cloud or network infrastructure.

- Peer-to-peer—A distributed architecture without the need for central coordination. Participants are both suppliers and consumers of resources (in contrast to the traditional client-server model).

Types of Cloud Services:

Apart from traditional services Cloud network from various companies has three unique traits that metamorphose it from traditional hosting. By the nature it is very dynamic typically by the user requirements even for minute or the hour; with flexibility -- a user can have as much or as little of a service as they want at any given time;

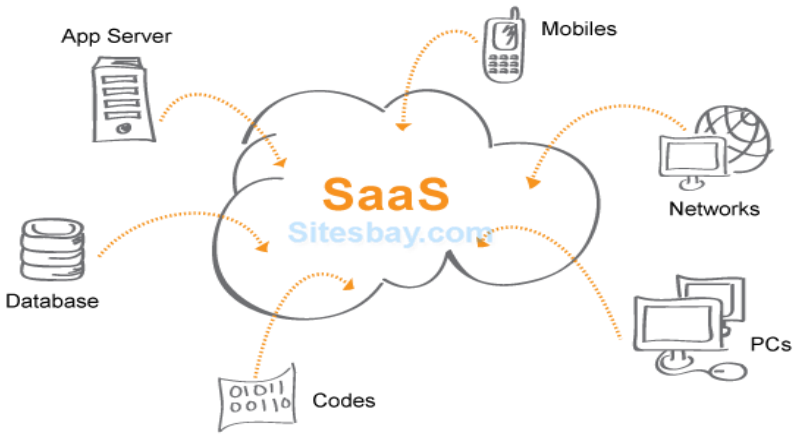
Users need not to be bothered about infra only they need connecting gadgets like laptop or PC with internet access. Noteworthy transformations in virtualization and distributed computing, as well as ameliorated access to high- speed Internet.



Source: www.stackscale.com

Software as a Service (SaaS)

These kinds of services are providing by google, Microsoft, salesforce.com, workday Inc. and many more. By using web or internet an individual as well as businesses uses these services according to their requirements only by interface of their software or application and their devices with the help of browsers, so middleware mechanism is totally abstract from end user/client. It's dedicated to client; an example to this kind of services may be Google drive, Gmail etc.



Source: www.sitesbay.com

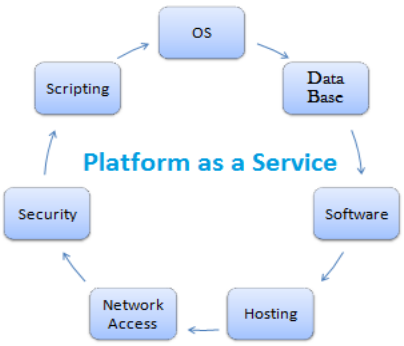
Platform as a Service (PaaS):

As the name suggest, these services are providing the platform as necessity either hardware or software with all solution at user end. It includes the following:

1. Design part.
2. Implementation & Testing
3. Deployment
4. Integrity with databases

There are three characteristic points in this service:

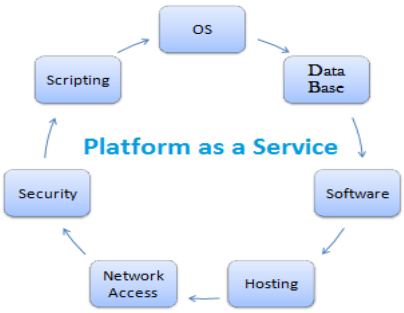
- Reliability & Scalability
- Adaptability.
- Categorization.



Source: www.sitesbay.com

Infrastructure as a Service (IaaS):

These services are providing complete setup as a data centers by giving server access without installing or buying the devices as its own, so all connections, hardware as well as software and various kinds of resources provided by service companies as an infrastructure with in the same premises.



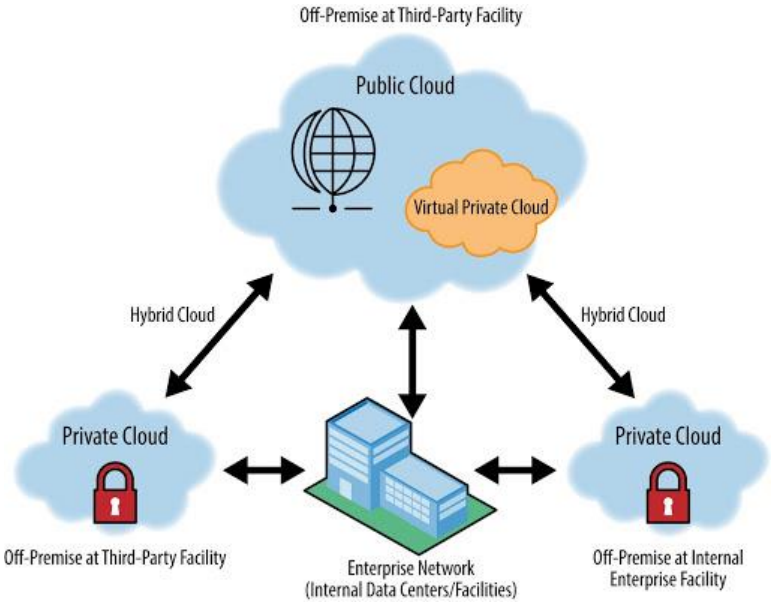
Source: www.sitesbay.com

Types of Cloud:

A cloud can be private or public. A public cloud sells services to anyone on the Internet. (Currently, Amazon Web Services is the largest public cloud provider.) A Private Cloud is a proprietary network or a data center that supplies hosted services to a limited number of people.

Virtual Cloud: When an Internet service provider uses public cloud resources to create their private cloud, the result is called a virtual private cloud. The main aim of Private or public cloud is the service which is reliable and scalable to end users with all kind of resources and ICT services.

Infrastructure-as-a-Service like Amazon Web Services provides virtual server instance to start, stop, access and configure their virtual servers and storage. In the enterprise, cloud computing allows a company to pay for only as much capacity as is needed, and bring more online as soon as required. Because this pay-for-what-you- use model resembles the way electricity, fuel and water are consumed, it's sometimes referred to as utility computing.



Source: www.BTCnetwork.com

I. CHARACTERISTICS OF CLOUD COMPUTING

1. **Self Healing**: Any application or any service running in a cloud computing environment has the property of self healing. In case of failure of the application, there is always a hot backup of the application ready to take over without disruption. There are multiple copies of the same application - each copy updating itself regularly so that at times of failure there is at least one copy of the application which can take over without even the slightest change in its running state.

2. **Multi-tenancy** With cloud computing, any application supports multi-tenancy - that is multiple tenants at the same instant of time. The system allows several customers to share the infrastructure allotted to them without any of them being aware of the sharing. This is done by virtualizing the servers on the available machine pool and then allotting the servers to multiple users. This is done in such a way that the privacy of the users or the security of their data is not compromised.

3. **Linearly Scalable** Cloud computing services are linearly scalable. The system is able to break down the workloads into pieces and service it across the infrastructure. An exact idea of linear scalability can be obtained from the fact that if one server is able to process say 1000 transactions per second, then two servers can process 2000 transactions per second.

4. **Virtualized** The applications in cloud computing are fully decoupled from the underlying hardware. The cloud computing environment is a fully virtualized environment.

5. **Flexible** Another feature of the cloud computing services is that they are flexible. They can be used to serve a large variety of workload types - varying from small loads of a small consumer application to very heavy loads of a commercial application.

II. TYPES OF CLOUD

Cloud can be of three types

3. 1. Private Cloud – This type of cloud is maintained within an organization and used solely for their internal purpose. So the utility model is not a big term in this scenario. Many companies are moving towards this setting and experts consider this is the 1st step for an organization to move into cloud. Security, network bandwidth are not critical issues for private cloud.

3.2. Public Cloud – In this type an organization rents cloud services from cloud providers on- demand basis. Services provided to the users using utility computing model.

3.3. Hybrid Cloud – This type of cloud is composed of multiple internal or external cloud. This is the scenario when an organization moves to public cloud computing domain from its internal private cloud.

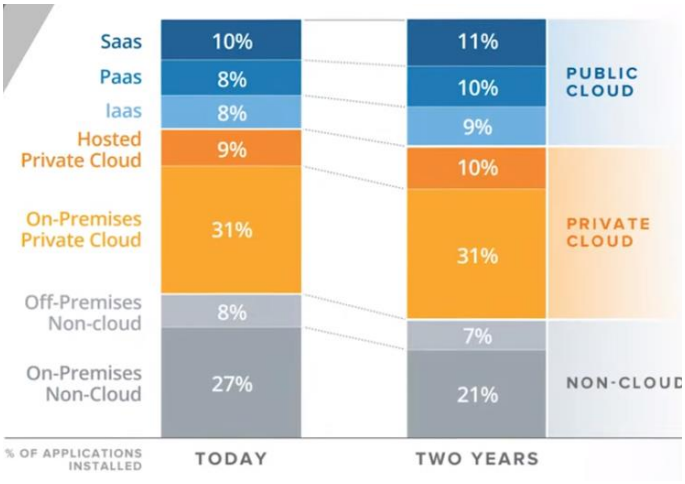
3.4 Radioactive power sources: Radioactive materials contain to a great degree high vitality densities. Likewise with hydrocarbon powers, this vitality has been utilized on a substantially bigger scale for quite a long time. Be that as it may, it has not been misused on a little scale as would be important to control remote sensor systems. The utilization of radioactive materials can represent a genuine wellbeing peril, and is a very political and questionable subject. It should, along these lines, be noticed that the objective here is neither to advance nor dishearten examination concerning radioactive power sources, yet to exhibittheir potential, and the exploration being done in the region.

CONCLUSION AND FUTURE SCOPE

- Virtualization in combination with utility computing model Cloud computing helped a lot in the IT industry and as well as in social perspective
- Now a day, most of the companies is all in for cloud infrastructure and out of all the various types of cloud infra, public cloud is the only way to put the things in a right way by accomplishing the survival of every storage on network.
- According to **Tech Enthusiast,** almost all daily routines work in various organizations has been already transferred to cloud infrastructure like email, file storage on google drive, Microsoft 360 etc. But according to IDC, more than **80%** of companies' business applications still remain on premise, and only **18%** use cloud for running their businesses. Later on companies will have been started to offer public cloud experience on premise
- According to Gartner, by 2025, Cloud Computing will be pervasive. Cloud will drive not only technological innovation, but also serve as the foundation for business innovation. This complimentary webinar will help IT and business leaders develop cloud strategies while mapping out cloud's evolutionary course for executive leaders, peers and teams.
- According to **future tech trends** by Bernard Marr, Net zero carbon emission through reducing the small infrastructures and a huge amount of carbon emission would be reduced by putting these all in a single data centers and providing hardware as well as software services all around the world.
- Most of the tech giants will spend **2022** implementing measures and innovations aimed at

helping them achieve their net zero carbon aspirations by reducing the effect of global warming as well.

- Amazon has become the biggest buyer of renewable energy and has also more than **200** of its own sustainable energy projects worldwide generating **8.5** gigawatts per year, new products like eco and firetv in the field of multimedia, digital media and entertainment industry by reducing the overall energy downstream to transform the energy in the useful form.



REFERENCES

[1] https://www.zdnet.com/article/what-is- cloud-computing-everything-you-need-to- know-about-the-cloud

[2] https://azure.microsoft.com/en- in/overview/what-is-cloud-computing.

[3] Https://searchcloudcomputing.techtarget.co m/definition/cloud-computing

[4] https://en.wikipedia.org/wiki/Cloud_compu ting

[5] https://www.geeksforgeeks.org/architecture of-cloud-computing/

[6] http://www.kurzweilai.net/memorandum-for-members-and-affiliates-of-the-intergalactic-computer-network

[7] http://www.computerweekly.com/Articles/2009/06/10/235429/A-history- of-cloud-computing.htm

[8] http://www.servermotion.com/blog/2010/07/history-of-cloud-computing-yesterday-today-and-tomorrow

[9] Above the Clouds: A Berkley View of Cloud Computing

[10] https://www.gartner.com/en/doc/750789-infographic-understanding-edge-computing

[11] https://azure.microsoft.com/en-in/resources/cloud-computing-dictionary/

[12] https://en.wikipedia.org/wiki/Cloud_computing

[13] https://www.techtarget.com/searchcloudcomputing/definition/cloud-computing

[14] https://www.ibm.com/cloud/learn/cloud-computing

[15] https://www.salesforce.com/in/learning-centre/tech/cloudcomputing/

