



Survey on cloud computing technology, application, usage and its stack terminology

Santvana Singh¹, Sarla Singh², Sumit Dubey³

¹Student (M.Tech. EC), ²Head of Department, ³Assistant Professor

^{1,2,3}Department of Electronics and Communication Engineering,
Jawahar Lal Nehru College of Technology Rewa, Madhya Pradesh, INDIA.

Abstract: In this paper we will discuss about cloud computing technology, cloud applications, its usage and about its stack terminology. This paper is basically a brief introduction to cloud computing technology and what are the cloud stack and their facilities, why cloud computing is more secure than a normal network why should we use cloud, and how to use cloud computing technology. This paper is a literature survey of cloud computing technology.

I. Introduction

Cloud refers to a distinct IT environment that is designed for the purpose of remotely provisioning scalable and measured IT resources. The term originated as a metaphor for the Internet which is, in essence, a network of networks providing remote access to a set of decentralized IT resources. Prior to cloud computing becoming its own formalized IT industry segment, the symbol of a cloud was commonly used to represent the Internet in a variety of specifications and mainstream documentation of Web-based architectures. This same symbol is now used to specifically represent the boundary of a cloud environment, as shown in Figure 1.0.

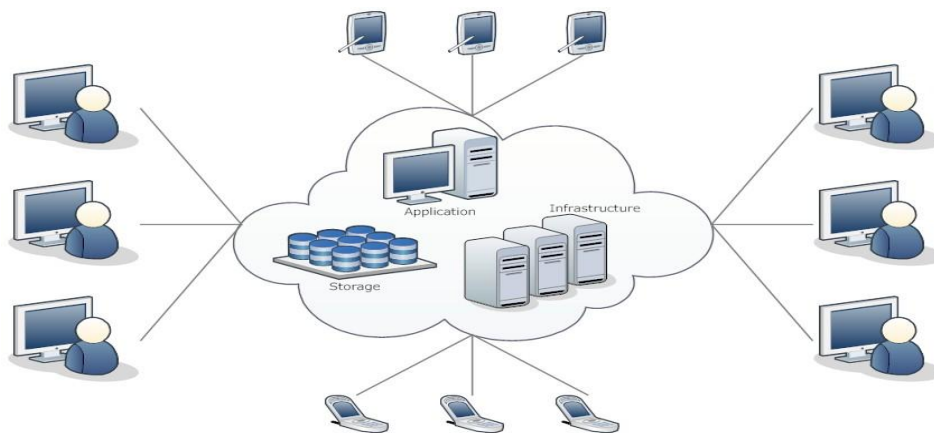


Fig 1.0 Cloud computing architecture

It is important to distinguish the term "cloud" and the cloud symbol from the Internet. As a specific environment used to remotely provision IT resources, a cloud has a finite boundary. There are many individual clouds that are accessible via the Internet. Whereas the Internet provides open access to many Web-based IT resources, a cloud is typically privately owned and offers access to IT resources that is metered.

Much of the Internet is dedicated to the access of content-based IT resources published via the World Wide Web. IT resources provided by cloud environments, on the other hand, are dedicated to supplying back-end processing capabilities and user-based access to these capabilities. Another key distinction is that it is not necessary for clouds to be Web-based even if they are commonly based on Internet protocols and technologies. Protocols refer to standards and methods that allow computers to communicate with each other in a pre-defined and structured manner. A cloud can be based on the use of any protocols that allow for the remote access to its IT resources.

Cloud Computing Stack: The main services (Stack) of cloud computing technologies are following:

- SaaS applications are designed for end-users, delivered over the web.

- PaaS is the set of tools and services designed to make coding and deploying those applications quick and efficient.
- IaaS is the hardware and software that powers it all – servers, storage, networks, operating systems. Stack of cloud computing is shown in Fig.1.1.

Cloud-based applications—or software as a service (SaaS)—run on distant computers “in the cloud” that are owned and operated by others and that connect to users’ computers via the Internet and, usually, a web browser.

Platform as a service provides a cloud-based environment with everything required to support the complete life cycle of building and delivering web-based (cloud) applications—without the cost and complexity of buying and managing the underlying hardware, software, provisioning and hosting. Infrastructure as a service provides companies with computing resources including servers, networking, storage, and data centre space on a pay-per-use basis.

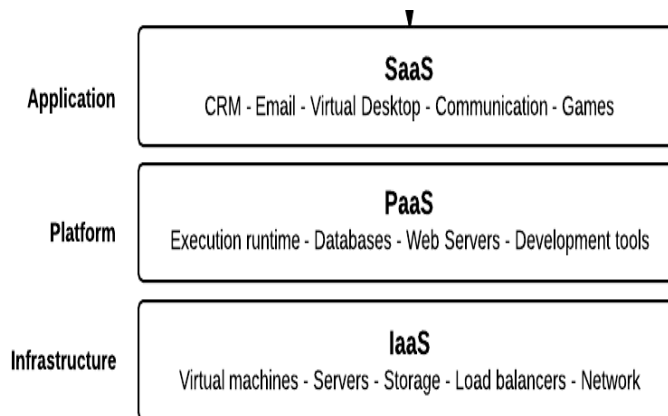


Fig 1.1 Cloud stack

II. Cloud Applications

On-demand self-service: A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

Broad network access: Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).

Resource pooling: The provider’s computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.

Rapid elasticity: Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.

Measured service: Cloud systems automatically control and optimize resource use by leveraging a metering capability¹ at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

III. Disadvantages of Cloud Computing

In spite of its many benefits, as mentioned above, cloud computing also has its disadvantages. Businesses, especially smaller ones, need to be aware of these cons before going in for this technology.

Technical Issues: Though it is true that information and data on the cloud can be accessed anytime and from anywhere at all, there are times when this system can have some serious dysfunction. You should be aware of the fact that this technology is always prone to outages and other technical issues. Even the best cloud service providers run into this kind of trouble, in spite of keeping up high standards of maintenance. Besides, you will need a very good Internet connection to be logged onto the server at all times. You will invariably be stuck in case of network and connectivity problems.

Security in the Cloud: The other major issue while in the cloud is that of security issues. Before adopting this technology, you should know that you will be surrendering all your company’s sensitive information to a third-party cloud service provider. This could potentially put your company to great risk. Hence, you need to make absolutely sure that you choose the most reliable service provider, who will keep your information totally secure.

IV. Conclusion

cloud computing is very new, advanced and flexible technology which has a stack concept of three common services, SaaS, PaaS, IaaS and all these three services provide software, platform, environment and virtualization services.

References

- 1) <http://mobiledevices.about.com/od/additionalresources/a/Cloud-Computing-Is-It-Really-All-That-Beneficial.htm>.
- 2) http://www.rackspace.com/knowledge_center/whitepaper/understanding-the-cloud-computing-stack-saas-paas-iaas
- 3) http://whatiscloud.com/basic_concepts_and_terminology/cloud.