

AN EFFICIENT STUDY OF CLOUD ENVIRONMENT ARCHITECTURE

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Abstract - Cloud computing is a vast developing and admirable auspicious technology and providing delivery of different servicing technologies like server, storage, database, networking etc.. Cloud computing is basically an Internet-based computing services like shared information, resources, and software, are provided to terminals and portable devices, services are also provided on-demand basis. Cloud computing is the mixture of grid computing, distributed computing, parallel computing, and ubiquitous computing etc. Cloud computing provides lot of different deployment models like SaaS (Software as a Service), PaaS (Platform as a Service), IaaS (Infrastructure as a Service), HaaS (Hardware as a Service) to distribute the powerful computing capacity to end-users. This paper describes about the history of cloud computing, cloud architecture and various types of services that are provided by the cloud etc.

Key Words: Cloud Computing, Software as a Service, Platform as a Service, IaaS, HaaS

1. INTRODUCTION

Cloud computing consists of three distinct sorts of computing services delivered remotely to clients via the web. Clients typically pay a monthly or annual service fee to providers, to gain access to systems that supply software as a service, platforms as a service and infrastructure as a service to subscribers. Clients who subscribe cloud computing services can reap a spread of advantages, counting on their particular business needs at a given point in time. The days of huge capital investments in software and IT infrastructure are now a thing of the past for any enterprise that chooses to adopt the cloud computing model for procurement of IT services. The skill to access

powerful IT resources on an incremental basis is smoothing the playing field for little and medium sized organizations, providing them with the required tools and technology to compete within the global marketplace, without the previously requisite investment in on premise IT resources. Clients who subscribe computing services delivered via the “cloud” are ready to greatly reduce the IT service expenditures for his or her organizations; and gain access to more agile and springy enterprise level computing services, in the process.

2. HISTORY OF CLOUD COMPUTING

Cloud computing as a term has been around since the first 2000s, but the concept of computing-as-a service has been around for much, for much longer as far back because the 1960s, when computer bureaus would allow companies to rent time on a mainframe, instead of need to buy one themselves.

These ‘time sharing’ services were largely overtaken by the increase of the PC which made owning a computer far more affordable, then successively by the increase of corporate data centers where companies would store vast amounts of knowledge .

But the concept of renting access to computing power has resurfaced again and again – within the application service providers, utility

computing, and grid computing of the late 1990s and early 2000s. this was followed by cloud computing, which really took hold with the emergence of software as a service and hyperscale cloud computing providers like Amazon Web Services.

3. CLOUD COMPUTING BUILDING BLOCKS

3.1. DEPLOYMENT MODELS

In cloud deployment model various services like networking, platform, storage, and software infrastructure are provided as a service that scale up or down depending on the demand as depicted in figure 1. In cloud computing deployment model fall on following categories.

3.1.1. Private Cloud:

Private cloud is the one that some vendors offering services to emulate cloud computing on private networks and it is set up within an organization's internal enterprise datacenter. In the private cloud, cloud vendor providing scalable resources and virtual applications are pooled together and available for cloud users to share and utilize. In this type of cloud services all the cloud resources and applications are managed by the organization itself, similar to Intranet functionality. Deployment and utilization of private cloud can be much more secure than that of the public cloud because of its specified internal exposure. Only the organization and designated stakeholders may have access to operate on a specific Private cloud [7]. One of the best examples of a private cloud is Eucalyptus Systems [8].

3.1.2 Public Cloud:

In cloud computing Public cloud describes traditional mainstream sense, whereby resources are dynamically provisioned on a fine-grained, self-service basis over the web, via web applications/web services, from an off-site third-party service provider who shares resources and bills based on on-demand utility computing basis. It is typically supported a pay-per-use model, almost like a prepaid electricity metering system which is flexible enough to cater for spikes in demand for cloud optimization [9]. Basically Public clouds are less secure than the private cloud models because it places a further burden of ensuring all service applications and data accessed on the general public cloud aren't subjected to malicious attacks. Following are the few examples of a public cloud computing services include Microsoft Azure, Google App Engine.

3.1.3 Hybrid Cloud:

In cloud computing Hybrid cloud is a private cloud linked to one or more external cloud services, centrally managed, provisioned as a single unit, and circumscribed by a secure network [10]. Cloud provides virtual IT solutions through a mixture of both public and private clouds. Hybrid Cloud provides more secure control to data and applications and it allows various cloud parities to access data and information over the internet and it also has an open architecture framework that allows interfaces to other management systems. Hybrid cloud describes configurations and combining virtual physical, collocated assets -

for example, cloud environment is an umbrella of virtualization and it mostly virtualized environment that requires hardware, physical servers, routers other hardware devices and network appliance acting as a firewall or spam filter. Amazon Web Services (AWS) is an example of Hybrid Cloud.

3.1.4 Community Cloud:

In Cloud computing community cloud describes that the common Infrastructure shared by multiple organizations shared cause and may be managed by them or a third party service provider and rarely offered cloud model. These cloud services are basically an agreement between related business organizations such as banking or educational organizations. This kind of cloud environment operates now be delivered via the cloud.

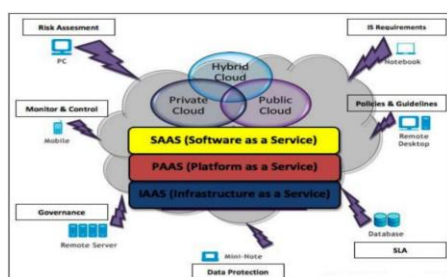


Figure -1. Cloud Deployment Model

4. TYPES OF CLOUD SERVICES: IaaS, PaaS, SERVERLESS AND SaaS

Cloud computing services mainly classified into three different types of services

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

4.1 INFRASTRUCTURE as a SERVICE

Infrastructure as a Service (IaaS) is a cloud computing service in this type of services where enterprises providing the service for rent or lease for compute and **storage** the information in the cloud. Users can run the services at any operating system or applications on the rented servers without bother about the maintenance and operating costs of those servers. Utilization of IT infrastructure-services can get by rent or lease it includes virtual machines (VMs), storage, networks, operating systems-from a cloud provider on a pay-as-you-go basis.

4.2 PLATFORM as a SERVICE

Cloud computing provides platform as a services to the users, Users just sign up use the resources which is provided in the cloud and it provides an environment to develop, test, deliver and manage software applications.

Using Platform services it is designed to make it easier for developers to quickly create web or mobile apps, without worrying about settings of how it is internally stored and managed underlying infrastructure of servers, storage, network and databases needed for development.

4.3 SOFTWARE as a SERVICE

Cloud provides software as a service to the user and it is a method for delivering lot of software applications with the help of internet. Following are the examples of Software applications Like Google class room, gmail, doc etc.

Software as a Service is a method for delivering software applications over the Internet, on

demand and typically on a subscription basis. With SaaS, cloud providers host and manages the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet or PC.

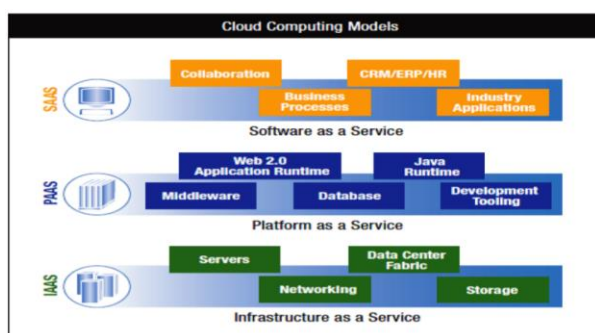


Figure2 Cloud Computing Service Model

5. ADVANTAGES OF CLOUD COMPUTING

Cloud based software offers companies from all sectors variety of advantages, including the power to use software from any device either via a native app or a browser. As a result, users can carry their files and settings over to other devices during a completely seamless manner. Cloud computing is way quite just accessing files on multiple devices. Users can store the documents at any place and can be accessed at any time using the file services that are provided by the google services. It also make it possible for users to backup their music, files, photos, ensuring those files are immediately available in the event of a hard drive crash. The cloud structure permits individuals to save storage

space on their desktops or laptops. Users upgrading software because software companies offers their cloud service application products via the internet instead of traditional ways.

6. CONCLUSION

In conclusion, cloud computing is recently new technological development that has the potential to possess an excellent impact on the planet. It has many benefits that it provides thereto users and businesses. For example, a number of the advantages that it provides to businesses, is that it reduces operating expense by spending less on maintenance and software upgrades and focus more on the businesses itself. But there are other contests the cloud computing must overcome. People are skeptical about whether their data is secure and private. But once, there are standards and regulations worldwide, cloud computing will revolutionize the longer term.

REFERENCES

- [1] T. Dillon, C. Wu, and E. Chang, "Cloud Computing: Issues and Challenges," 2010 24th IEEE International Conference on Advanced Information Networking and Applications(AINA), pp. 27-33, DOI= 20-23 April 2010.
- [2] J. F. Yang and Z. B. Chen, "Cloud Computing Research and Security Issues," 2010 IEEE International Conference on Computational

- Intelligence and Software Engineering (CiSE), Wuhan pp. 1-3, DOI= 10-12 Dec. 2010
- [3] S. Zhang, S. F. Zhang, X. B. Chen, and X. Z. Huo, "Cloud Computing Research and Development Trend," In Proceedings of the 2010 Second International Conference on Future Networks (ICFN '10). IEEE Computer Society, Washington, DC, USA, pp. 93-97. DOI=10.1109/ICFN.2010.58.
- [4] J. J. Peng, X. J. Zhang, Z. Lei, B. F. Zhang, W. Zhang, and Q. Li, "Comparison of Several Cloud Computing Platforms," 2009 Second International Symposium on Information Science and Engineering (ISISE '09). IEEE Computer Society, Washington, DC, USA, pp. 23-27, DOI=10.1109/ISISE.2009.94.
- [5] S. Zhang, S. F. Zhang, X. B. Chen, and X. Z. Huo, "The Comparison between Cloud Computing and Grid Computing," 2010 International Conference on Computer Application and System Modeling (ICCSM), pp. V11-72 - V11-75, DOI= 22-24 Oct. 2010.
- [6] M. M. Alabbadi, "Cloud Computing for Education and Learning: Education and Learning as a Service (ELaaS)," 2011 14th International Conference on Interactive Collaborative Learning (ICL), pp. 589 - 594, DOI=21-23 Sept. 2011.
- [7] S. Arnold (2009, Jul.). –Cloud computing and the issue of privacy.||KM World, pp14-22. Available: www.kmworld.com [Aug. 19, 2009].
- [8] B. R. Kandukuri, R. Paturi V, A. Rakshit, –Cloud Security Issues||, In Proceedings of IEEE International Conference on Services Computing, pp. 517-520, 2009.
- [9] A Platform Computing Whitepaper. –Enterprise Cloud Computing: Transforming IT.|| Platform Computing, pp6, 2010.
- [10] Global Netoptex Incorporated. –Demystifying the cloud.Important opportunities, crucial choices.|| pp4-14. Available: <http://www.gni.com> [Dec. 13, 2009].