

Cloud computing-Future of IT

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Abstract— “Cloud” computing – a relatively recent term, defines the paths ahead in computer science world. Being built on decades of research it utilizes all recent achievements in virtualization, distributed computing, utility computing, and networking. It implies a service oriented architecture through offering softwares and platforms as services, reduced information technology overhead for the end-user, great flexibility, reduced total cost of ownership, on demand services and many other things. This paper is a brief survey based of readings on “cloud” computing and it tries to address, related research topics, challenges ahead and possible applications..

Keywords— cloud computing ,virtualization,cloud services,

I. INTRODUCTION

Cloud computing is the next generation in computation. Maybe Clouds can save the world; possibly people can have everything they need on the cloud. Cloud computing is the next natural step in the evolution of on-demand information technology services and products. The Cloud is a metaphor for the Internet, based on how it is depicted in computer network diagrams, An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it.

Traditional application integration technologies are performed in a rigid and slow process that usually takes a long time to build and deploy, requiring professional developers and domain experts. They are server-centric and thus do not fully utilize the computing power and storage capability of client systems. Since the face of the Internet is continually changing, as new services and novel applications appear and become globally noteworthy at an increasing pace. Nowadays the locus of computation is changing, with functions migrating to remote datacenters via Internet based communication. Computing and communication are being blended into new ways of using networked computing .

II. ANALYSIS OF CLOUD COMPUTING

2.1 DEFINITION OF CLOUD COMPUTING

It is a style of computing in which IT-related capabilities are provided “as a service”, allowing users to access technology-enabled services from the Internet (i.e., the Cloud) without knowledge of, expertise with, or control over the technology infrastructure that supports them

At the current stage, the Cloud computing is still evolving and there exists no widely accepted definition. Based on our experience, we propose an early definition of Cloud computing as follows:

A computing Cloud is a set of network enabled services, providing scalable, QoS guaranteed, normally personalized, inexpensive computing platforms on demand, which could be accessed in a simple and pervasive way

2.2 CLOUD ARCHITECTURE

Usually cloud computing services are delivered by a third party provider who owns the infrastructure. It advantages to mention but a few include scalability, resilience, flexibility, efficiency and out sourcing non-core activities. Cloud computing offers an innovative business model for organizations to adopt IT services without upfront investment.

1) *IaaS (Infrastructure as a service) model:* The main concept behind this model is virtualization where user have virtual desktop and consumes the resources like network, storage, virtualized servers, routers and so on, supplied by cloud service provider. . Usage fees are calculated per CPU hour, data GB stored per hour, network bandwidth consumed, network infrastructure used per hour, value added services used, e.g., monitoring, auto-scaling etc. Examples: Storage services provided by AmazonS3, Amazon EBS. Computation services: AmazonEC2, Layered tech and so on.

2) *PaaS (Platform as a service) model:* It refers to the environment that provides the runtime environment, software deployment framework and component on pay to enable the direct deployment of application level assets or web applications. PaaS is a platform where software can be developed, tested and deployed. It means the entire life cycle of software can be operated on a PaaS. This service model is dedicated to application developers, testers, deployers and administrators. Examples: Google App Engine (GAE), Microsoft Azure, IBM Smart Cloud, Amazon EC2, salesforce.com and jelastic.com and so on.

3) *SaaS (Software as a service):* Through this service delivery model end users consume the software application services directly over network according to on-demand basis. For example, Gmail is a SaaS where Google is the provider and we are consumers. Other well-known examples of PaaS include billing services provided by Arial system, op source. Financial services: Concur, workday, Backup and recovery services and so on capable of dynamic and seamless utilization of IT resources based on user- demand across a multiplicity of devices, networks, providers, service domains and social and business processes .

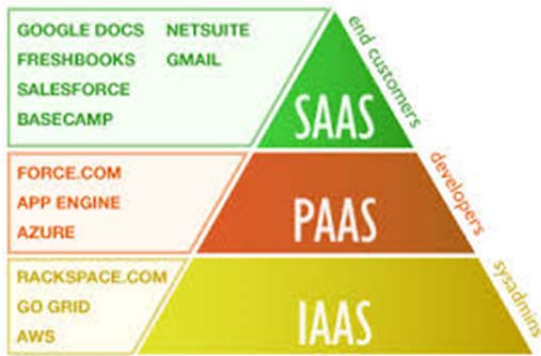


Fig.1:-Pyramid of service providers

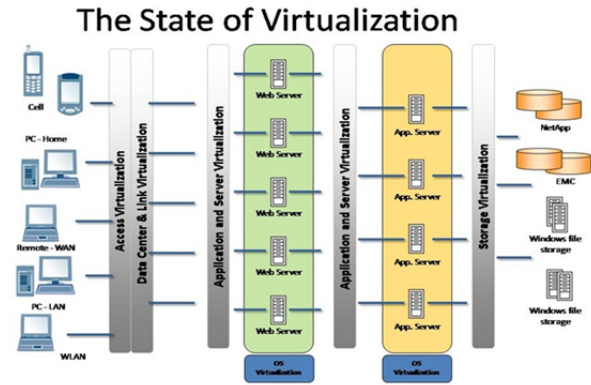


Fig.3:-States of virtualization

2.3. Cloud Deployment

1) *Public cloud/external cloud*: This model allows cloud environment as openly or publically accessible. Public cloud is off premise in which various enterprises can be used to deliver the services to users by taking it from third party.

2) *Private cloud/internal cloud*: This model referred to on-premise cloud which is managed or owned by an organization to provide the high level control over cloud services and infrastructure. In other words private cloud is build specifically to provide the services within an organization for maintaining the security and privacy.

3) *Hybrid cloud/virtual private cloud model*: This model compromised both private and public cloud models where cloud computing environment is hosted and managed by third party (off-premise) but some dedicated resources are privately used only by an organization.

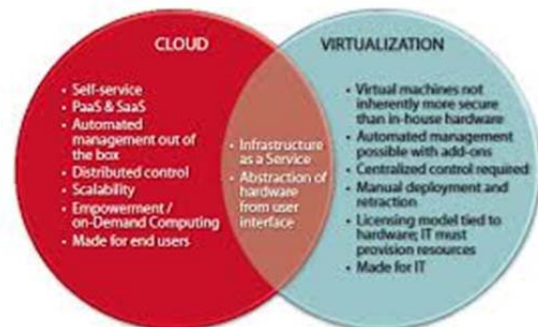


Fig.4:-Virtualization services



Fig.2:-Types of cloud

2.4 Virtualization

Virtualization is a framework or methodology of dividing the resources of a computer into multiple execution environments, by applying one or more concepts or technologies such as hardware and software partitioning, time-sharing, partial or complete machine simulation, emulation, quality of service, and many others. It allows abstraction and isolation of lower-level functionalities and underlying hardware. This enables portability of higher-level functions and sharing and/or aggregation of the physical resources [8]. There are lots of virtualization products, and a number of small and large companies that make them. For instance, in the operating systems and software applications space are VMware1, Xen - an open source Linux-based product developed by XenSource2, and Microsoft virtualization products, can be mentioned.

2.4 Pros

1) *Reduced Cost*: Cloud technology is paid incrementally you pay only for what you need), saving organizations money in the short run. Money saved can be used for other important resources.

2) *Increased Storage*: Organizations can store more data than on private computer systems.

3) *Highly Automated*: IT personnel not needed to keep software up to date as maintenance is the job of the service provider on the cloud.

4) *More Mobility*: Employees can access information wherever they are, rather than having to remain at their desks.

5) *Allows IT to Shift Focus*: No longer having to worry about constant server updates and other computing issues, government organizations will be free to concentrate on innovation

2.5 Cons

GNU founder Richard Stallman says that the interesting thing about cloud computing is that we've redefined cloud computing to include everything that we already do. One reason you should not use web applications to do your computing is that you lose control. It's just as bad as using a proprietary program [11]. But certainly shifting to cloud computing has other problems including:

1) *Security*: Is there a security standard?

2) *Reliance on 3rd Party*: Control over own data is lost in the hands of an "difficult-to-trust" provider

3) *Cost of transition*: Is it feasible for me to move from the existing architecture of my data center to the architecture of the cloud?

4) *Uncertainty of benefits*: Are there any long term benefits?

2.6 Challenges Ahead

One of the most important challenges ahead is that clouds will always be compared to local machine in the time of usage. It's important for the user to know what he gains of shifting to the cloud. Obviously using services on local machines, the user needs more resources but at least he knows that he has access to his data all the time and he has the data he owns on his local machine. But who is in charge of restoring his data if something happens to the cloud and the fact that the user is not aware of the physical place which his data is stored makes cloud more unreliable for him. Here is a list of issues that cloud computing is currently facing.

2.7 Provenance Data

Cloud provenance data, and in general meta-data management, is an open issue. Open challenges include: How to collect provenance information in a standardized and seamless way and with minimal overhead – modularized design and integrated provenance recording; How to store this information in a permanent way so that one can come back to it at any time, - Standardized schema; and How to present this information to the user in a logical manner – an intuitive user web interface.

III CONCLUSION

Cloud computing is an emerging computing paradigm that is increasingly popular. Leaders in the industry, such as Microsoft, Google, and IBM, have provided their initiatives in promoting cloud

computing. Big IT companies are also building their own version of cloud. Virtualization concepts have open shared nature which is responsible for the violation of security polices and laws as well as degrades their computing reputation and performance. So there is need to focus on privacy and on solutions of various security problems to maintain the trust level of organization for deploying the cloud computing.

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