Review on Internet base Services of Cloud Computing

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Abstract— Cloud computing has generated a lot of interest and competition in the organizations. It is an internet based service delivery model which provides internet based services, computing and storage for users. In this paper we discusses about the clouds computing, cloud architecture and what are the benefits and challenges face when we uses the cloud services.

Keywords— *"cloud" computing, Virtualization, clients, the datacentre, and distributed servers, term "as a service."*

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I. CLOUD COMPUTING

Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle an applications. In cloud computing the term cloud is used for the *"Internet"* so the phrase cloud computing means a type of Internet-based computing services such as storage, servers and applications which are delivered to an organization's computers and devices through the Internet.

The "cloud" in cloud computing can be defined as the set of networks, hardware, storage, services, and interfaces which combine to deliver aspects of computing as a service. Cloud services include the delivery of infrastructure, software and storage over the Internet either as separate components or a complete platform based on user demand.

So we can say that the cloud computing refers to the delivery of computing resources over the internet, keeping the data on your own hard drive or updating applications when you needs, you use a service over the Internet from any location to store your information or use its applications. According to the NIST (National Institute of Standards and Technology) definition Cloud computing is a model for enabling convenient, on demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) see in fig 1, that can be rapidly provisioned and released with minimal management effort or service provider interaction

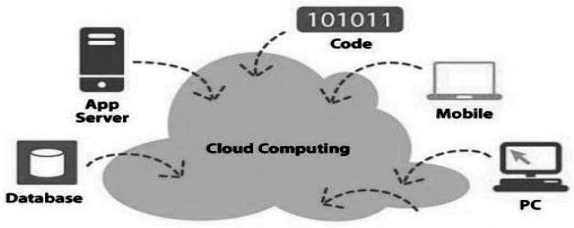

Fig 1: - Cloud Used in Network represented to the Internet

II. CLOUD ARCHITECTURE

A cloud computing architecture is made up of several elements: clients, the datacentre, and distributed servers. Each element plays a specific role in delivering a functional cloud-based application,

1. Clients: Clients are the devices that the end users interact with to manage their information on the cloud. Clients are generally categories into three type

Mobile - Mobile devices include PDAs or smartphones, like a Blackberry, Windows Mobile Smartphone, or an iPhone.

Thin -Clients are computers that do not have internal hard drives, but rather let the server do all the work, but then display the information.

Thick - This type of client is a regular computer, using a web browser like Firefox or Internet Explorer to connect to the cloud

2. Datacentre: The datacentres the collection of servers where the application to which you subscribe is housed. It is a large room in the basement of your building full of servers on the other side of the world that you access via the Internet. In the IT world is virtualizing servers that is software can be installed allowing multiple instances of virtual servers to be used. In this way, you can "n" number of virtual servers running on one physical server.

3. Distributed Servers: The servers don't all have to be housed in the same location.

Often, servers are in geographically disparate locations. This gives the service provider more flexibility in options and security. If something were to happen at one site, causing a failure, the service would still be accessed through another site if the cloud needs more hardware they need not throw more servers in the safe room they can add them at another site and simply make it part of the cloud.

Virtualization in computing is the creation of a virtual rather than actual, version of something like a hardware operating system, a storage device or a network resources. Virtualization is a technique in which is completely installed on one machine and run on another machine. The result is a system in which all software running on the server is within a virtual machine. Virtualization is relevant to cloud computing because it is one of the ways in which you will access services on the cloud. That is, the remote datacentre may be delivering your services in a fully virtualized format.

Virtualization has been successful for several purposes:

[1]Sharing a computer system in multiple users

[2]Isolating users from each other and from the control program

[3]Emulating hardware on another machine

III. CLOUD SERVICE MODEL

The services in cloud computing is the concept of being able to use reusable components across a vendor's network. This is widely known as "as a service." Offerings with as a service as a suffix include traits like the following:

• Low barriers to entry, making them available to small businesses

• Scalability

• Multitenancy, which allows resources to be shared by many users

• Device independence, which allows users to access the systems on different hardware

Cloud Computing is broadly classified into three services: - "SaaS", "PaaS" and "HaaS". Cloud Computing have some different utility services.

1. Software as a Service (SaaS) is the model in which an application is hosted as a service to customers who access it via the Internet. SaaS is a software delivery method that provides access to software and its functions remotely as a Web-based service. Software as a Service allows to organizations to access business functionality at any cost typically less than paying for licensed applications since SaaS pricing is based on a monthly cost because the software is hosted remotely users don't need any additional hardware. SaaS removes the need for organizations to handle the installation, set-up and maintenance. It may also be referred to as simply hosted applications. SaaS applications differ from earlier distributed computing solutions in that SaaS was developed specifically to use web tools just like the browser. SaaS provides network-based software access to commercially available. So the software is managed at a central location and customers can access their applications wherever they have web access.

2. Platform as a Service (PaaS) is another application delivery model. PaaS provides all the resources which required to build an applications and services completely from the Internet, without download or install any software. PaaS services include development, application design, testing, and hosting. Other Services include team cooperation, web service, security, scalability, database, storage. PaaS generally offers some support to help the creation of user interfaces and it is normally based on HTML or JavaScript. Because PaaS is expected to be used by many users simultaneously and generally provides automatic facilities for concurrency management, scalability, failover, and security. PaaS also supports web development interfaces such as Simple Object Access Protocol (SOAP) and Representational State Transfer (REST), which allow the construction of multiple web services sometimes called mashups. The interfaces are also able to access databases and reuse services that are within a private network. PaaS is found in one of three different types of systems, Add-on development facilities, Stand-alone environments, Application delivery-only environments

3. Hardware as a Service (HaaS) is the next form of service available in cloud computing. Where SaaS and PaaS are providing applications to customers, HaaS doesn't. It simply offers the hardware so that your organization can put whatever they want onto it. HaaS allows you to "rent" such resources as Server space, Network equipment, Memory, CPU cycles, Storage space

HaaS involves several pieces:

[1]Service level agreements this is an agreement between the provider and client, guaranteeing a certain level of performance

from the system. [2]Computer hardware these are the components whose resources will be rented out. Service providers often have this set up as a grid for easier scalability. [3] Network this includes hardware for firewalls, routers, load balancing, and so on. [4]Internet connectivity this allows clients to access the hardware from their own organizations.
[5] Platform virtualization environment this allows the clients to run the virtual Machines they want. [6] Utility computing billing typically set up to bill customers based on how many system resources they use.

IV. DEPLOYMENT MODELS IN CLOUD COMPUTING

Cloud services can be deployed in different ways, depending on the structure of organization and the location. There are four deployment models are usually distinguished in **public, private, community** and **hybrid** cloud service (see fig 2).

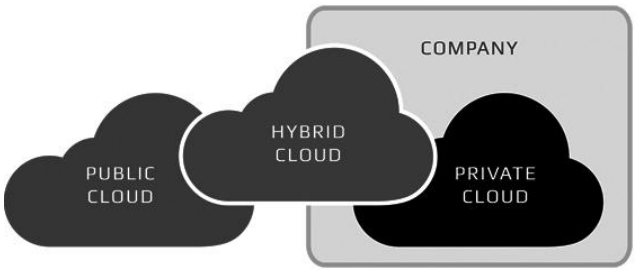

Fig 2:- Cloud Deployment Model

1. Public cloud: This model allows cloud environment as openly or publically accessible in which various companies can be used to deliver the services to users by taking it from third party.
2. Private cloud: This model referred to private cloud which is managed by an organization or owned, to provide the high level control over the cloud services. In other words private cloud is specifically to provide the services within an enterprise for maintaining the privacy and security.
3. Hybrid cloud model: This model are combination of both private and public cloud models where cloud computing environment is hosted and managed by third party but some dedicated resources are privately used only by the enterprise.
4. Community model: It allows the cloud computing environment which is shared or managed by organizations.

Characteristics: [1] Shared Infrastructure: cloud computing use a virtualized software model which is enable the sharing of storage, physical services, and networking Capabilities. The cloud infrastructure seeks to make the most of the available infrastructure across a number of users.

[2]Dynamic Provisioning: It allows for the provision of services based on current demand requirements. This is done automatically using the software, enabling the expansion and contraction of service capability as needed. This dynamic scaling needs to be done when we maintaining high levels of reliability and security.
[3]Network Access: It needs to be accessed across the internet from the PCs, laptops, and mobile devices, using standards-based APIs based on HTTP. Services of cloud include everything from using business applications to the latest application on the smartphones.
[4] Managed Metering: Metering are used for managing and optimizing the service to provide reporting and billing information. In this way consumers are billed for services according to how much they actually used during the billing period.
In short we can say that cloud computing allows the sharing and scalable deployment of services if needed, from any location and for which the customer can be billed based on actual usage service models

V. BENEFITS AND CHALLENGES

Benefits: [1] Scalability/Flexibility: Companies can start with a small deployment and grow to a large deployment fairly rapidly and then scale back if necessary. Also, the flexibility of cloud computing allows to the enterprise to use extra resources at the most busy time, enabling them to satisfy consumer demands.
[2]Simplicity: Again, not having to buy and configure new equipment allows you and your IT staff to get right to your business. The cloud solution can get your application started immediately, and it reduce the costs what it would cost to implement an on-site solution.
[3]Reliability: Services using multiple redundant sites can support business continuity and disaster recovery.
[4]Maintenance: Cloud service providers do the system maintenance, and access is through Application programming interfaces that do not require application
Install in to PCs, and it will reducing maintenance requirements.
[5]Mobile Accessible: It will increased productivity due to systems from anywhere.

Challenges: Cloud computing may cause a slowdown when delivering more services in the cloud, most also can provide opportunities, if resolved with due care and attention in the planning stages.
[1]Security and Privacy: Security and Privacy are the most important issues of cloud computing relate to storing and securing data and monitoring the use of the cloud by the service providers. These challenges can be addressed by storing the information internal to the organization but allow to use in the cloud. For this reason security mechanisms between

organization and the cloud need to be robust and a Hybrid cloud could support such a deployment.

[2]Lack of Standards: Clouds have documented interfaces so it has no standards are associated with these and the most clouds will be inter-operable. The Open Grid Forum is developing an Open Cloud Computing interface to resolve this issue and the Open Cloud Consortium is working on cloud computing standards.

[3]Continuously Evolving: User requirements are continuously evolving as are the requirements for networking, interfaces, and storage. This means that a cloud does not remain static and is also continuously evolving.

VI. CONCLUSION

In this paper much of the work has been focused on cloud architecture. It gives a comparison between different services providers on different cloud services SaaS, PaaS, HaaS. This review shows that there deployment models of clouds and the related challenges on each level and there benefits.

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