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Performance Analysis of Services Supported by Cloud Computing as SaaS, PaaS and IaaS

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ABSTRACT: Basically Cloud is a collection of computer resources and provides a million of services to its user simultaneously. A Cloud provides a friendly environment to its user and various services. These services are used in Publicly, Private, Hybrid and Community terms. Cloud computing is model of computing that use the internet for sharing of information, software and resources to computer and other devices. In this paper**, we describes the cloud services.**
This paper presents a case study to illustrate how cloud services can be used. The services it provides include Platform-asa-Service (PaaS), Software-as-a-Service (SaaS) and Infrastructure-as-a-Service (IaaS) and it is still making its way to other similar services. These services models have certain requirements to be met and other security and design issues. This paper aims at discussing these three services models, important factors for these models and challenges currently faced by these services models.

Keywords: CCS, SAP, SAS, SAS

I. INTRODUCTION

Cloud is referred as large pool that holds easily accessible and usable virtualized resources. To manage variable load and optimum usage, these resources are reconfigured dynamically. Cloud computing incorporates Internet delivery of services, virtualization, open source software, on demand deployment, etc. Cloud computing is a paradigm that uses Internet and central servers to maintain data and applications which in turns allows efficient computing.
Cloud Computing environment provides internet based platform which are used for computer technology. It describes a variety of Computing concepts. .Cloud becomes the new wrapped around the new technology. Cloud Computing collects all the computing resources and manages them automatically.
Today World relies on Cloud computing to store their public as well as personal information. Cloud computing, becomes the requirement for every user and provide relevant relevant hardware, software and service according to the need that users put forward.
With the rapid development of the Internet, user's requirement is realized through the Internet, different from changing with the need. In fact cloud computing is an extend of grid computing, distributed computing, and parallel computing. Its foreground is to provide secure, quick, convenient data storage and net computing service centered. Many Companies that could be considered as the gaint of software industry like Microsoft are joining to develop Cloud services. Cloud Computing having secure access to all the application and data from any network device.

II. CLOUD COMPUTING SERVICE MODELS

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, three service models, and four deployment models.

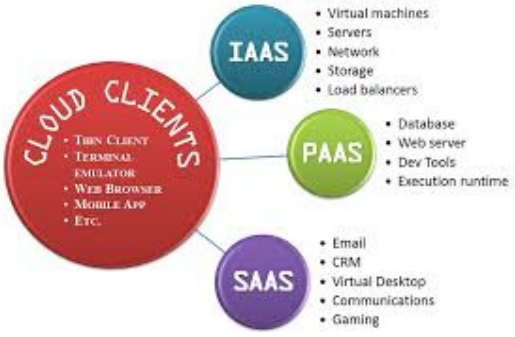
a) **Software as a Service (SaaS).**

The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure2. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

b) **Platform as a Service (PaaS).**

The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider.3 The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

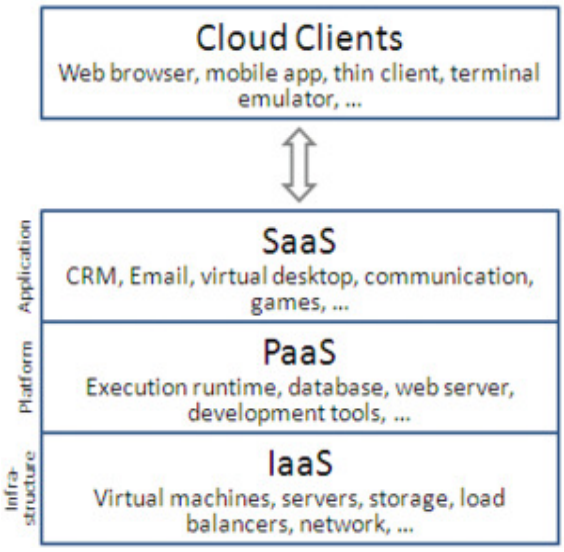
The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls).



c) **Infrastructure as a Service**

In IaaS model, Cloud Service Provider (CSP) outsources storage, servers, hardware, networking components, etc. to the consumer. CSP owns the equipment and responsible for housing, running and maintaining it. In this model, consumer pays on per-use basis. Characteristics and components of IaaS include: Policy-based services :

1. Dynamic scaling
2. Automation of administrative tasks
3. Utility computing service and billing model
4. Internet connective
5. Desktop virtualization

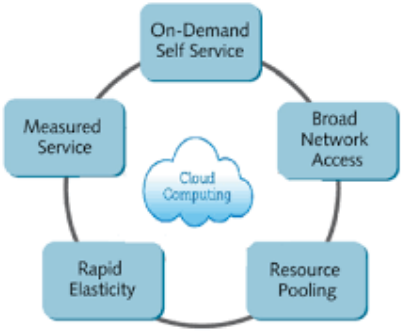


Amazon Web Services (AWS) which gives IaaS also provides block of storage on demand and virtual server with unique IP addresses. AWS provides consumer an Application Program Interface (API) to start, stop, access, and configure the virtual server and storage. Sometime IaaS is referred as Hardware as a Service (HaaS)

III. CHARACTERISTICS OF CLOUD COMPUTING

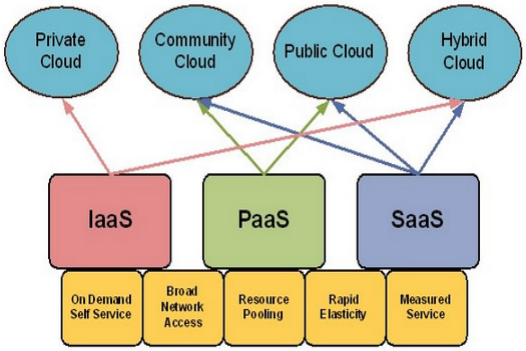
A. Hardware and Maintenance : Cloud Computing helps to reduce hardware and maintenance cost because there is no need to be installed any application on user's computer.

B. Application Program interface: API provides accessibility to software that enable interaction with the cloud software in the same way that a traditional user interface.(e.g. A computer desktop) facilitates interaction between user and computer.



C. On-demand Service: Cloud provides a large resource pool which allow user to obtain configure and accesses information according to their need.

D. Up to date: We need not to worry about the updates to the software's and hardware's that we are using in the cloud. The provider is responsible for the overall update process of all the components



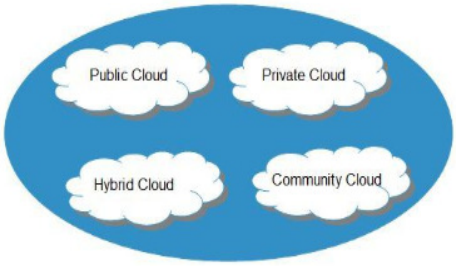
E. Ultra-large Scale platform:

The Cloud has large scale platform i.e. The Google Cloud has owned more than one million server.. It can produce various applications supported by cloud, and one cloud can support different applications running it at the same time.

IV. DEPLOYMENT MODEL OF CLOUD

The Deployment model of Cloud are three types which are commonly used:-

- **Private Cloud:** It is also known as Internal Cloud or on-premises Cloud. It is managed and operated by single organization or a group. It is also known as internal cloud or on-premise cloud, aprivate cloud provides a limited access to its resources and services to consumers that belong to the same organization that owns the cloud. In other words,
- the infrastructure that is managed and operated for one organization only, so that a consistent level of control over security, privacy, and governance can be maintained.



- ***Public Cloud:*** It is also known as external cloud or multitenant cloud. It is available and open used by general public. It may be owned and managed by government organization or some combination of them. It is referred as external cloud or multi-tenant cloud, this model represents an openly accessible cloud environment in this cloud can be accessed by general public. Customer can access resources and pay for the operating resources. Public Cloud can host individual services as well as collection of services.
- ***Community Cloud:*** It refers to an special purpose cloud environment which is shared and managed by community that shares common concerns (like security, governance, compliance etc). It typically refers to special-purpose cloud computing environments shared and managed by a number of related organizations participating in a common domain or vertical market.
- ***Hybrid Cloud:*** It is composition of two or more distinct cloud infrastructure(private, community or public) but are bound together by standardized technology that enable data and application portability. A hybrid cloud is a combination of public and private cloud. It provides benefits of multiple deployment models. It enables the enterprise to manage steady-state workload in the private cloud.

Providers of Cloud Services

V. CONCLUSION

A user can share cloud services anywhere, anytime with any device. Cloud Computing becomes most popular for every user can enjoy highly demanded services provided by cloud This paper outlined a survey in cloud computing services, focusing on the long list services provided by leading companies. Cloud computing is based on the demand access to virtualized IT resources that are housed outside of your range, while you can share it with different services however use it easily in addition you can subscribe for this service with an inexpensive monthly fees, and navigate the web smoothly that has many features.

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