

Cloud Computing Basics: Features and Services

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An advantage of the cloud computing technology includes cost savings, high availability, reliability, and easy scalability [5]. Figure 1 shows the infrastructure of cloud computing.

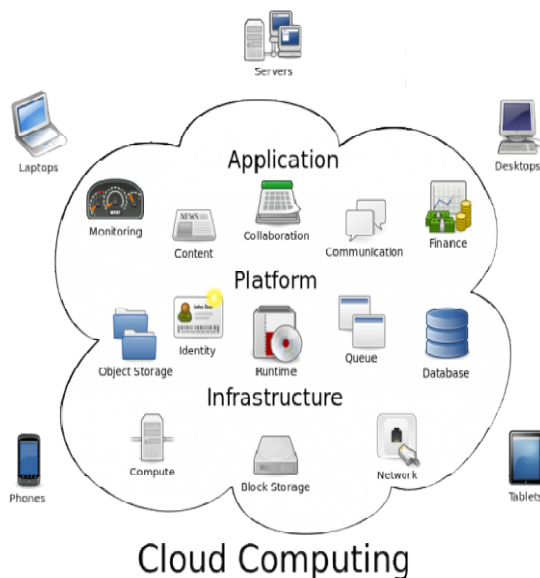


Figure1. Cloud Computing Infrastructure

Cloud Service Models

This section of the paper describes three kinds of services with which the cloud-based computing resources are available to end customers shown in Figure 2. These services are Platform as a Service (PaaS), Software as a Service (SaaS), and Infrastructure as a Service (IaaS).

ABSTRACT

Cloud computing is an on demand service in which distributed resources, information, software and other devices are provided according to the client’s requirement at specific time [1]. Cloud computing involves deploying groups of remote servers and software networks that allow centralized data storage and online access to computer services or resources. In this paper, we explore the different services in different computing platforms and applications. Cloud computing is a service, which offers customers to work over the internet [2].

KEYWORDS: Cloud Computing, Cloud Services, PaaS, SaaS, IaaS

I. INTRODUCTION

This section gives an introduction to Cloud computing. 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) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Cloud computing is also a new model of business computing is virtualization [4]. It will be widely used in the near future. The core concept of cloud computing is reducing the processing burden on the users. Eventually users use a wide variety of devices, including PCs, Laptops, Smart Phones, and PDAs to access different kinds of utility programs, storage, and application development platforms over the Internet. All these services offered by cloud computing providers.

A. Platform as a Service (PaaS)

In this service model the consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has over the deployed applications and possibly application hosting environment configurations. In this there might be constraints as to which applications can be deployed. i.e. consumer can deploy applications created using programming languages and tools supported by the provider [3].

B. Software as a Service (SaaS)

In this service model, consumers purchase the ability to access and use an application or service that is hosted in the cloud. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email). 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. An example of this is Salesforce.com where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud [8].

C. Infrastructure as a Service (IaaS)

In this service model 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, deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

IaaS provides basic storage and computing capabilities as standardized services over the network. Servers, storage systems, networking equipment, data centre space etc. are pooled and made available to handle workloads. The customer would deploy own software on the infrastructure.

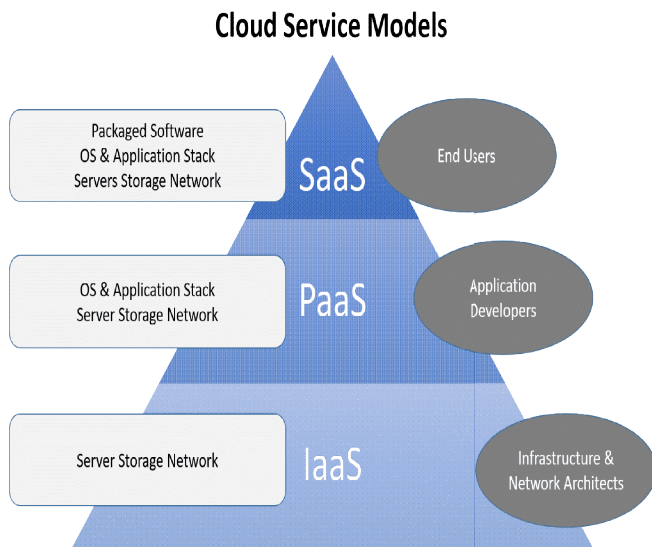


Figure2. Cloud Service Models

Cloud Deployment Models

Cloud Computing has four types of deployment models shown in Figure 3. These are public, private, community and hybrid.

1. Private Cloud

The cloud infrastructure is available to the public on a commercial basis by the cloud service provider. A consumer can develop and deploy a service in the cloud with very little financial outlay compared to the capital expenditure requirements normally associated with other deployment options.

2. Private Cloud

The cloud infrastructure is maintained and operated for a specific organization. It may be managed by the organization or a third party and may exist on premise or off premise.

3. Community Cloud

The cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be managed by the organizations or a third party and may exist on premise or off premise.

4. Hybrid Cloud

The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).

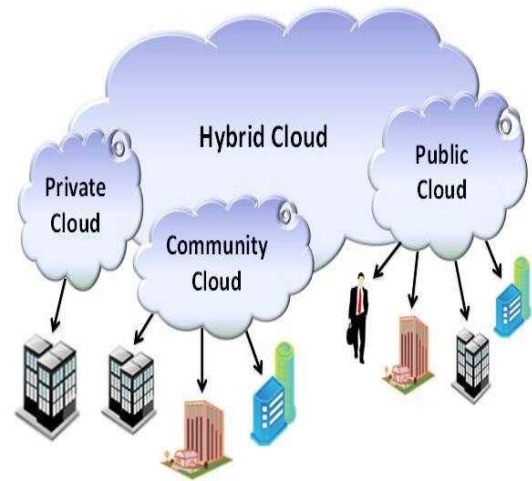


Figure3. Cloud Deployment Models

Cloud Computing Characteristics

Cloud computing’s characteristics include on-demand self-service, measured service, broad network access, rapid elasticity, and resource pooling.

1. On-demand self-service

A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically [9].

2. Measured service

Public cloud providers like Amazon allow companies to avoid large upfront infrastructure investment, so the small companies can afford the workloads as per their requirement.

3. Broad network access

Capabilities are available over the network that promotes use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).

4. Rapid elasticity

Capabilities can be elastically provisioned and released, scale rapidly outward and inward commensurate with demand dynamically.

5. Resource pooling

The resources like storage, servers, memory, Processing Unit, Network and virtual machines can be pooled and utilized by multi-tenant fashion with dynamically provisioning and de-provisioning of resources [10].

Benefits of Cloud Computing

There are some of the possible benefits for those who offer cloud computing-based services and applications:

Cost Savings – Companies can reduce their capital expenditures and use operational expenditures for increasing their computing capabilities. This is a lower barrier to entry and also requires fewer in-house IT resources to provide system support.

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 companies to use extra resources at peak times, enabling them to satisfy consumer demands.

Reliability – Services using multiple redundant sites can support business continuity and disaster recovery.

Maintenance – Cloud service providers do the system maintenance, and access is through APIs that do not require application installations onto PCs, thus further reducing maintenance requirements.

Mobile Accessible – Mobile workers have increased productivity due to systems accessible in an infrastructure available from anywhere [7].

CONCLUSION

In this paper, we study that the basic of the Cloud computing that is widely recognized as the widely growing computing infrastructure [6]. The application of Cloud computing architecture allows enterprises to achieve more efficient use of their IT hardware and software investments. Cloud computing offers many benefits by allowing users to use infrastructure like servers, networks, data storages, and other without impacting to the owner's organization. This paper describes the definition, the various services models, deployment models, characteristics and benefits of cloud computing. As efficiency and scalability are among the primary benefits of cloud computing, then it develops cloud-based applications that are compatible with multiple platforms. Along with this we have studied the newest services offered by cloud computing.

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