



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 Issue: II Month of publication: February 2018

DOI: <http://doi.org/10.22214/ijraset.2018.2122>

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Effect of Cloud Computing System in Education

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Abstract: Nowadays, information Systems play effective role in the organizations in a way that they cannot be imagined without these systems. The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer. The “cloud” in cloud computing originated from the habit of drawing the internet as a fluffy cloud in network diagrams. No wonder the most popular meaning of cloud computing refers to running workloads over the internet remotely in a commercial provider’s data center -called “public cloud” model. Cloud computing, often referred to as simply “the cloud,” is the delivery of on-demand computing resources—everything from applications to data centers over the internet on a pay-for-use basis. Moving to the cloud, Running in the cloud and Stored in the cloud. Cloud Computing initiatives could affect the enterprises within two to three years as it has the potential to significantly change IT. Cloud computing can be identified as a technology that uses the Internet to deliver its services.

Key words: Cloud computing, computing resources, education.

I. INTRODUCTION

Cloud education is to realize the distribution management and sharing application of teaching resources, satisfy teachers with teaching model innovation and meet the need of individualized learning by using the idea and technical pattern of cloud computing. Users can interactively study and communicate on the internet in real time only with a browser. Teachers and students can log in the platform of cloud education to obtain resources with a account number and a browser. Cloud education can efficiently resolve the problem of low sharing of educational information resources. Learning that is based on cloud environment (such as micro-class, cloud computing terminals, video communication and other social learning communication software), is the existence of the common problems during the process of teachers' teaching and students' learning, which can take a variety of forms of organization to have interaction, discussion and experience sharing, so as to achieve solving the network practical problems. Cloud computing is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g., computer networks, servers, storage, applications and services) which can be rapidly provisioned and released with minimal management effort. Cloud computing is a new technology that delivers many types of resources over the Internet.

Accessed from the cloud: these days is seems like everything is happening “in the cloud”. The cloud is a big deal for three reasons: It doesn't need any effort on your part to maintain or manage it.

It's effectively infinite in size, so you don't need to worry about it running out of capacity.

You can access cloud-based applications and services from anywhere – all you need is a device with an Internet connection.

A. The Definition Of Cloud Computing And Cloud Education

Cloud computing is a new calculation mode making virtual technology as its kernel. It inherits and develops distributed processing, parallel processing and grid computing and delivers infrastructure, development platform and software as a kind of services to users in need. Cloud computing, often referred to as simply “the cloud,” is the delivery of on-demand computing resources—everything from applications to data centers—over the internet on a pay-for-use basis. Moving to the cloud. Running in the cloud. Stored in the cloud.

B. What Are The Technologies Used In Cloud Computing

The main enabling technology for cloud computing is virtualization-

1) *Virtualization* : Virtualization software enables a physical computing device into one or more “virtual” devices, each of which can be easily used and managed to perform computing tasks. With operating system–level virtualization essentially creating a scalable system of multiple independent computing devices, idle computing resources can be allocated and used more efficiently. Virtualization provides the agility required to speed up IT operations, and reduces cost by increasing infrastructure utilization.

Autonomic computing automates the process through which the user can provision resources on-demand. By minimizing user involvement, automation speeds up the process, reduces labor costs and reduces the possibility of human errors. Users routinely face difficult business problems.

2) *Service-Oriented Architecture (Soa):* Cloud computing adopts concepts from Service-oriented Architecture (SOA) . Cloud computing provides all of its resources as services, and makes use of the well-established standards and best practices gained in the domain of SOA to allow global and easy access to cloud services in a standardized way.

C. Essential characteristics of cloud computing

The National Institute of Standards and Technology's definition of cloud computing identifies "five essential characteristics":

- 1) *On-Demand Self-Service:* A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider
- 2) *BROAD NETWORK ACCESS:* Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations)
- 3) *Resource Pooling:* The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand.
- 4) *Rapid Elasticity:* Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear unlimited and can be appropriated in any quantity at any time
- 5) *Measured Service:* Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service

II. CLOUD COMPUTING SERVICE MODEL

There are three service model as defined by National Institute of Standards and Technology

A. IAAS

This is known as Infrastructure as a Service. Here the cloud provider gives the Physical infrastructure (network, storage, Computing power. Virtual machines) as service which can be accessed over internet. You can use that to install your software application deployment etc. 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.

B. PAAS

This is known as Platform as a Service. Here cloud providers deliver a computing platform, typically including operating system, programming-language execution environment, database, and web server. Application developers can develop and run their software solutions on a cloud platform without the cost and complexity of buying and managing the underlying hardware and software layers. 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

C. SAAS

This is known as Software as a Service. Here cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. SAAS is sometimes referred to as "on-demand software" and is usually priced on a pay-per-use basis or using a subscription fee. Cloud users do not manage the cloud infrastructure and platform where the application runs.

III. CLOUD COMPUTING DEPLOYMENT MODEL

A. Public Cloud

It is basically the shared physical infrastructure on the third party site. Many companies are sharing the same infrastructure

- 1) It is quite easy for incremental or short term capacity
- 2) Low investment – pay for use

- 3) ideal for small and medium sized businesses or businesses that have changing demands
- 4) Security of data is the major risk and not much control

B. Private cloud

It is basically the dedicated physical infrastructure on the third party site or on prim .Your company is only using the infrastructure

- 1) Data is secure and total control on that server
- 2) Initial High investment is the disadvantage
- 3) ideal for business critical applications

C. Hybrid Cloud

It is a mix of public and private cloud .So it connect the public cloud infrastructure to the private cloud infrastructure. You can have Test/DEV instances on the Public Cloud and Production on On-prim private cloud

D. Popular Examples Of Cloud Computing

- 1) Email like Gmail ,Hotmail etc
- 2) Public storage like Microsoft One-drive, Google Drive
- 3) Collaborations tools like Webex

IV. USES OF CLOUD COMPUTING

You are probably using cloud computing right now, even if you don't realise it. If you use an online service to send email, edit documents, watch movies or TV, listen to music, play games or store pictures and other files, it is likely that cloud computing is making it all possible behind the scenes.

The first cloud computing services are barely a decade old, but already a variety of organisations—from tiny startups to global corporations, government agencies to non-profits—are embracing the technology for all sorts of reasons. Here are a few of the things you can do with the cloud.

Create new apps and services Store, back up and recover data Host websites and blogs Stream audio and video Deliver software on demand Analyse data for patterns and make predictions

A. Types Of Cloud Services: Iaas, Paas, Saas

Most cloud computing services fall into three broad categories: infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS). These are sometimes called the cloud computing stack, because they build on top of one another. Knowing what they are and how they are different makes it easier to accomplish your business goals.

B. Infrastructure-As-A-Service (Iaas)

The most basic category of cloud computing services. With IAAS, you rent IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis.

C. Platform As A Service (Paas)

Platform-as-a-service (PAAS) refers to cloud computing services that supply an on-demand environment for developing, testing, delivering and managing software applications. PAAS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development

D. Software As A Service (Saas)

Software-as-a-service (SaaS) is a method for delivering software applications over the Internet, on demand and typically on a subscription basis. With SaaS, cloud providers host and manage 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.

E. Advantages Of Cloud Computing In Education

The cloud's main appeal is to reduce the time to market of applications that need to scale dynamically. Increasingly, however, developers are drawn to the cloud by the abundance of advanced new services that can be incorporated into applications, from machine learning to internet-of-things connectivity.

- 1) *On-demand self-service.* A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
- 2) *Broad network access.* Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops, and workstations).
- 3) *Resource pooling.* The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter). Examples of resources include storage, processing, memory, and network bandwidth.
- 4) *Rapid elasticity.* Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.

V. ACKNOWLEDGMENT

The authors are grateful to Principal of St. Aloysius college, Jabalpur Rev. Fr. Valan Arasu and Head, Department of Education, Jabalpur to providing facilities.

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