RESEARCH ARTICLE OPEN ACCESS

An Overview To Cloud Computing

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Abstract: This study reveals the feasibility and study of Cloud computing and its concepts .It tells how cloud is computed and used in today's era with rise of new technologies and day by day changing the generation .

It also specifies how cloud can help society to solve the problems like creating a virtual system without hardware need , memory providence , client server network , cost saving etc.various cloud models are discussed & there are various opportunities can be available by cloud computing .

Keywords : Infrastructure ,reliability ,computerize, pooling , scalability , cloud , protocol ,hybrid , community ,mobilization .

Introduction

The term "cloud "is used as a metaphor for the internet which describe how a network or rempte servers can be accessed via the internet to store and manage information . The process of building applications has been a journey and it varies depending on one's application requirements and purpose [1]

Cloud computing is a term for characterizing the facilitating administration over the internet . It is basically an on demand delivery of computer power , database ,storage , applications and the other IT resources accessed by the internet . It is a paid service as well as a free service.

There are so many reasons that organizations are turning to cloud services these days- first it is a cost effective method in which you can eliminate capital expenses of buying hardware and software, data centers set-up and run [2].

Cloud computing implies the secured way of data accessing , records as well as tasks over the web instead of any hardware and system . It computerizes the data at whatever time , any place utilizing any service to the internet . It provides the opportunity of doing things with more abilities , power and straightforwardness. Cloud computing has become a popular model for reducing cost of business, improvise quality of services, and provide good & secure computing [3].

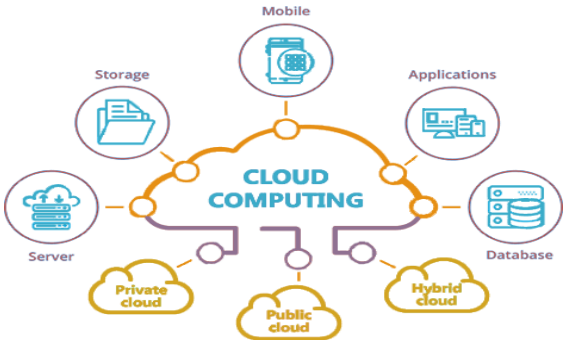

Fig 1: Working of cloud computing

In a cloud computing system, there is a significant workload shift . Local computers have no longer to do all the heavy lifting when it comes to run applications . Cloud computing provides access to to servers, storage, databases, and a broad set of application services over the Internet . Various cloud service providers owns and maintains the network connected hardware which is required for the application services , while a user and use what it needs to require vai the web application . It works on network layer protocol to connect different devices to provide access to resources that are residing in the centralized data center of the cloud.

Features of Cloud Computing

1. On Demand self – service :- In cloud computing , a client can provise the computer resources without any interaction with cloud service provider .
2. Cloud Computing also provide broad network access to the cloud over the network which are using standard methods that provides platform independent access to clients . It is most commonly found in devices like mobile phones , laptops which conclude mixture of heterogeneous OS.
3. Resource Pooling :- resources are created by cloud service provider which can be pooled together in a multi-tenage user system . As per requirement , physical and virtual systems are dynamically allocated .Pooling specifies the concept of hiding the resource location like virtual machine , memory , network ,bandwidth .
4. Rapid Elasticity :-As per user requirement , rapid elasticity can be increased by scaling up and out the systems .
5. Measured Service :- Cloud services are provided to the user in accordance to the use on the basis of time .Charges are applied to user as per usage of the amount of storage used , network used

Cloud service delivery models

The cloud service delivery models can be categorized into 3 broad categories :

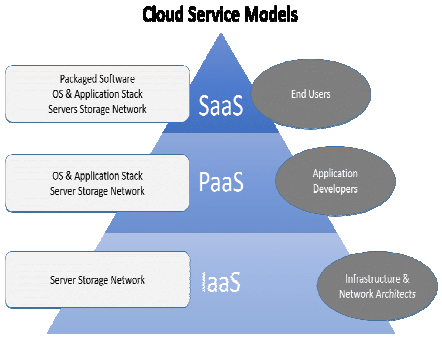

Fig 2: Cloud Service Models

Software as a Service (SaaS)

Software as aService (SaaS) is a model for the allocation of software where a user can access data over the internet . In this model , the software provider host and retain the servers , databases and code that comprise an application .

Characteristics of SaaS

- User is not required to have knowledge of back end infrastructure .
- Scalable services or resources over the web and well defined API.
- Saas provider manage the complete application stack .

Pros & cons of SaaS

Pros :- 1. The client can also access services without installing the software on their device .

2. SaaS provider look after identifying and fixing the bug .

3. With the help of centralized cloud , software updates are made simpler.

Cons :- 1. Malware attacks can affect the use of SaaS service in a web browser .

2. Proper security mechanism might be require the involvement of third party.

Platform as a Service (PaaS)

Platform as a Service (PaaS) is a type of cloud computing service delivery model that provides platform & a solution stack as a service which include resources like

programming language , operating system , compiler , run time environment ,servers like database server , web server . It is more portable for application developers . The user can subscribe for the required platform , configure and setup the platform depending upon the time required .

Characterstics of PaaS

- ➔ It provides in-built scalability , web service interface and security to connect other applications outside the PaaS.
- ➔ It provides common packages/ services for network , payment integration & databases .
- ➔ It uses multi tenant model for multiple concurrent users with appropriate security .

Pros and Cons of PaaS

Pros :1. Facilitates working with multiple platforms .

2. The users are authorised to develop and upgrade of complete application

3. PaaS automatically takes care of the application's dynamic resource requirement .

Cons : 1. A secure aware applications must be taken as a necessary measures like as secure connection & encryption while acquiring PaaS.

2. Customization of underlying hardware and software may be required .

3. Migration from the PaaS vendors' application to another PaaS vendor will create some problem .

Infrastructure as a Service (IaaS)

Infrastructure as a Service(IaaS) are self service models used for accessing ,monitoring and managing the remote based data centres like storage , computing ,networking services .Best example is Firewall . User can purchase IaaS based on consumption which can't save time from purchasing or installing hardware .

Infrastructure as a Service comes in all different shapes , sizes and colors . there are 8 types of IaaS providers :

1. Computing
2. Enterprise IT
3. Test/Development
4. Cloud Storage
5. Resource Sharing
6. Telecom
7. Wholesale vending
8. High performance computing

Characteristics of IaaS

> Advance reservations can be made for resources for a certain duration of time .

> To cater the need of scalability and provisioned dynamically , elasticity is implemented .

> In order to enhance the avaibility and responsiveness , data centers are geographically distributed around the globe .

Pros & Cons of IaaS

Pros :1. No need to purchase suitable dedicated servers .

2. The software launched on IaaS can be upgraded by the users .

3. The IaaS can be utilized by the developers to test and develop their applications on multiple environments .

Cons: 1. The software can be run in the service provider's infrastructure and therefore , all of the vulnerabilities of such legacy software can be exposed to other users .

2. The virtual machines may become out of date with respect to the security updates.

Cloud Development Models

Private Cloud

Private cloud , which is also known as internal cloud is basically describing the emulation of cloud computing in a private or in a protected network .It uses virtualisation technologies that provide the ability to host the applications

to host the virtual machines or a particular application within the company's own network .It has an ability to recover from failures ,errors .It also allows scale up or demand to allow with the request generated by users .

Private cloud are most commonly used by the enterprise for business critical system & to protect data & intellectual property .

Public Cloud

Public cloud is basically describes the business models in the traditional mainstream sense , where the resources or services are dynamically provisioned on a self service basis on internet basis from third party provider . user can can purchase these cloud from third party provider for storage or bandwidth and CPU cycles consumption .

It is beneficial for reducing the need in various organizations to invest and maintain the IT resources . All the resources are fully utilized as customer gets only those resources as per requirement

Community Cloud

A Community is an offering which is provided to the particular community . .It is also known as hosted cloud .This cloud is still a public cloud but the features and offerings are being tailored to a particular community .

When more than one public cloud grouped together , then can form a community of cloud which can be used to various business partners or list of companies .

Hybrid Cloud

Hybrid cloud is a combination of elements ,i.e., implementation of various forms of cloud computing .

Hybrid cloud provides an environment where an organisation serves or manages the resources or services internally and the rest is created externally . They are mostly used is large scale organisations which provide resources for internal solutions .

Applications of Cloud Computing

The fundamental requirements and constraints for developing a software product remain the same [4].

1. Cloud Computing are broadly used in IT industries or in business industries for solving technical and business related problems by providing data centres, accessing the software and Hardware services by saving money and space and making their own data centres .
2. Cloud computing is also used in Banking industries , since they need a cloud for storing the bank details of people. But , they are providing least amount of security . They also use cloud to set up a network for communication and system .
3. Medical field now a days uses cloud computing for assisting in procuring patient's details by doctors to access data remotely , which can lead to update doctors about patient's condition whether they are present or not .
4. Cloud computing are also used in the area of Education fields by providing conventional and interactive classrooms (smart classes) and also providing remote access of learning and realistic material , that is E-learning .

Future Scope of Cloud computing

The job opportunities for cloud computing are expected to be risen . The jobs in cloud computing might reach from cloud developers to operators . Every role embraces of the expertise of the cloud computing core & some domain specific skills . It can monitor wireless access points, the private, public as well as the hybrid clouds environment, and can identify the occurrence of the problems [5] .

Conclusion

So , the study concludes that the main focus of implementing the cloud is having a backup . It is simple for anyone to approach personal devices and make changes to files . It also helps reduce data delay or redundancy and also makes easier to manage data . It also makes capability of using less resources and easier to access file .

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