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CLOUD COMPUTING- IN A MORE GENERAL SCOPE

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ABSTRACT

Everyone, be it a Small-scale enterprises or large-scale enterprises, are now adopting the concept of cloud computing. Cloud computing comprises of two words but these two words itself offer huge brand of services. Cloud computing is a long way to go term, that is, it is a powerful and a big technique with which comes a list of merits. Basically, Cloud computing is a subscribed based service where a user can get a networked storage space and various other tools to enjoy. With all these achievements in hand, cloud computing fights against some challenges also. This paper to a spatial extent, deals with the usage of cloud computing, about its working, pros, cons and its platform in more general context.

KEYWORDS: Scope, attributes, scalability, model, cloud types, merits, and demerits.

INTRODUCTION

Cloud computing, as the name says a computer application connected with the most basic term CLOUD that combines to work over the internet. In particular, cloud computing can be defined as a metaphor which provides an army of useful services like storage, management and processing of data over a network of remote services hosted on the internet instead of using on local servers or personal computers. All the services work synchronously and with much quick and easy manner.

Cloud computing relies on a group of integrated predefined-coded hardware and software, internet, infrastructure and platform.

The platform provided in cloud computing is independent and provides access from anywhere and everywhere. It's like anywhere and from any device round the world as shown in Fig[2].

The platforms are user friendly and provide an easy and flexible working environment by providing very interactive graphical user interface. Additionally, all these services and benefits can be achieved as a user pay and can go on.

Fig1. Cloud Computing- Round the world [2]

CLOUD TYPES

Clouds have their different categories for which they are widely subscribed to.Fig.[3] defines share of each cloud type over ally.

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PUBLIC CLOUD: -Public cloud, as per its name, is accessed publicly over the network. Any subscriber to a cloud can access the space and resources of cloud using an internet connection. This also refers to the fact that a subscriber using public cloud is relying onthird parties which are presenting IT servicesefficiently on the internet. Example of public cloud includes Amazon AWS, Google apps, salesforce.com, Microsoft BPOs.

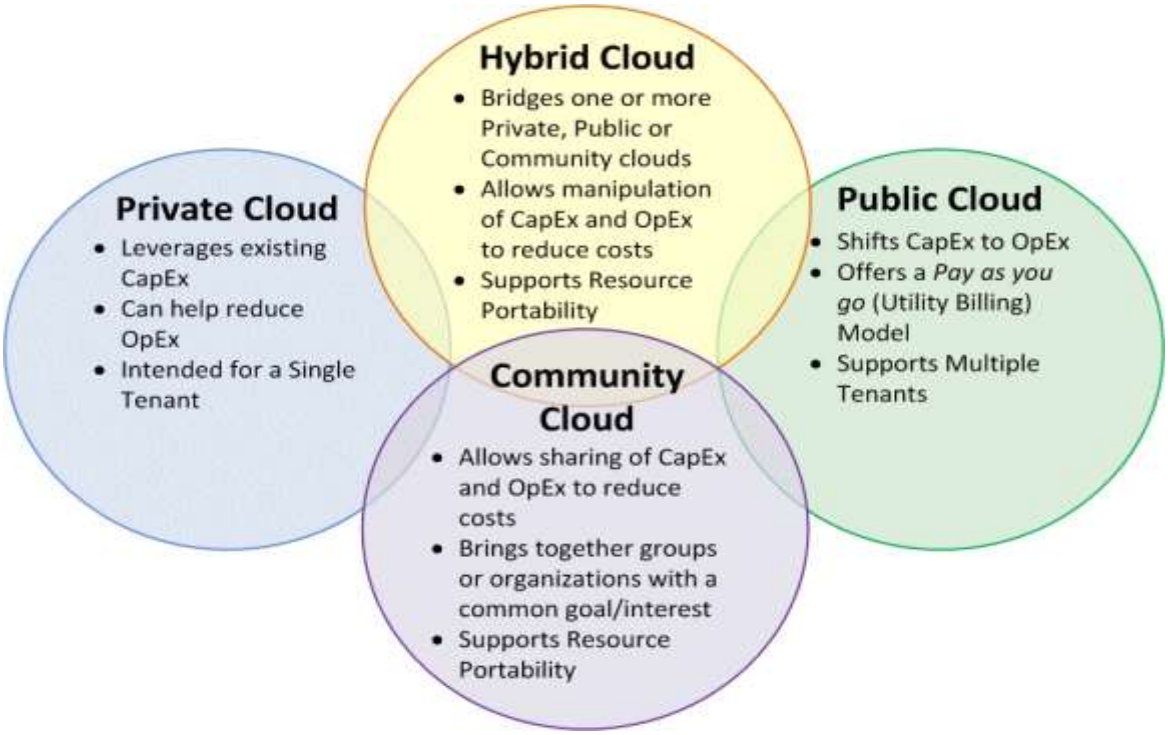

Fig 2. Cloud types [12]

Advantages of Public Cloud

Consistent uptime

- Easy availability of data
- Cost effective- very less expenses of setup and maintenance
- Control with third party
- Scalable
- No wastage of resources

Drawbacks of Public Cloud:

- Data security issue

PRIVATE CLOUD

According to the National institute of standards and technology (NIST), a private cloud is a cloud structure that is made isolated for just one particular organization or a specific group of departments. This means that private cloud is confined to certain circle. Private clouds are mostly used to secure the confidential data. Its security architecture is made like so. It works same like cloud but on small scale.

Advantages of Private Cloud

- Infrastructure is solely operated
- More secure than public cloud
- Cost saving in case of virtualized services
- Reduces complexity

Drawbacks of Private Cloud:

- In comparison to Public cloud, it involves more cost.

COMMUNITY CLOUD

Community Cloud is set to operate on two or more groups of organizations that have same requirements, security, and privacy considerations instead of single organization. It is exclusively accessed by more than one organization.

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Community cloud lies between private and public cloud, also cost of setting up a community cloud is cheaper because of division among the organization.

However, limitation of community cloud can be if compared with the public cloud, is it is more costly. Organizations share fixed bandwidth and storage space.

HYBRID CLOUD

Hybrid, as the name suggests, is a combination of two or more cloud types. Hybrid clouds are considered to be more complex than the other deploymentmodels, since they involve acomposition of two or more clouds (private, community or public). Each member remains a unique entity, but is bound to others through standardized or proprietary technology that enables application and data portability among them [3]. A hybrid cloud is typically offered in one of two ways: a vendor has private cloud and forms a partnership with a public cloud provider, or a public cloud provider forms a partnership with a vendor that provides private cloud platforms [4].

In hybrid cloud, an organization provides and manages some resources in-house and some out-house. For example, organizations that have their human resource (HR) and customer relationship management (CRM) data in public cloud like salesforce.com but have confidential data in their own private cloud [5].

Hybrid clouds [6] offer the cost and scale benefits of public clouds, while also offering the security and control of private clouds.

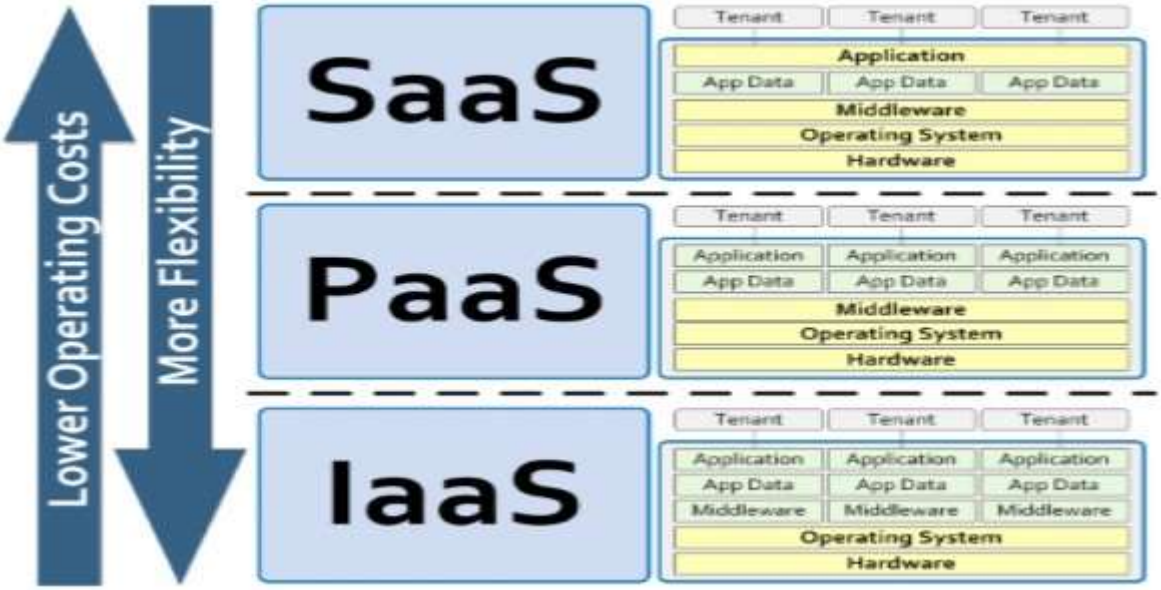

Fig.3 cloud computing stating layers working as a model [12]

The Advantages of hybrid cloud include:

- It supplies strong support to cloud bursting
- There are less expenses involved as most of the needs relies on public cloud providers
- It offers both the controls that are present in private cloud accessibility along with the benefit to rapidly scale up using public cloud.

Disadvantages of hybrid cloud are:

- The9 data flow from a private environment to a public cloud much easier which may leads to inconsistency in data and may affect security and integrity of data.
- Problems of encrypting the data in hybrid technology
- An easier approach to solving the identity, needs of hybrid clouds is to extend the existing
- Enterprise identity and access management to the public clouds. This opens up concerns about how this approach will affect the enterprise identity and its impact on the organization's security [7].

CLOUD COMPUTING REFERENCE MODEL

Cloud computing is completely latest technique and with its great scope implies different cloud services as stated in Fig [3]. Its various flavors come in

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- Software as a service
- Infrastructure as a service
- Platform as a service
- Data as a service
- Network as a service
- Storage as a service

SOFTWARE AS A SERVICE (SaaS)
A software as a service is one to many software delivery service. It gives its subscribers wide range of activities, resources, its different applications, software and its functions over the internet. With the software as a service, user needs not to worry about the installation, daily work and maintenance. Software as a service or simply hosted applications is hosted remotely. SaaS allows the same software to be accessed on all devices over the cloud. Example Facebook, sales force, Google apps, workday are some of the providers that use SaaS applications.

PLATFORM AS A SERVICE (PaaS)
PaaS, as the name says, it provides computing platform for the development and up gradation of software, delivered over the web. It provides various interrelated activities for the software like testing, deploying hosting and maintaining different UI scenarios. Platform as a service also provides tools that can be used to handle billing and subscription management like operating system handles and manages all the work and acts as a platform in which all software applications run, same as that is Hadoop, Amazon web services (AWS), Mendix, Appear IQ. Applications which use PaaS inherit the attributes of cloud such as scalability, high- availability, SaaS enablement and much more.

INFRASTRUCTURE AS A SERVICE (IaaS)
The services infrastructure as a service deals with operating systems, network connectivity and storage. The user needs not to operate the internal infrastructure. Infrastructure services provided by cloud vendors, allow any user to provision a large number of compute instances fairly easily [9].
Amazon EC2 is an example of IaaS, where virtual servers can be set up and configured over a web based interface within minutes [10-11]. The consumer can choose operating system, database and application development environment, which gives the consumer greater control over the hardware in comparison to platform as a service. The consumer has the possibility to configure the servers based on their needs which generally includes more maintenance in comparison to Platform-as-a-Service but also more options [12].

DATA AS A SERVICE (DaaS)
Like all the services, data is integrated in a form that is understandable to users and are accessible to it regardless of any geographical or network organization. This provides cloud users with protected, well updated and affordable data. Also, data which is accessed has a single update point which facilitates its accessibility to be in more controlled way which ultimately leads to good quality of data. However, security issues on one single voluminous data are applied which make it easier to encrypt in case of any sensitivity.
Example oracle data as a service helps customers deal with their data to access and personalize their experience

NETWORK AS A SERVICE (NaaS)
Network as a service often called as Communication as a service, delivers its cloud subscribers with the network related services. NaaS provides flexible and extended virtual private network (VPN), bandwidth on demand, custom routing, protocols, firewalls, wide area networks, data maintenance, security methods and antivirus. With theuse of appropriate network, subscriber can access to cloud data. So NaaS makes sure the availability of communication lines for better uptime.

STORAGE AS A SERVICE (SaaS)
Storage as a service compensates for the data that is, it keeps the data to some other party. That is why it is also considered as a kind of model which is deployed in such a way that keeps the storage space in other third company. However this kind of approach is useful in small sized organizations that may not be able to build or maintain large storage structures.

CHOOSING A CLOUD PROVIDER?
As there are different cloud providers which are intended to work in their own manner, so is the user's requirements which make them work accordingly. Each cloud provider has its own significant characteristics. However considerations may be taken according to business environment or other specific objectives. That is in what kind of environment cloud computing needs to be done. Also there isa key factor which needs to be considered before taking the leap. As per technological point of view, more storage space may be required so

accordingly cloud services can be selected. If it is for personal home use, then there will be different cloud type. Factors like security, costs are also taken in the court. Also some large sized organizations do pragmatic case study on all the cloud types for any accessibility. Many organizations look for SSL certificate for security purpose which they consider the solution of hour when security is their constraint. As cloud computing is constantly changing the IT landscape, several other key issues like access benefits, regulatory compliance, data segregation, monitoring, continuity, data recovery are looked. Each provider does what user expects from it, it can make user reap its benefits only when it is chosen according to needs.

MERITS TAKEN INTO CONSIDERATION FOR CLOUD COMPUTING

- Due to the fact that there is no need of any physical medium for any data storage, cloud computing gives better performance.
- No tension of switching on/off computer and also internal traffic is much faster.
- Cloud user can access sitting anywhere and from everywhere, no need to take any physical documents along.
- Cloud computing helps to recover from disaster recovery
- It creates backup at two or more places with the use of virtualization
- no limit for storage
- organizations need not to worry about maintenance costs as it gets reduced with the use of cloud computing
- each and every data of user gets synced automatically with the subscription
- latest version gest easily available
- User is not confined to a single desktop computer. With the use of cloud computing, user gest the benefit of increased power of computing.
- Cloud technology provides flexibility to all kinds of organizations when they are deployed to resources

CLOUD DEMERITS ASSOCIATED WITH COMPUTING

The following are some of the notable challenges associated with the cloud computing

- Perhaps one of the burning issue surrounding cloud computing relates to security and monitoring the use of cloud by the service providers.
- Problem of vendor lock-in: when a client uses two separate vendors for availing its services, it cannot be integrated between two vendors since different vendors perform function differently with hardware and software so migration of data is nearly impossible.
- Customer dissatisfaction at times when service is unavailable due to technical fault or due to going out of business.
- Absence of proper Service Level agreement (SLA) creates problems among the vendors
- There is no stable performance during high load.

CONCLUSION

In the Crux, it can be said that cloud computing is a very powerful and most emerging technology. It has many notable pros but on the other hand suffers from some cons as well to which different amendments are still on.

Cloud computing is vast with its deep features so when choosing any cloud type or provider, be certain with its working and factors must be consider under different circumstances. Cost, security, business environment, platform, extensibility, flexibility must be taken into account. All these factors have been discussed in this paper in a general way. Also, deep and fortunate research believes cloud computing to be a very reliable service for its subscribers if used properly. Many enterprises have been really working upon to move their IT system into the clouds.

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