

Cloud Deployment Models, Benfits and Its Challenges

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Abstract:-*In recent days the cloud computing is a new business model and it is a recent and advance topic. It is an online file storage center. The cloud computing users are exploring new ways to share the business related documents, files through the network anywhere at any time .The customers and industries to utilize the apps via the internet. In cloud computing has four models they are private cloud, public cloud, community cloud and hybrid cloud. The private is a particular model of cloud computing that involves a distinct and secure cloud based environment in which only the specified client can operate. The public cloud is based on the standard cloud computing model, in which a service provider makes resources, such as virtual machine, applications or storage , available to the general public over the internet. The community cloud is a cloud service model that provides a cloud computing solution to a limited number of individuals or organizations that is a governed, managed and secured commonly by all the participating organizations or a third party managed service provider. The hybrid cloud is combination of private and public cloud storage. The cloud services are IaaS, SaaS, and PaaS. Then these services are providing many features. IaaS is a form of cloud computing that provides virtualized computing resources over the internet. SaaS is a software distribution model in which a third-party provider hosts applications and makes them available to customers over the internet. PaaS is a another cloud computing service model in which a third-party provider delivers hardware and software tools—usually those needed for application development—to users over the internet. In this paper discussed about the types of cloud, cloud deployment models services, benefits and challenges of the overview of a cloud.*

I. Introduction

Cloud computing refers to manipulating, configuration and accessing the hardware and software resources remotely. It offers online data storage, infrastructure, and application. Cloud computing offers platform independency, as the software is not require to installed locally on the PC. Hence, the cloud computing is making our business applications mobile and collaborative. Cloud providers typically use a “pay - as - you - go” model, which can lead to unexpected operating expenses. Data storage is the fundamental service provided by cloud. It provides the combination of technology such as hosting and storage services over the internet. The cloud operators have been targeting at consistency, safety, privacy-preserving and cost-efficient cloud design. But now that they have, and realize the saving potential associated with the ability to outsource the software and hardware necessary for tech services, the pace at which business embrace and utilize internet-based systems has quickened. Business can employ cloud computing in different ways. Some users maintain all applications and data on the cloud, while others use a hybrid model, keeping certain applications and data on private servers and other on the cloud.

II. Cloud Deployment Models

There are four main cloud deployment models that differ significantly and for which most of the companies' options: a public, private, hybrid and a community one. There are also web-based organization systems that are not so widespread, such as virtual private, inter-cloud and others. The following diagram represents the cloud deployment model.

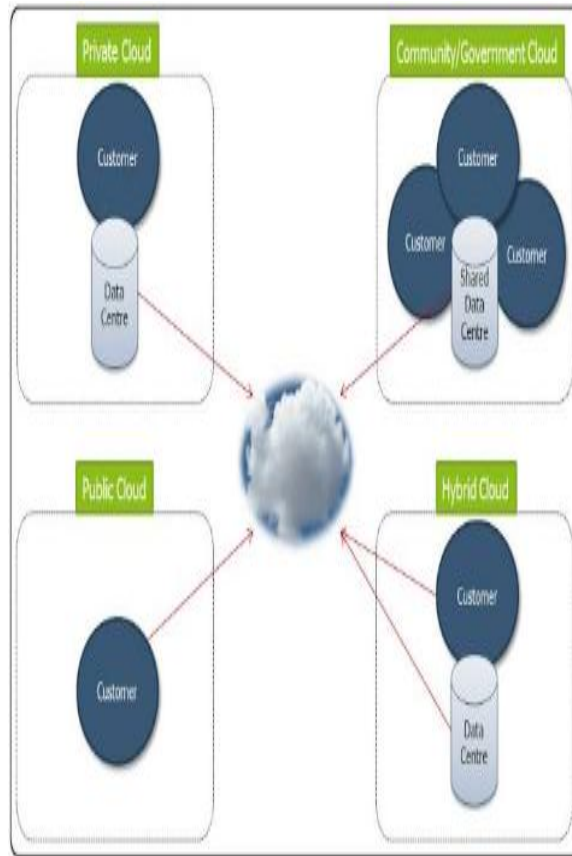


Figure 2.1 Cloud deployment model

2.1 Public cloud:

The name speaks for itself, as public clouds are available to the general public and data are created and stored on third-party server. As server infrastructure belong to service providers that manage then and administer pool resources, the need for user companies to buy and maintain the own hardware is eliminated. Provider companies offer resources as a service on a free of charge or pay-per-use basic through the internet connection. Users can scale them when required. When it comes to popular cloud deployment models, examples are Google AppEngine, IBM's blue, Microsoft Azure. The following diagram represents the Public cloud model.

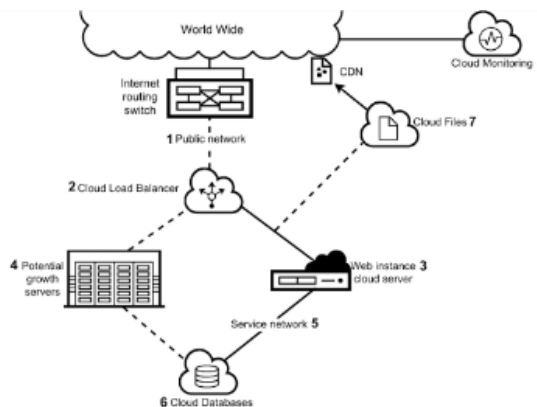


Figure 2.2 Public cloud

2.2 Private cloud:

There is little to no difference between public and private clouds from the technical point of view, as their designs are very similar. However, unlike in the public one, only one specific company owns a private cloud, which is why it is also called internal or corporate. Because these data center architecture reside within the firewall, they provide enhanced security. Even though one organization runs its workloads on a private basis,

third-party can also manage it, and the server can be hosted externally or on premises of the user company. Only a clearly defined scope of persons has access to the information kept in a private repository, preventing the general public from using it. In light of numerous breaches, a growing number of large corporations decided on a closed private type as it is expected to be less risky. Multiple service providers- including Amazon, Dell and Red Hat Cisco also build private solutions. The following diagram represents the Private cloud model.

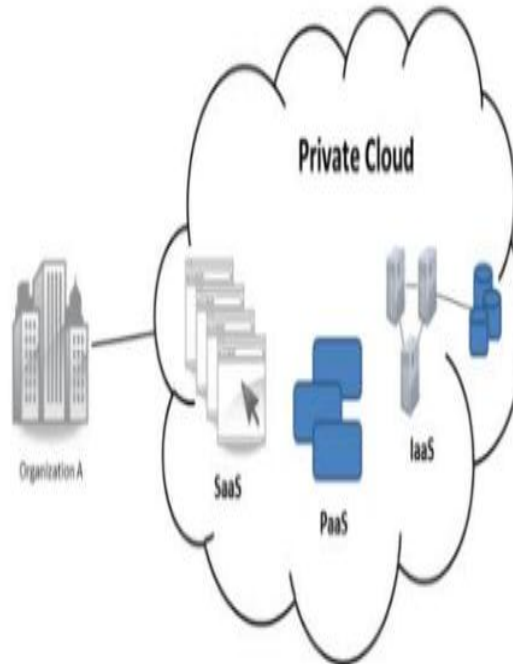


Figure 2.3 Private cloud

2.3 Community Cloud:

A Community cloud deployment model resembles a private one to a large extent; the only difference is the set of users. While a private type implies that only one company owns the server, in the case of community one, several organizations with similar background share the infrastructure and related resources. As the organization have uniform security, privacy and performance requirements, this multi-tenant data center architecture helps companies achieve their business-specific objective. That is why a community model is particularly suited for organizations that work on joint projects. In that case, a centralized cloud facilitates project development, management and implementation. Also the costs are shared across all users. The following diagram represents the Private cloud model.

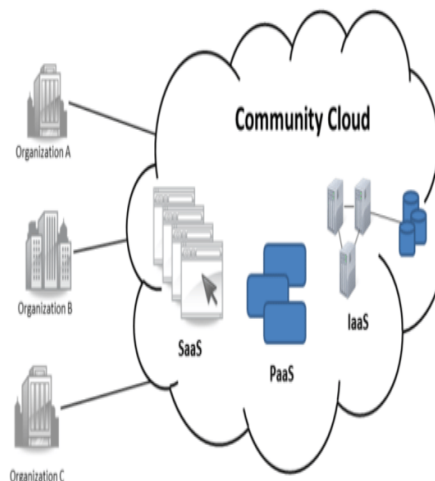


Figure2.4 Community cloud

2.4 Hybrid cloud:

As it is usually the case with any hybrid phenomenon, a hybrid cloud encompasses the best features of the above –mentioned cloud computing deployment models- a public, private and community ones. It allows companies to mix and match the facets of all three types that best suit their requirements. As an example, a company can balance its loads by locating mission-critical workloads on a secure private cloud and deploying less sensitive ones to a public one. It not only safeguards and controls strategically important assets but does so in the most cost-and resource-effective way possible for each specific case. Also, this approach facilitates data and application portability. The following diagram represents the Private cloud model.

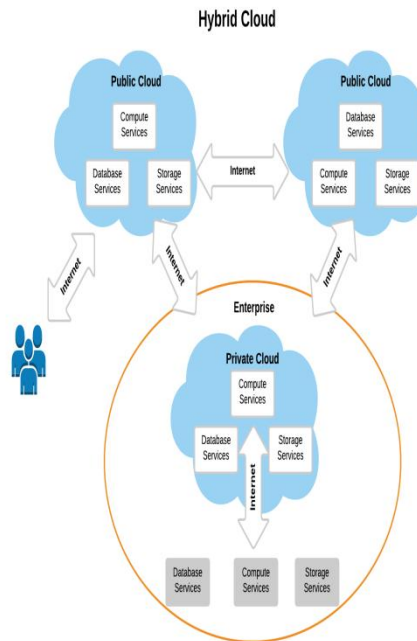


Figure 2.5 Hybrid cloud

III. Cloud Computing Service Model

Cloud computing is a model for enabling convenient, on –demand space network access to a shared pool of configurable computing resources that network servers storage, applications, and services that can be rapidly provisioned and released with minimal management effort or service provider interaction. The three services models are SaaS, PaaS, and IaaS.

3.1 Software as a Service (SaaS):

The capability provided to the consumer is to use the providers application running on a cloud infrastructure².The application are accessible from various client device through either a thin client interface, such as a web browser example 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.

3.2 Platform as a Service (PaaS):

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

3.3 Infrastructure as a Service (IaaS):

The capability provided to the consumer is to provision processing, storage, network, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can

include operating system and application .The consumer does not manage or control the underlying cloud infrastructure but has control over operating system, storage, and deployed applications, and possibly limited control of select networking components (e.g. ,host firewalls) . The following diagram represents the Cloud Service models.

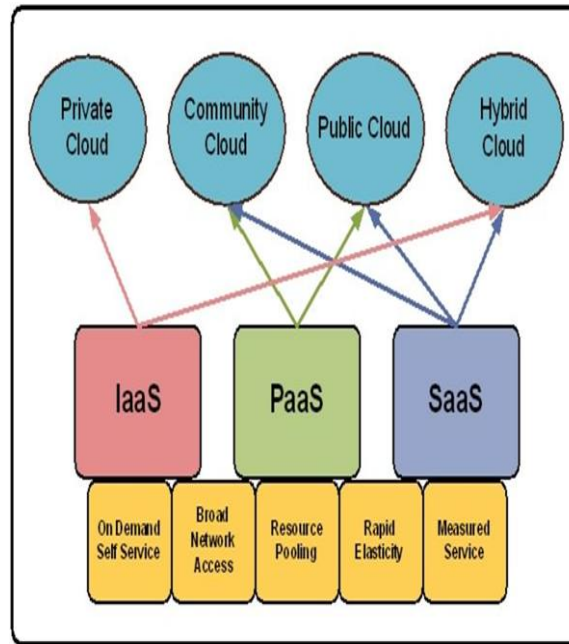


Figure 3.1 Cloud Service Models

IV. Benefits

Cloud computing offers our business many benefits .It allows you to set up what is essentially a virtual office to give you the flexibility of connecting to our business files anywhere, anytime.

4.1 Reduced IT Cost:

Moving to cloud computing may reduce the cost of managing and maintaining our IT systems. Rather than purchasing expensive systems and equipment for our business, you can reduce our costs by using the resources of our cloud computing service providers.

4.2 Scalability:

Our business scale up or scale down our operations and storage needs quickly to suit our situation, allowing flexibility as our needs change. Rather than purchasing and installing expensive upgrades us. Your cloud computer service provider can handle this for you.

4.3 Flexibility of work practices:

Cloud computing allows employees to be more flexible in their work practices. Example you have the ability to access data from home, on holiday, or through the commute to and from work (providing you have an internet connection). If you have needed access to your data while you are off-site, you can connect to your virtual office, quickly and easily.

4.4 Access to automatic updates

Access to automatic update for your IT requirements may be included in your service fee. Depending on your cloud computing service providers, your system will regularly be updated with the latest technology. This cloud includes up-to-date versions of software, as well as upgrades to servers and computer processing power.

4.5 Business continuity

Protecting your data and systems is an important part of business continuity planning. Whether you experience natural disaster, power failure or other crisis, having your data stored in the cloud ensures. It is backed up and protected in a secure safe location being able to access to your data again quickly allows you to conduct business as usual , minimizing any downtime and loss of productivity.

V. Challenges

There are many challenges involved in cloud computing, and if you are not prepared to deal with them, you won't realize the benefits. It has less trust, Privacy and availability. Performance, ownership and cost saving. The creation and adoption of new software development process is highly complicated. The new ways to manage and maintain the cloud capacity. It has hard work to maintain the security, legal and Regulatory issues.

5.1 Cost:

Cloud computing itself is affordable, but tuning the platform according to the company's needs can be expensive. Furthermore, the expense of transferring the data to public cloud can prove to be a problem for short-leaved and small- scale projects.

5.2 Service Provider Reliability

The capacity and capability of technical service provider are as important as price. In the service provider must be available when you need them. The main concern should be the service provider's sustainability and reputation.

5.3 Downtime

Downtime is a significant shortcoming of cloud technology. No sellers can premise a platform that is free of possible downtime. Cloud technology makes small companies reliant on their connectivity, so companies with an untrustworthy interconnection probably want to think twice before adopting cloud computing.

5.4 Password Security

Industrious password supervision plays a vital role in cloud security. However, the more people you have accessing your cloud account, the less secure it is. Anybody aware of your passwords will be able to access the information you store there.

5.5 Data Privacy

Sensitive and personal information that is kept in the cloud should be defined being for internal use only, not to be shared with third parties. Business must have a plan to securely and efficiently manage the data the gather.

5.6 Vendor Lock-In

Entering a cloud computing agreement is easier than leaving it "Vendor lock-in" happens when altering providers is either excessively expensive are just not possible. It cloud be that the service in nonstandard or that there is no viable vendor substitute.

VI. Conclusion

Cloud computing is recently new technological development that has the potential to have a great impact on the world. It has many benefits that it provides to it users and businesses. For example, some of the benefits that it provides to businesses, is that it reduce operating cost by spending less on maintenance and software upgrades and focus more on the businesses it. But there are other challenges the cloud computing must overcome. People are very skeptical about whether their data is secure and private. There are no standards or regulations worldwide provided data through cloud computing. Users also worry about who can disclose their data and have ownership of their data. But once, there are standards and regulations worldwide, cloud computing will revolutionize the future.

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