Cloud Computing Deployment Models

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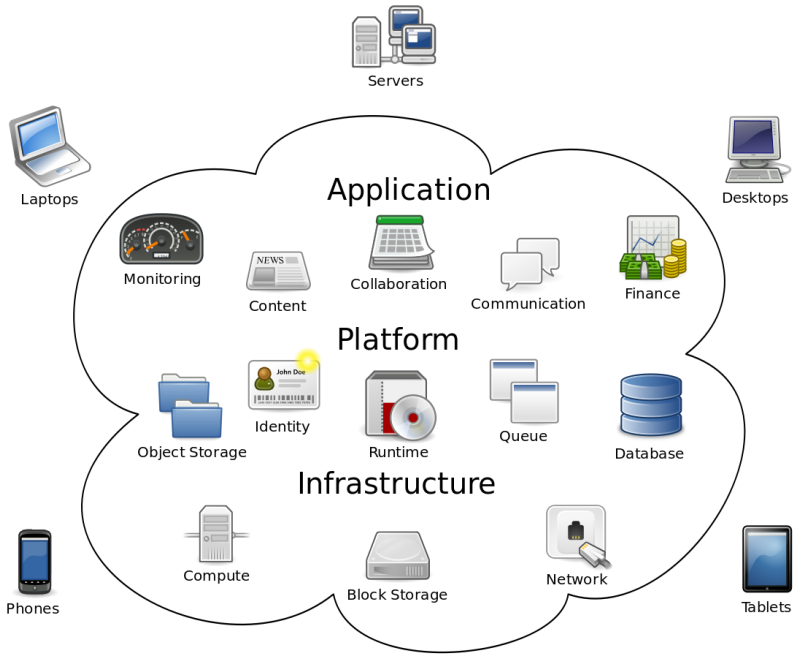
amazon
web services™

Windows Azure

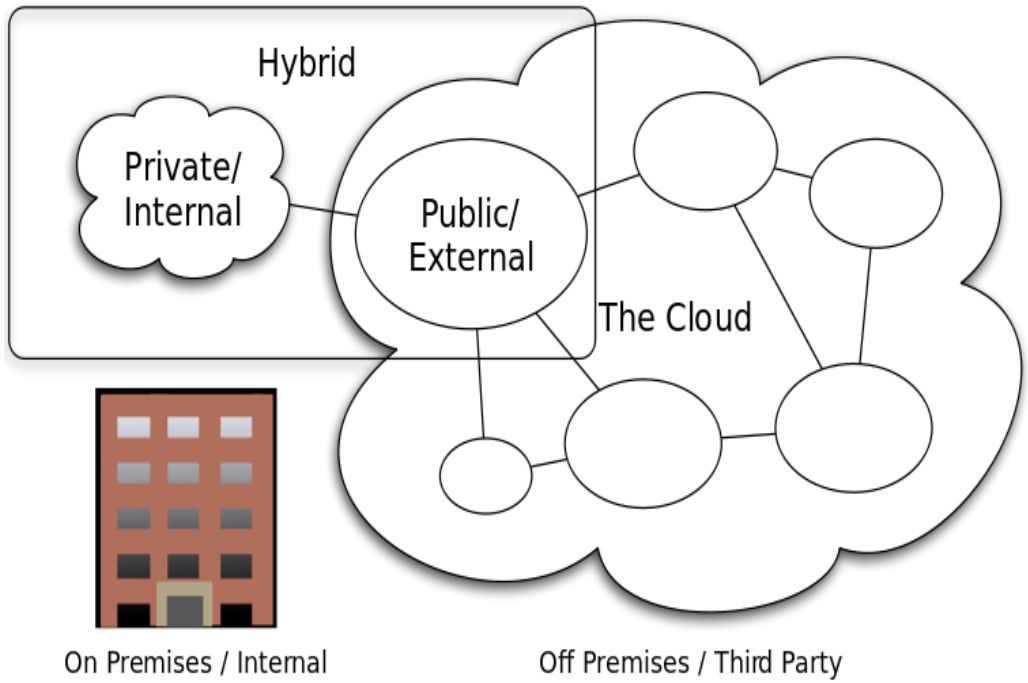
What is Cloud Computing?

- Cloud computing:
  - Internet-based computing in which large groups of remote servers are networked so as to allow sharing of data-processing tasks, centralized data storage, and online access to computer services or resources.
  - Any computer related task that is done entirely on the Internet



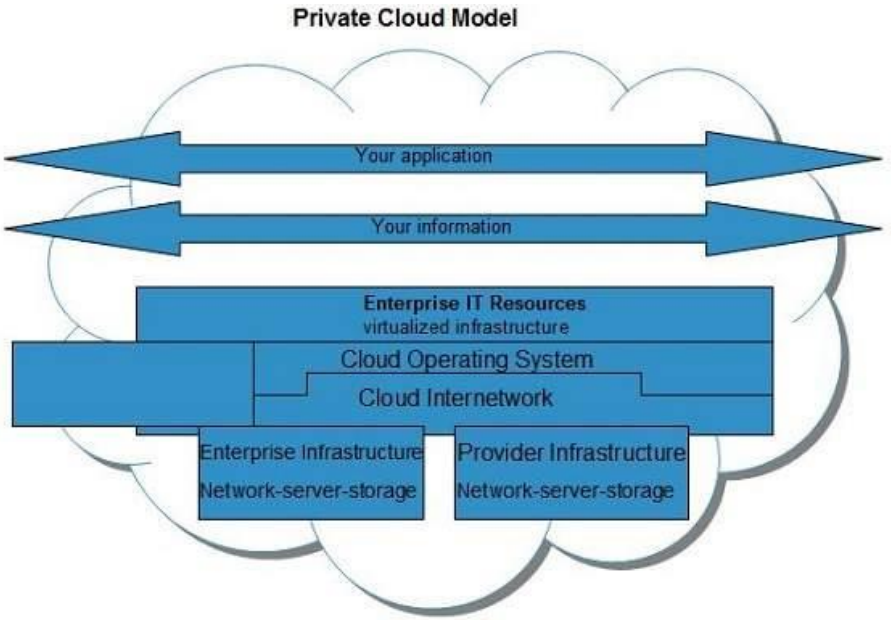
Deployment Models

- Public cloud
  - Done by service providers
- Community cloud
  - organizations from a specific community with common concerns
- Private cloud
  - operated solely for a single organization
- Hybrid cloud
  - composition of two or more clouds (private, community or public)



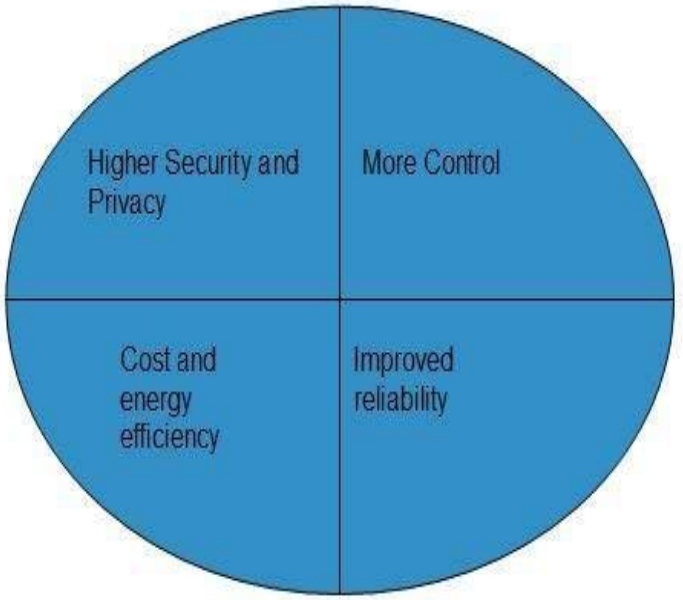
Private Cloud

- It is a cloud-based infrastructure used by stand-alone organizations. It offers greater control over security.
- The data is backed up by a firewall and internally, and can be hosted internally or externally.
- Private clouds are perfect for organizations that have high-security requirements, high management demands, and availability requirements.



Benefits

- 1. High Security and Privacy
- 2. More Control
- 3. Cost and Energy Efficiency
- 4. Reliable

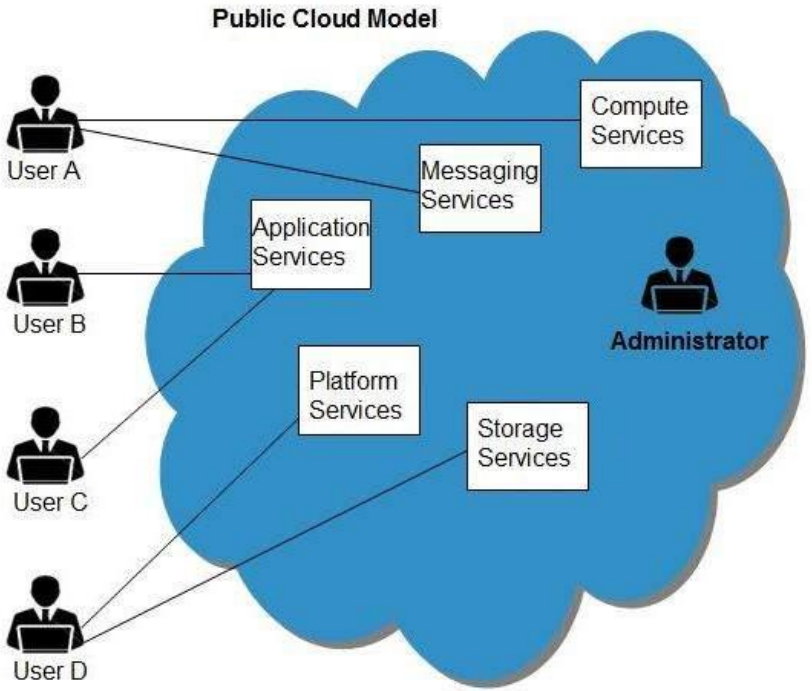


Disadvantages

- 1. Restricted Area of Operation
- 2. High Priced
- 3. Limited Scalability
- 4. Additional Skills

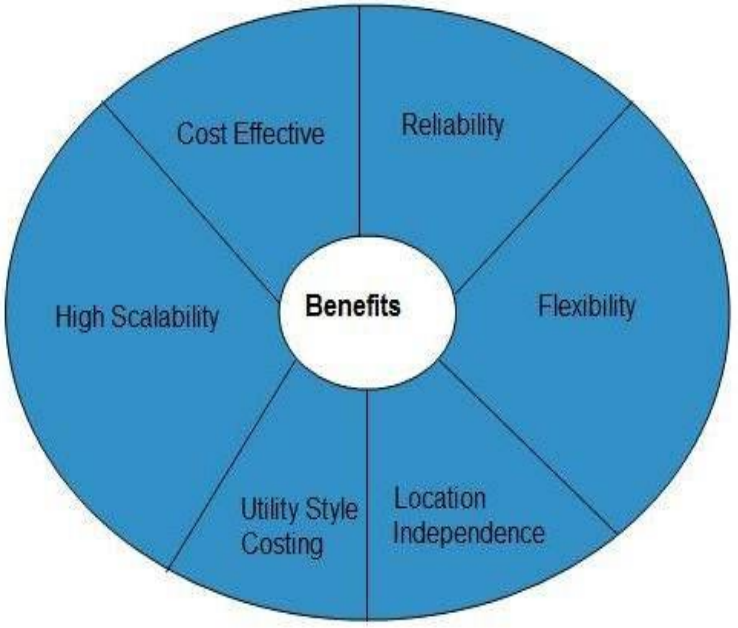
Public Cloud

- This type of cloud services is provided on a network for public use. Customers have no control over the location of the infrastructure.
- It is based on a shared cost model for all the users, or in the form of a licensing policy such as pay per user.
- Public deployment models in the cloud are perfect for organizations with growing and fluctuating demands.
- It is also popular among businesses of all sizes for their web applications, webmail, and storage of non-sensitive data.



Benefits

- 1. Cost Effective
- 2. Reliability
- 3. Flexibility
- 4. Location Independence
- 5. Utility Style Costing
- 6. High Scalability

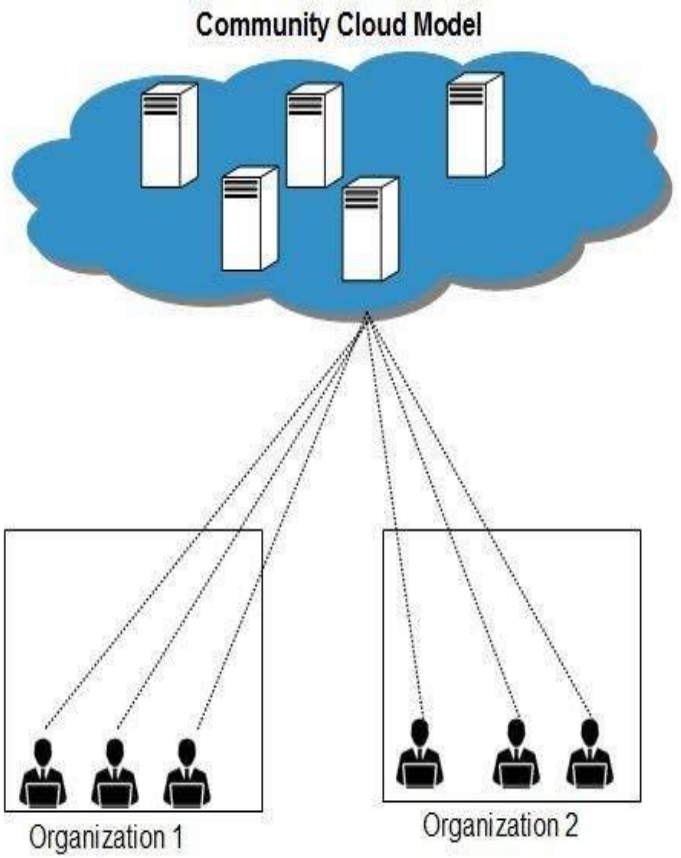


Disadvantages

- Low Security
- Less Customizable

Community Cloud

- It is a mutually shared model between organizations that belong to a particular community such as banks, government organizations, or commercial enterprises.
- Community members generally share similar issues of privacy, performance, and security.
- This type of deployment model of cloud computing is managed and hosted internally or by a third-party vendor.



Benefits

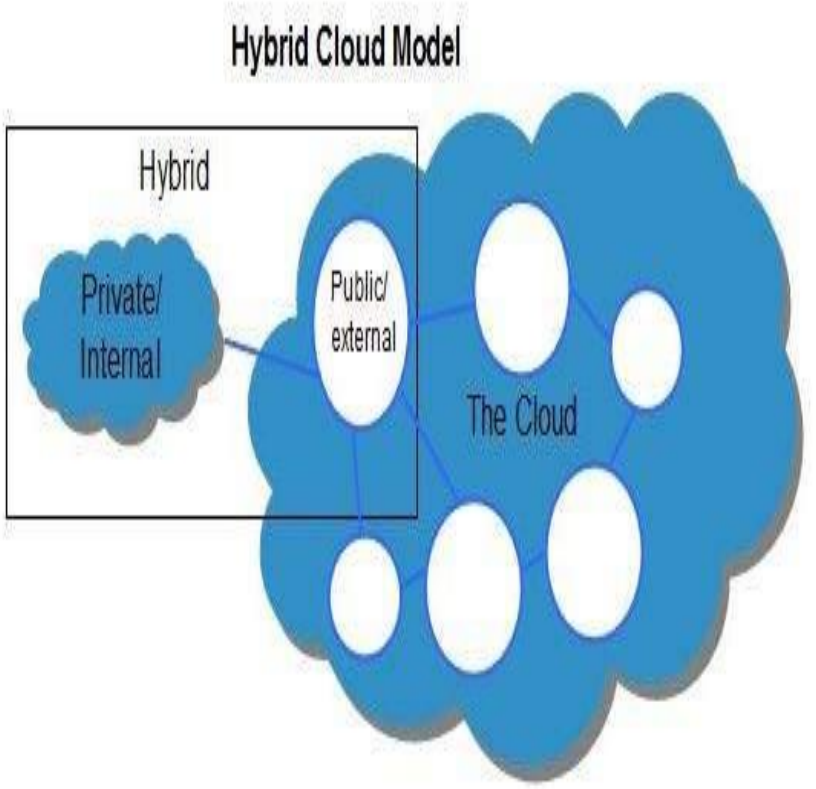
- 1. Cost Effective
- 2. Sharing Among Organizations
- 3. Security

Disadvantages

- Since all data is located at one place, one must be careful in storing data in community cloud because it might be accessible to others.
- It is also challenging to allocate responsibilities of governance, security and cost among organizations.

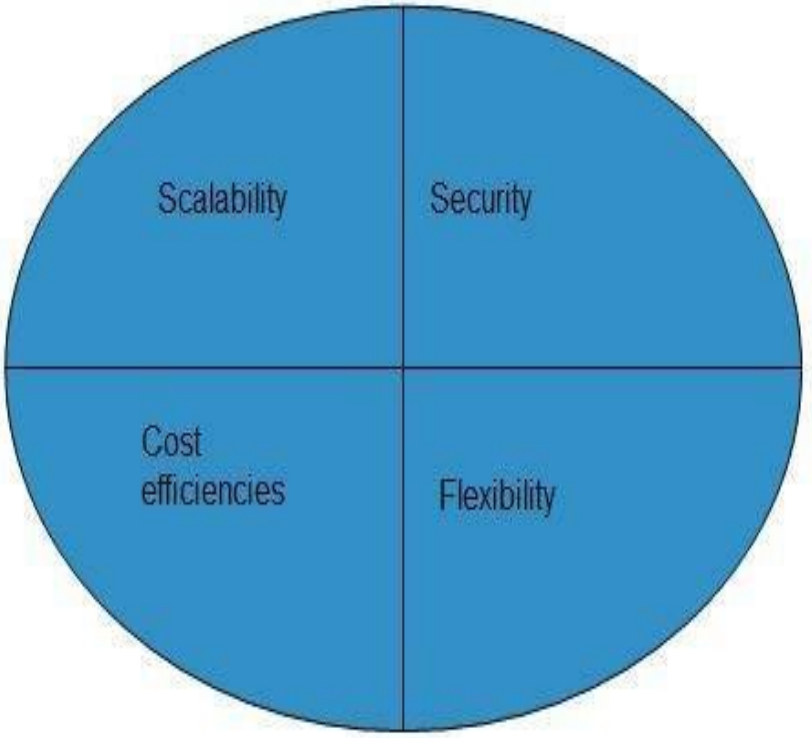
Hybrid Cloud

- This model incorporates the best of both private and public clouds, but each can remain as separate entities.
- Further, as part of this deployment of cloud computing model, the internal, or external providers can provide resources.
- A hybrid cloud is ideal for scalability, flexibility, and security. A perfect example of this scenario would be that of an organization who uses the private cloud to secure their data and interacts with its customers using the public cloud.



Benefits

- 1. Scalability
- 2. Flexibility
- 3. Cost Efficiency
- 4. Security

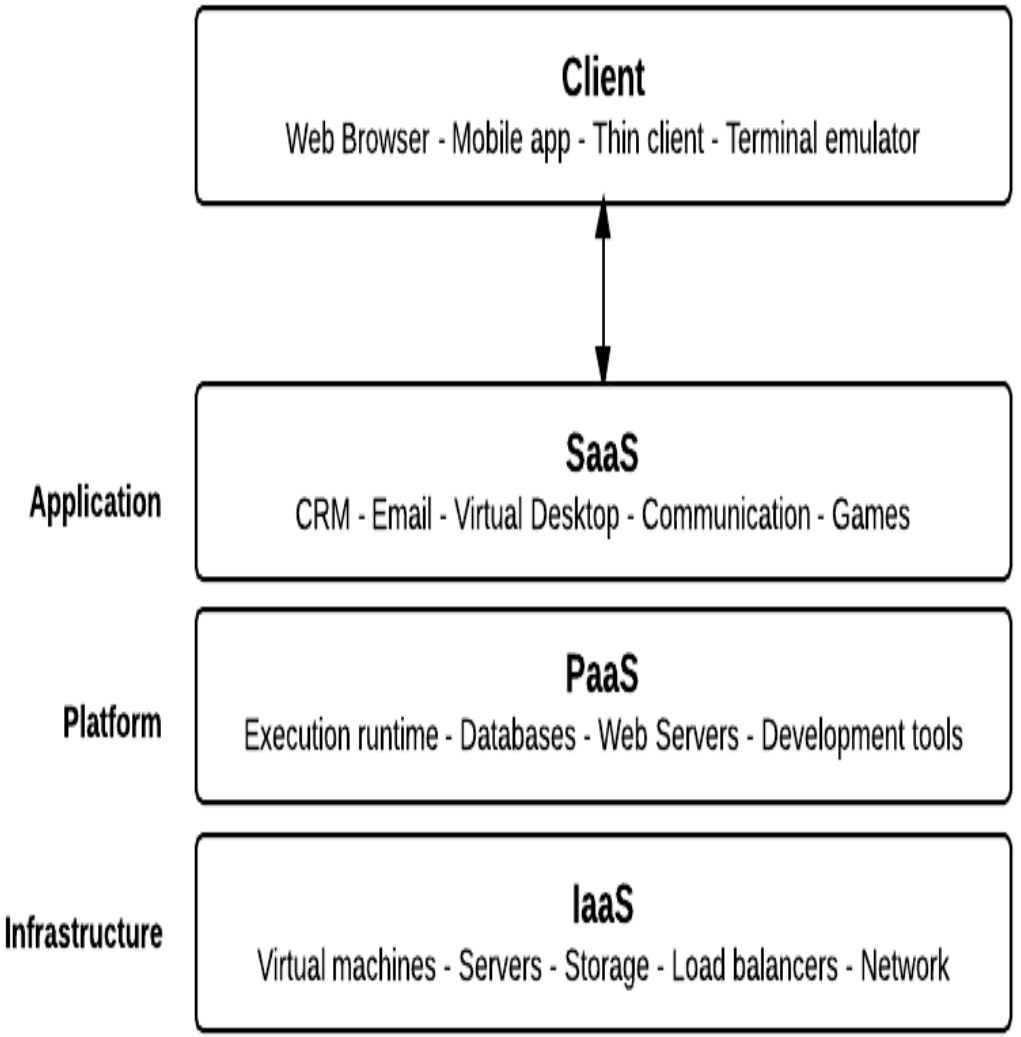


Disadvantages

- 1. Networking Issues
- 2. Security Compliance
- 3. Infrastructure Dependency

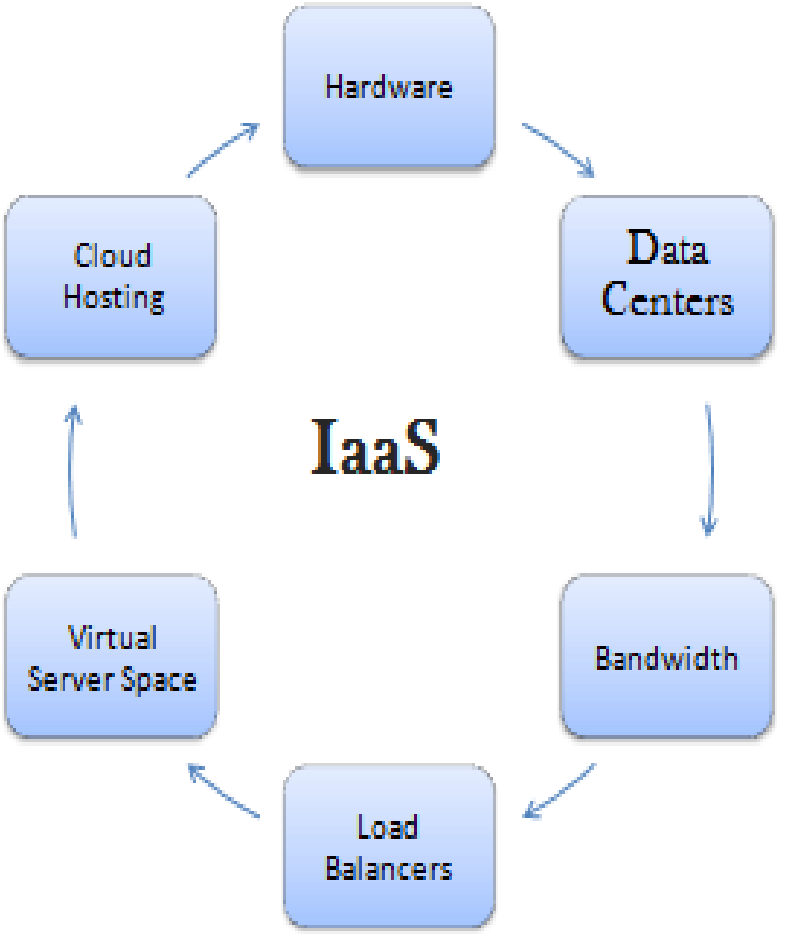
Cloud Service Models

- Cloud computing is offered in three different service models which each satisfy a unique set of business requirements. These three models are known as
- **Software as a Service (SaaS),**
- **Platform as a Service (PaaS), and**
- **Infrastructure as a Service (IaaS).**



IaaS

- **Infrastructure as a service** offers a standardized way of acquiring computing capabilities on demand and over the web.
- Such resources include storage facilities, networks, processing power, and virtual private servers.
- These are charged under a “pay as you go” model where you are billed by factors such as how much storage you use or the amount of processing power you consume over a certain timespan.
- In this service model, customers do not need to manage infrastructure, it is up to the provider to guarantee the contracted amount of resources and availability.



Characteristics of IaaS

- There are the following characteristics of IaaS –
  - Resources are available as a service
  - Services are highly scalable
  - Dynamic and flexible
  - GUI and API-based access
  - Automated administrative tasks
- **Example:** DigitalOcean, Linode, Amazon Web Services (AWS), Microsoft Azure, Google Compute Engine (GCE), Rackspace, and Cisco Metacloud.

SaaS

- **Software as a Service** offers applications that are accessed over the web and are not managed by your company, but by the software provider.
- This relieves your organization from the constant pressure of software maintenance, infrastructure management, network security, data availability, and all the other operational issues involved with keeping applications up and running.
- SaaS billing is typically based on factors such as number of users, usage time, amount of data stored, and number of transactions processed.
- SaaS is also known as "**on-demand software**".

Characteristics of SaaS

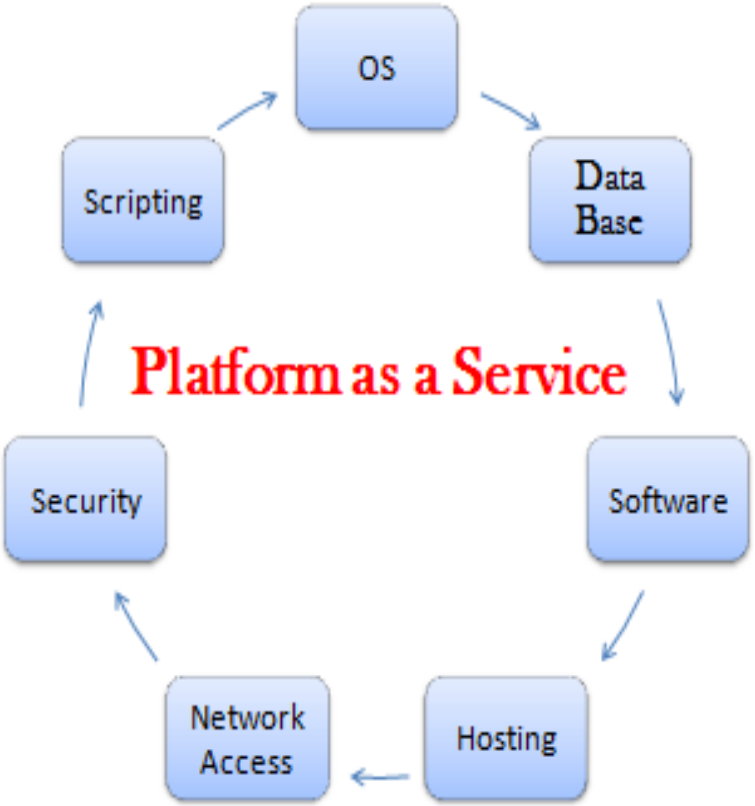
There are the following characteristics of SaaS -

- Managed from a central location
- Hosted on a remote server
- Accessible over the internet
- Users are not responsible for hardware and software updates. Updates are applied automatically.
- The services are purchased on the pay-as-per-use basis

- **Example:** BigCommerce, Google Apps, Salesforce, Dropbox, ZenDesk, Cisco WebEx, ZenDesk, Slack, and GoToMeeting.

PaaS

- **Platform as a Service** is halfway between Infrastructure as a Service (IaaS) and Software as a Service (SaaS).
- It offers access to a cloud-based environment in which users can build and deliver applications without the need of installing and working with IDEs (Integrated Development Environments, which are often very expensive.
- Additionally, users can often customize the features they want included with their subscription.



Characteristics of PaaS

- There are the following characteristics of PaaS -
  - Accessible to various users via the same development application.
  - Integrates with web services and databases.
  - Builds on virtualization technology, so resources can easily be scaled up or down as per the organization's need.
  - Support multiple languages and frameworks.
  - Provides an ability to "**Auto-scale**".
- **Example:** AWS Elastic Beanstalk, Windows Azure, Heroku, Force.com, Google App Engine, Apache Stratos, Magento Commerce Cloud, and OpenShift.

Difference between IaaS, PaaS, and SaaS

IaaS	Paas	SaaS
It provides a virtual data center to store information and create platforms for app development, testing, and deployment.	**It provides virtual platforms and tools to create, test, and deploy apps.**	**It provides web software and apps to complete business tasks.**
It provides access to resources such as virtual machines, virtual storage, etc.	**It provides runtime environments and deployment tools for applications.**	**It provides software as a service to the end-users.**
It is used by network architects.	**It is used by developers.**	**It is used by end users.**
IaaS provides only Infrastructure.	**PaaS provides Infrastructure+Platform.**	**SaaS provides Infrastructure+Platform +Software.**