

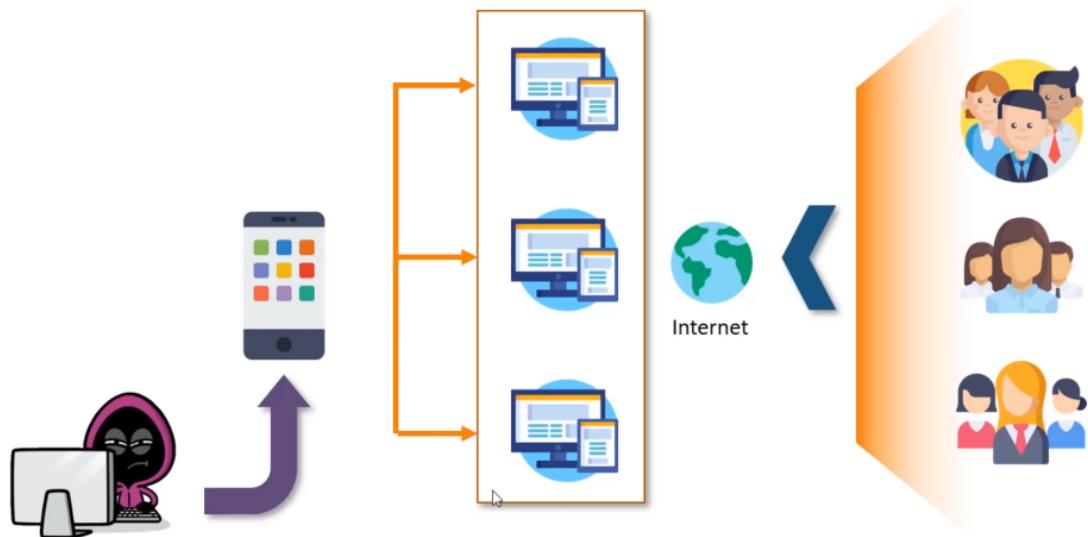
What is Cloud Computing?

Introduction to Cloud Computing

Cloud computing is the practice of using remote servers on the internet for carrying out a task, rather than using our own computers/servers.



Introduction to Cloud Computing



When you created an application and wanted to share it to the market, then you must buy servers, configure it and connect to the internet, then only people will come use your application. And, you want to arrange staff to investigate everything. You need to create a DNS name to your web site or ip static address should be given to your application.

If you rent servers/infrastructure from AWS or some other cloud providers, there are lot of advantages.

Cloud Computing Advantages



Cloud Products



NETFLIX **airbnb**

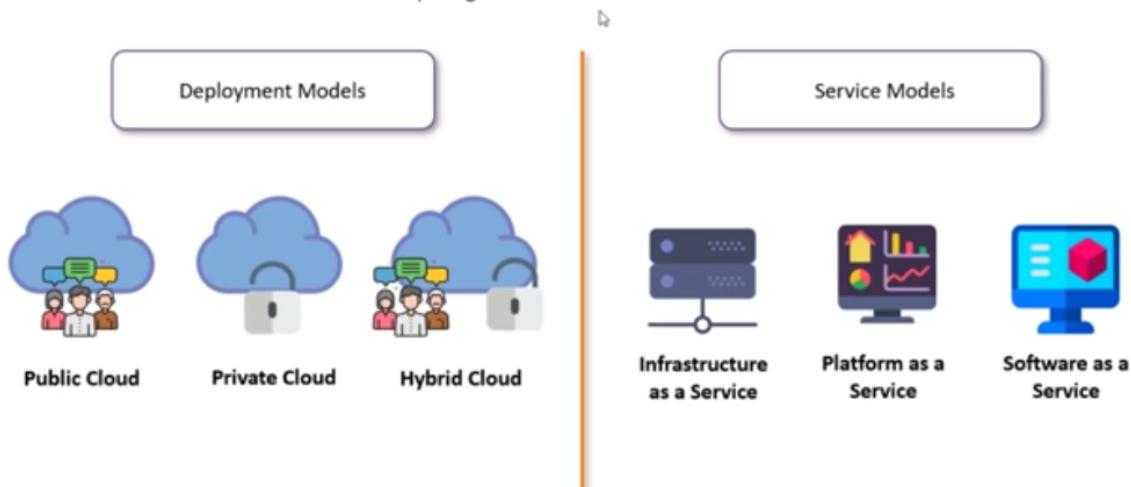
amazon

prime video

Cloud Computing Models:

Cloud Computing Models

There are two kinds of models in Cloud Computing:

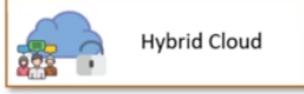


- Public Cloud
- Private Cloud
- Hybrid Cloud

Public Cloud

In a public cloud deployment mode, the services which are deployed are open for public use and generally public cloud services are free. Technically there may be no difference between a public cloud and a private cloud, but the security parameters are very different, since the public cloud is accessible by anyone there is a more risk factor involved with the same.

Cloud Computing Models - Deployment



Public cloud is defined as computing services offered by third-party providers over the public Internet, making them available to anyone who wants to use or purchase them



Private Cloud

A private cloud is operated solely for a single organization, it can be done by the same organization or a third-party organization. But usually the costs are high when you are using your own cloud since the hardware would be updated periodically, security also has to be kept in check since new threats come up every day.

Cloud Computing Models - Deployment



Public Cloud



Private Cloud



Hybrid Cloud

Private cloud refers to a model of **cloud** computing where IT services are provisioned over **private** IT infrastructure for the dedicated use of a single organization.



Hybrid Cloud

A hybrid cloud consists the functionalities of both private and public cloud

Cloud Computing Models - Deployment



Public Cloud



Private Cloud



Hybrid Cloud

Hybrid cloud is a **cloud** computing environment that uses a mix of on-premises, private **cloud** and third-party, public **cloud** services with orchestration between the two platforms.



Notes: A hybrid approach to a multicloud environment. It's a mix of public clouds to quickly develop and deploy applications, private clouds to maintain the highest levels of security and availability for business-critical data and processes, and in many cases traditional on-premises IT.

Private cloud

A cloud computing environment in which access is limited to members of an enterprise and partner networks.

Public cloud

A cloud computing environment in which access to standardized resources, such as infrastructure, multi-tenant hardware, and services, is available to subscribers on a pay-per-use basis.

Hybrid cloud

A cloud computing model in which an enterprise uses a combination of on-premises, private cloud and public cloud architecture.

Multicloud

A cloud computing environment that consists of multiple public and private resources.

Why hybrid cloud? Here are the top 10 reasons.

1. Innovate

Build new apps with the latest technologies and data from more vendors.

2. Modernize

Extend and modernize existing on prem apps with new cloud capabilities.

3. Costs

Manage costs by deploying and shifting to the most co

4. Scalability

Scale on prem apps and workloads with public cloud services on demand.

5. Resiliency

Enable resiliency and instant recovery of mission critical applications.
st effective provider.

6. SaaS

Access to the broadest choice of on demand business applications.

7. Requirements

Meet unique security and compliance requirements with the best fit model.

8. Management

Offset management burden to third party and free up valuable resources.

9. Flexibility

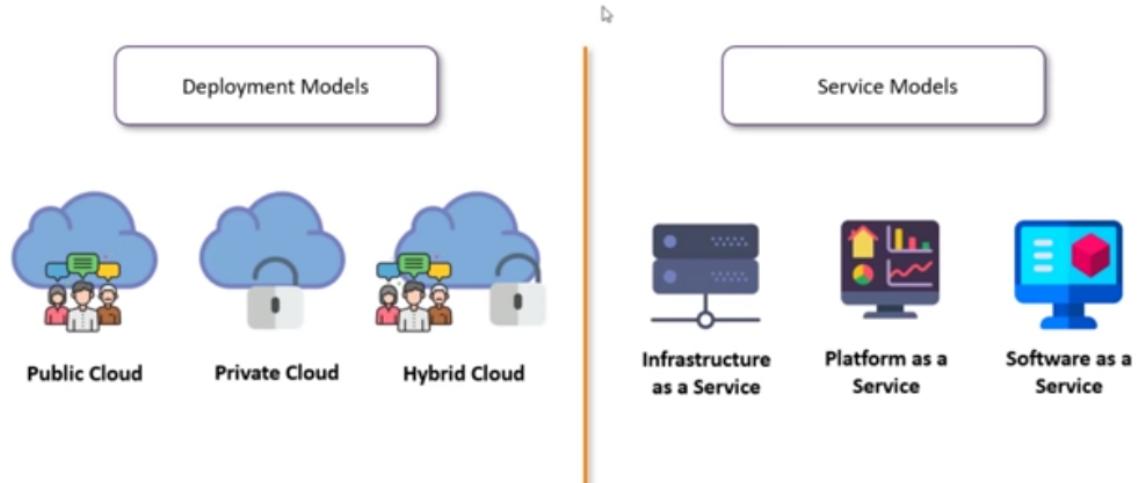
Develop on one cloud model and deploy on another as needs require.

10. Global

Access to more cloud data centres globally to brings apps closer to end users.

Cloud Computing Models

There are two kinds of models in Cloud Computing:



Cloud Computing Models - Service



Infrastructure as a service refers to providing the complete access to the server's OS. Typically, IaaS provides hardware, storage, servers and data center space or network components; it may also include software. **Ex. EC2**



EC2 – Elastic Compute Cloud

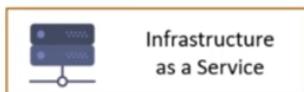
Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers. Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment.

<https://aws.amazon.com/ec2/>

- **IaaS (Infrastructure as a Service)**

It allows companies to rent servers, storage space, etc. from a cloud provider ie In this service the Cloud Provider provides the customer with virtual machines and other resources as a service, they abstract the user from the physical machine, location, data partitioning etc. If the user wants a Linux machine, he gets a linux machine, he will not worry about the physical machine or the networking of the system on which the OS is installed, simple.

Cloud Computing Models - Service



Infrastructure
as a Service



Platform as a
Service



Software as a
Service

In **Platform as a Service**, one does not get access to the whole Operating System. Rather access is given at a Dashboard level, where a user uploads the data, and the rest is taken care by the cloud provider. Ex. **Elastic Beanstalk**



AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

<https://aws.amazon.com/elasticbeanstalk/>

- **PaaS (Platform as a Service)**

It allows developers to build applications, collaborate on projects without having to purchase or maintain infrastructure ie In this service the Cloud Provider gives the ability to the customer to deploy customer created application using programming languages, tools etc that are provided by the Cloud Provider. The customer cannot control the underlying architecture including operating systems, storage, servers etc.

For Example: This service would make sense to you only if you are a developer, since this service provides you a platform for developing applications, like Google App Engine.

Cloud Computing Models - Service



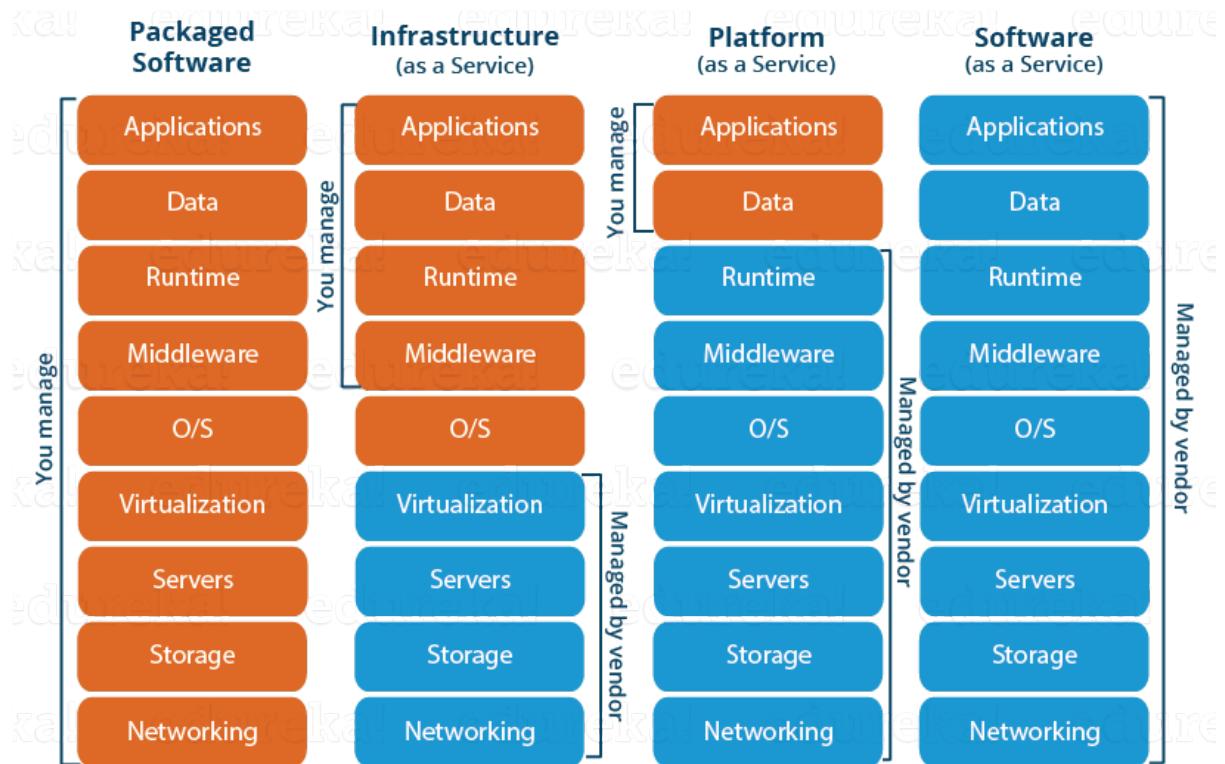
Software as a Service refers to the practice of directly providing the software to the customer, without making any server or dashboard available to them. Ex. Facebook



- **SaaS (Software as a Service)**

- It allows companies to use software without having to purchase them, which reduces the expenditure of the company drastically, since they are already installed on the cloud server they can be quickly deployed and therefore saves time.

For Example: salesforce.com provides the CRM (Customer Relation Manager) on a cloud infrastructure to its client and charges them for it, but the software is owned by the salesforce company only.

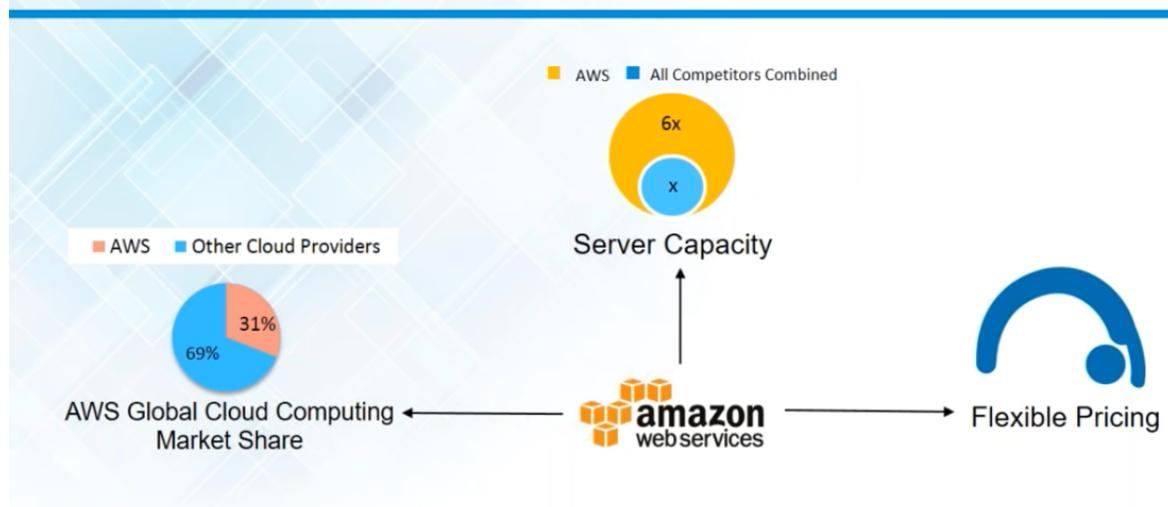


Cloud Providers



Google Cloud

Why AWS?



What is AWS?

Amazon Web Services (AWS) is a secure cloud services platform, offering compute power, database storage, content delivery and other functionality to help businesses scale and grow.



Introduction to Amazon Web Services

Amazon Web Services provides on-demand cloud computing platforms to individuals, companies and governments, on a metered pay-as-you-go basis. It offers services in various domains such as compute, storage, networking etc.



Different Domains in AWS



Compute



Migration



Security & Identity,
Compliance



Storage



Networking and
Content Delivery



Messaging



Database



Management
Tools

- Compute

It is used to process data on the cloud by making use of powerful processors which serve multiple instances at a time.

- Storage and Content Delivery

The storage as the name suggests, is used to store data in the cloud, this data can be stored anywhere but content delivery on the other hand is used to cache data nearer to the user so as to provide low latency.

- Database

The database domain is used to provide reliable relational and non relational database instances managed by AWS.

- Networking

It includes services which provide a variety of networking features such as security, faster access etc.

- **Management Tools**

It includes services which can be used to manage and monitor your AWS instances.

- **Security and Identity**

It includes services for user authentication or limiting access to a certain set of audience on your AWS resources.

- **Application Services**

It includes simple services like notifications, emailing and queuing.

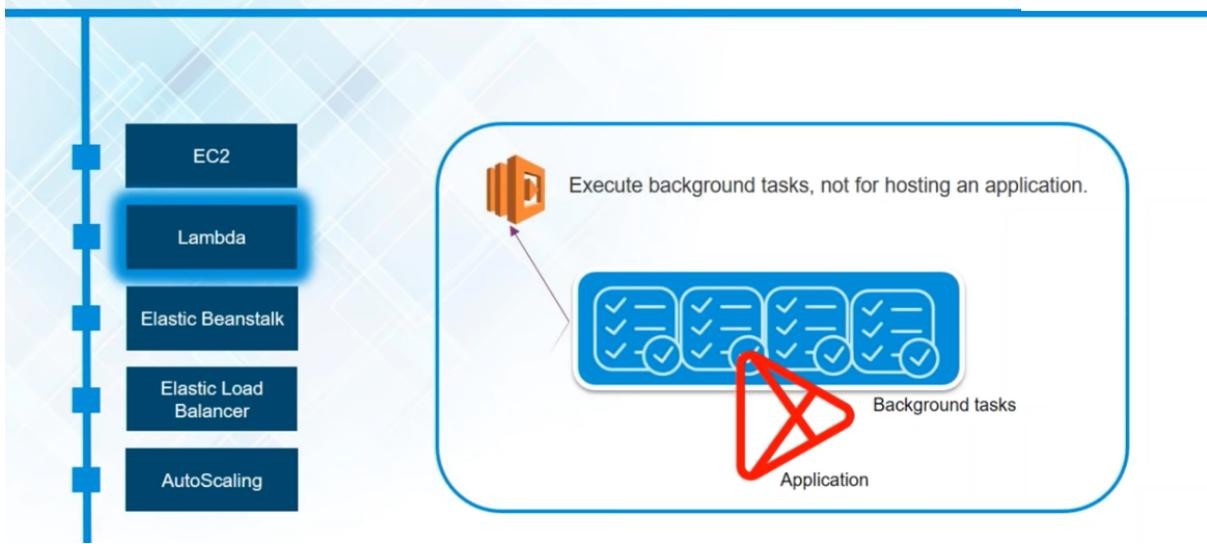
AWS Services :



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AWS Compute Services



With AWS Lambda, you can run code without provisioning or managing servers. You pay only for the compute time that you consume—there's no charge when your code isn't running. You can run code for virtually any type of application or backend service—all with zero administration. Just upload your code and Lambda takes care of everything required to run and scale your code with high availability. You can set up your code to automatically trigger from other AWS services or call it directly from any web or mobile app.

AWS Lambda: AWS Lambda is used to execute backend code without worrying about the underlying architecture, you just upload the code and it runs, it's that simple!

AWS Compute Services



AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

<https://aws.amazon.com/elasticbeanstalk/>

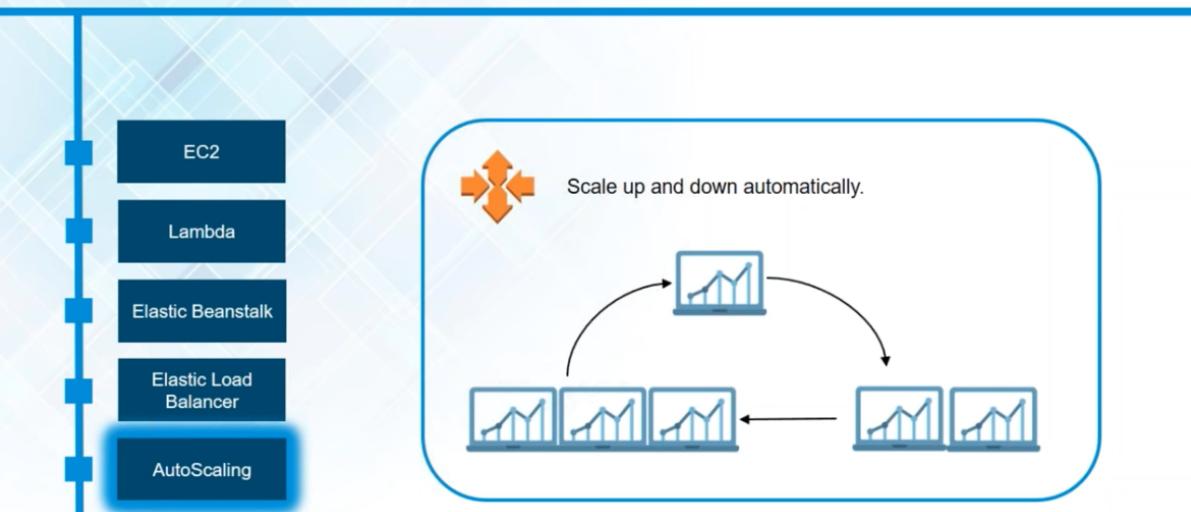
AWS Elastic Beanstalk : Elastic Beanstalk lets you quickly deploy and manage applications in AWS without worrying about the underlying infrastructure

AWS Compute Services



AWS Elastic Load Balancing: ELB automatically manages the workload on your instances and distributes them to other instances in case of an instance failure.

AWS Compute Services



AWS Autoscaling: The Autoscaling feature is used to scale up and down automatically as and when required.

How To Create AWS Account :

<https://www.youtube.com/watch?v=uJssXPyMf0s>

Signing in to AWS and Using Services.

<https://www.youtube.com/watch?v=uJssXPyMf0s>

AWS Documentation:

https://docs.aws.amazon.com/index.html?nc2=h_ql_doc_do