

# Fundamentals of Cloud Computing and AWS



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# What is cloud computing?



- Decades back, companies used to store and host data in-house i.e. on their own servers. But over the years with internet speed becoming better, companies discovered a new way to store data i.e. on Cloud.
- Traditional data centers consist of various pieces of hardware, such as a desktop computer, which are connected to a network via a remote server. This server is typically installed on the premises, and provides all employees using the hardware, access to the business's stored data and applications.
- Businesses with this IT model must purchase additional hardware and upgrades in order to scale up their data storage and services to support more users.
- Mandatory software upgrades are also required with traditional IT infrastructure to ensure fail safe systems are in place to in case a hardware failure occurs.

# What is cloud computing? (contd..)



- **Cloud computing** is a term referred to storing and accessing of data over the internet.
- It provides on-demand delivery of IT resources via internet on secure cloud services platform offering compute power, storage, database, content delivery etc.
- It doesn't store any data on the hard disk of your personal computer.
- In cloud computing, you access data from a remote server.

# Cloud v/s Traditional



## Elasticity and resilience

- First of all, you do not need to buy the hardware and maintain it with your own team. The information in the cloud is stored on several servers at the same time. It means that even if 1 or 2 servers are damaged, you will not lose your information. It also helps to provide the high uptime, up to 99.9%.
- When we talk about their traditional infrastructure, you will have to buy and maintain the hardware and equipment. If something happens, you can lose the data and spend a lot of time and money to fix the issues.

# Cloud v/s Traditional (contd..)



## **Scalability and flexibility**

The cloud computing is the perfect Choice for those who do not require a high performance constantly but use it time by time. You can get a subscription and use the resources you paid for.

The traditional infrastructure is not so flexible. You have to buy an equipment and maintain it even if you do not use it. In many cases, it's even more expensive because you might need their own technical crew.

# Cloud v/s Traditional (contd..)



## Automation

- One of the biggest differences between cloud and traditional infrastructure is how they are maintained. Cloud service is served by the provider's support team. They take care of all the necessary aspects including security, updates, hardware, etc.
- The traditional infrastructure required the own team to maintain and monitor the system. It requires a lot of time and efforts.

# Cloud v/s Traditional (contd..)



## Cost

- With cloud computing, you do not need to pay for the services you don't use: the subscription model means you choose the amount of space, processing power, and other components that you really need.
- With traditional infrastructure, you are limited to the hardware you have. If your business is growing, you will regularly have to expand your infrastructure. At the same time, you will have to support and maintain it.

# Cloud v/s Traditional (contd..)

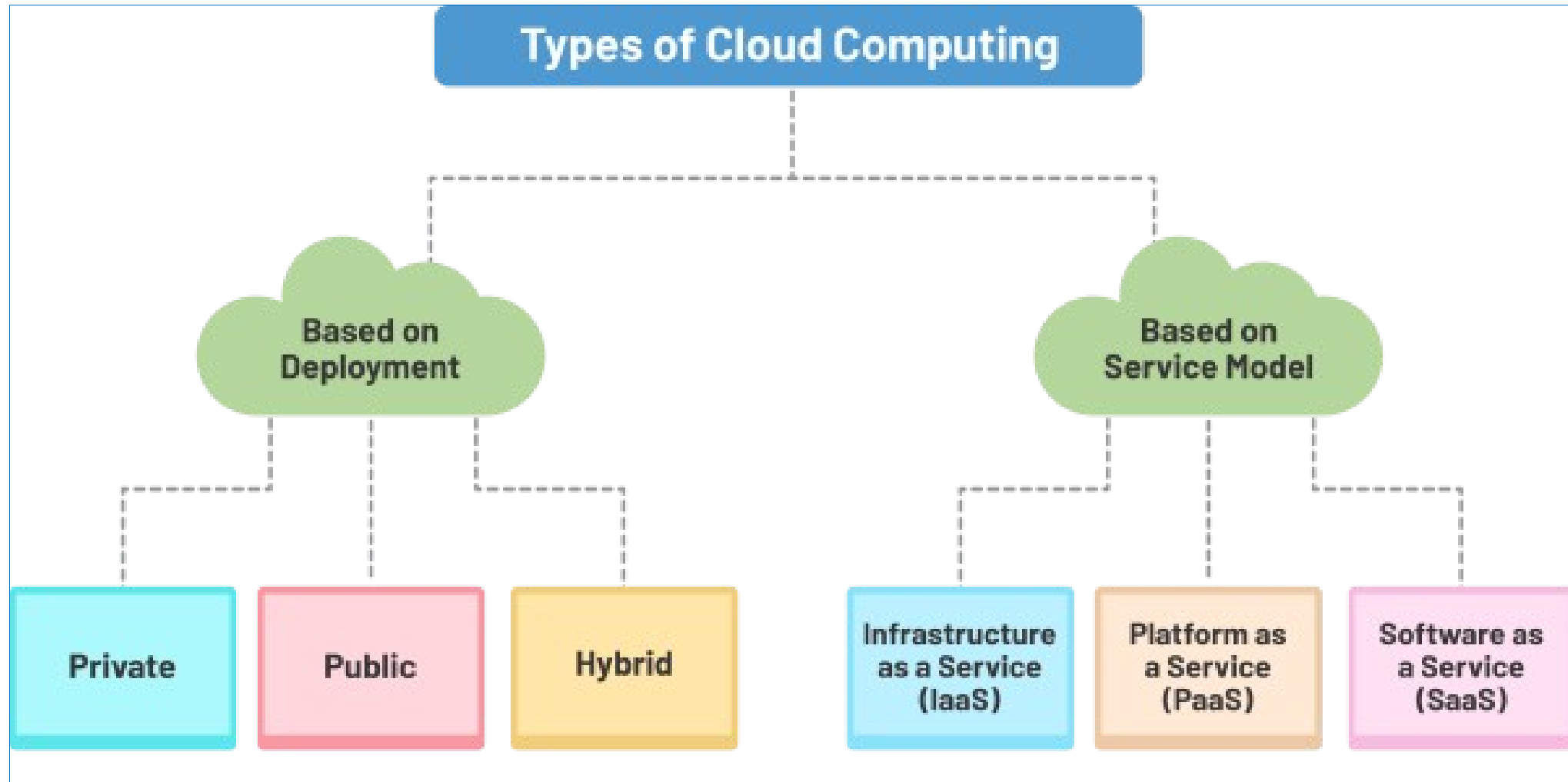


## Security

Many people are not sure about the security of cloud services. Why can it be not so secure? As the company uses the third party solution to store data, it's reasonable to think that the provider can access the confidential data without permission. However, there are good solutions to avoid the leaks.

As for traditional infrastructure, you and only you are responsible for who will be able to access the stored data. For the companies who operate the confidential information, it's a better solution.





# Types of Cloud Computing

There are mainly three types of cloud computing:

1. Public
2. Private
3. Hybrid

# Public cloud



- Public cloud, in general, is SaaS services offered to users over the internet. It is the most economical option for users in which the service provider bears the expenses of bandwidth and infrastructure. It has limited configurations, and the cost is determined by usage capacity.
- As public clouds use shared resources, they do excel mostly in performance, but are also most vulnerable to various attacks.

# Private cloud



- As the name suggests, the private cloud is used by large organizations to build and manage their own data centers for specific business and IT needs/ operations. The private cloud provides more control over customizability, scalability and flexibility, while improving security of assets and business operations.
- Private Cloud provides the same benefits of Public Cloud, but uses dedicated, private hardware. Private cloud means using a cloud infrastructure (network) solely by one customer/organization. It is not shared with others, yet it is remotely located.
- This sort of infrastructure can be built on premises or outsourced to a third party service provider either way, it has the ability to maintain the hardware and software environment over a private network solely for the owner.

# Hybrid cloud

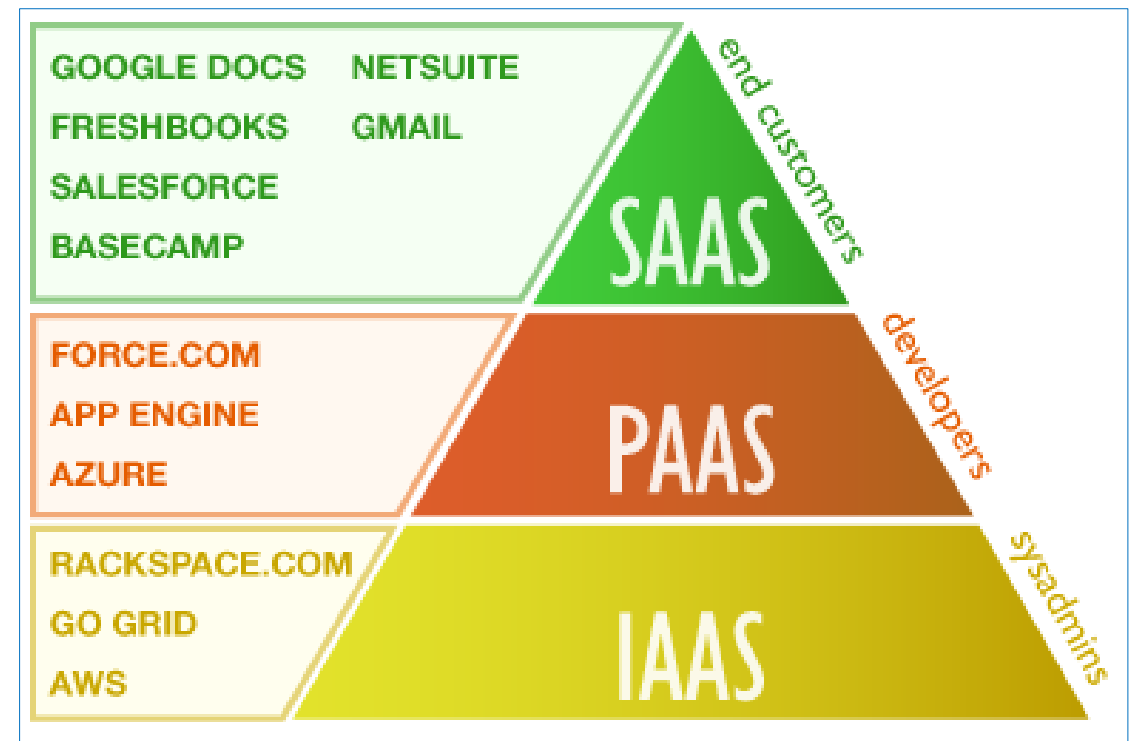


- Hybrid cloud is the combination of a private and public cloud, providing for more flexibility to businesses while having control over critical operations and assets, coupled with improved flexibility and cost efficiency.
- The hybrid cloud architecture enables companies to take advantage of the public cloud as and when necessary due to their easy workload migration.
- For instance, businesses can use the public cloud for running high-volume applications like emails, and utilize private clouds for sensitive assets like financials, data recovery, and during scheduled maintenance and rise in demand.

# Cloud Service Models

There are mainly three types of clouds in Microsoft Azure are:

1. IaaS
2. PaaS
3. SaaS



# IaaS (Infrastructure as a Service)

- IaaS is the foundational cloud platform layer.
- This Azure service is used by IT administrators for processing, storage, networks or any other fundamental computer operations. It allows users to run arbitrary software.

# PaaS (Platform as a Service)



PaaS is a computing platform which includes an operating system, programming language execution environment, database or web services.

This Azure service is used by developers and application providers.

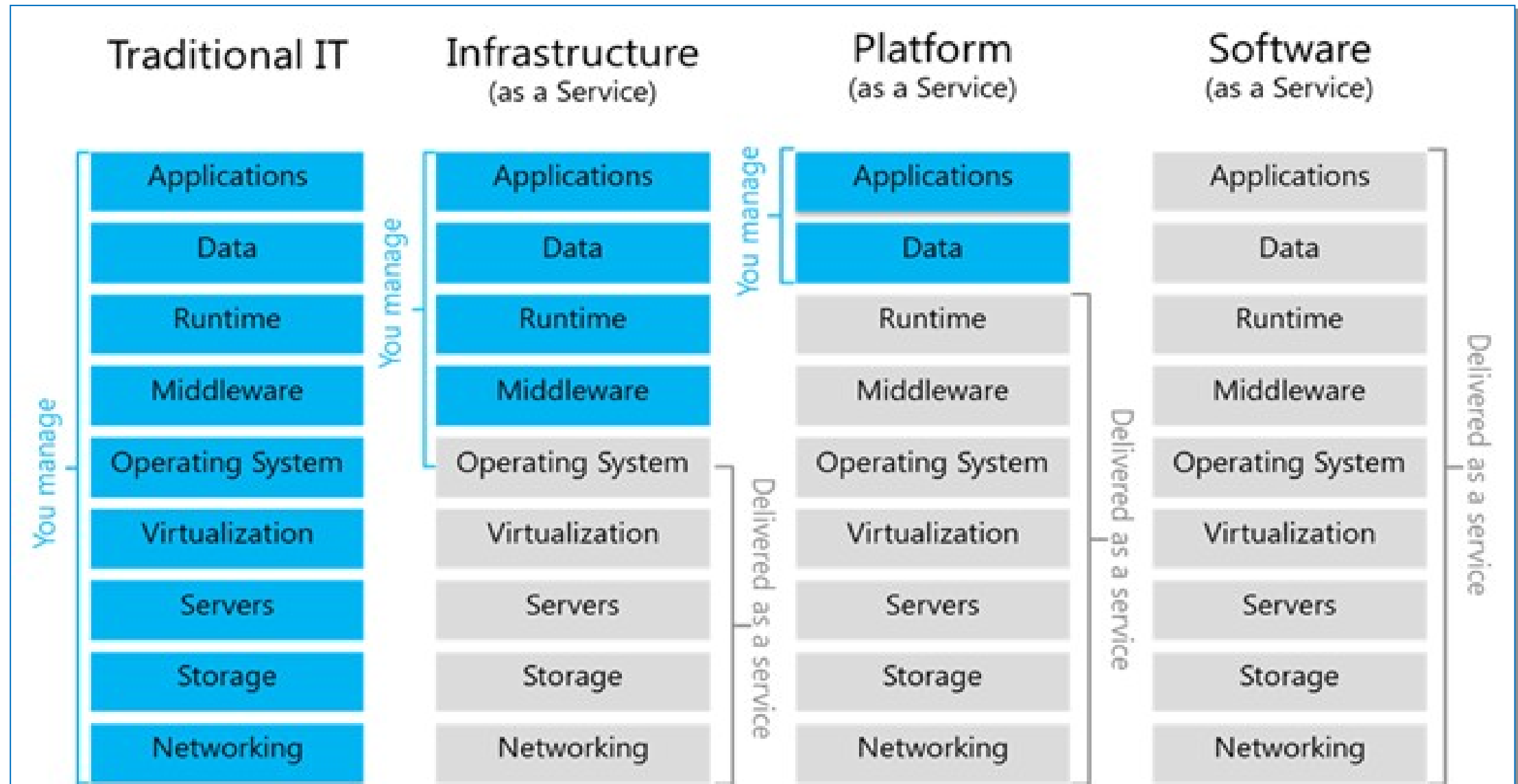
As its name suggests, this platform is provided to the client to develop and deploy software. It allows the client to focus on application development instead of worrying about hardware and infrastructure.



# SaaS (Software as a Service)



- SaaS is software which is centrally hosted and managed.
- It is a single version of the application is used for all customers. You can scale out to multiple instances.
- The software is licensed through a monthly or annual subscription. MS Exchange, Office, Dynamics are offered as a SaaS



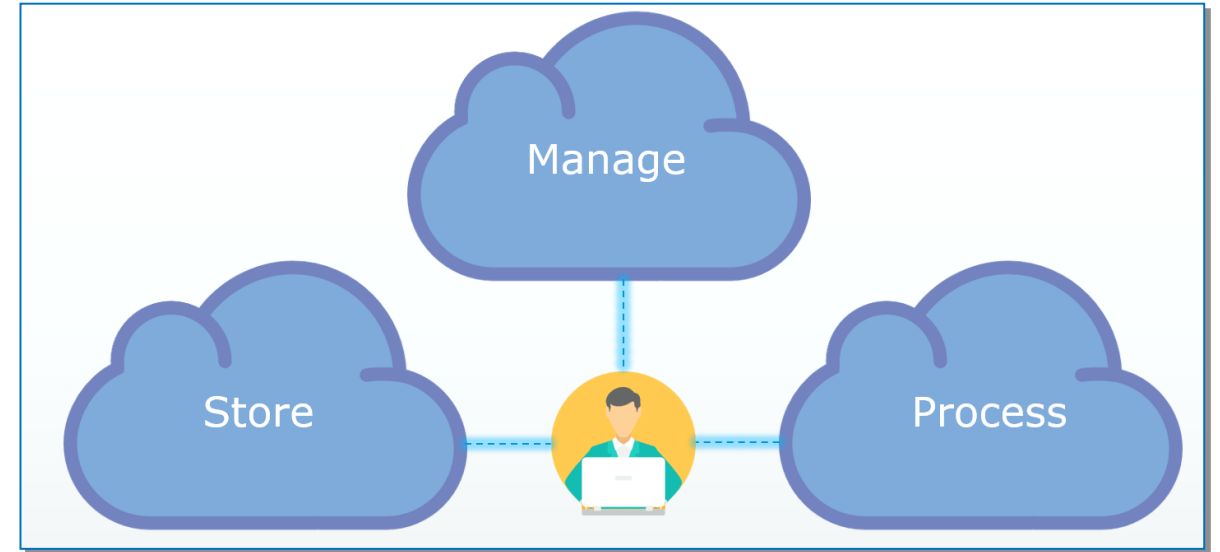
# What is AWS?



- Amazon Web Services (AWS) is a subsidiary of Amazon that provides on-demand cloud computing platforms and APIs to individuals, organizations and governments on a metered pay-as-you-go basis.
- AWS was launched by **Amazon** in year 2006.
- It is an open and flexible cloud platform which helps in development, data storage, service hosting, and service management.

# What AWS does?

- **Store:** Store large or small files on the cloud, which you can access on the go
- **Manage:** Manage your data with optimized databases on the cloud.
- **Process:** With scalable compute power on the cloud, you can process any amount of data in moments



So basically, all these tasks i.e. “**store, manage and process**”, rather than doing it on your personal computer or your private datacenter, you are doing it on the public cloud and accessing via internet.

# Where is AWS?



- In the computing world, cloud is located not on a single premise, but on the various geographical regions containing lots of data centers all around the globe.
- These data centers are responsible for hosting all the services any cloud provider has to offer. The network of these data centers forms the cloud.
- Having these different geographical regions all around the world makes cloud accessible to all.
- Having the presence of these geographical regions also makes it easy for any organization to perform globally diminishing the requirement of setting up infrastructure in different places around the globe.

The End