Assignment 01

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Problem statement: Case study on Amazon EC2 and learn about Amazon EC2 web services.

Amazon Web Services:

Amazon Web Services is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments. Millions of cloud operators are using AWS as their cloud service provider.

Cloud Computing:

Cloud Computing is nothing but a practice of providing Cloud Services (Storage, Computation, Databases, Security, etc) on rent and also through a network that can be accessed over the internet.

There were service providers in the market that started providing Compute, Storage, Networking, and other application hosting services on 'pay as you go model'. This meant people could rent these services and pay for only those services they used and only for the time duration they used those for. Also, these services providers managed the configuration, scalability and management part. In simple terms, this solved all the issues we listed above. This process we just discussed, evolved and started to be known as Cloud Computing.

Who is using cloud computing?

Organizations of every type, size, and industry are using the cloud for a wide variety of use cases, such as data backup, disaster recovery, email, virtual desktops, software development and testing, big data analytics, and customer-facing web applications. For example, healthcare companies are using the cloud to develop more personalized treatments for patients. Financial services companies are using the cloud to power real-time fraud detection and prevention. And video game makers are using the cloud to deliver online games to millions of players around the world.

AWS EC2:

1. Elastic Compute Cloud (EC2) is a computing service provided by AWS.
2. It provides secure and resizable computing capacity in cloud.
3. Scaling: As the name suggests elastic it can be scaled easily according to requirements.
4. It can be easily integrated with other cloud services of AWS like S3 or Relational Database Service.
5. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster.
6. One can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage.
7. Instances can be launched in more than one region and availability zones in the world.
8. Support for different Operating systems.
9. It works with Amazon VPC (virtual private cloud) to provide secure network to resources.

What is the Instance?

An instance is taken as the virtual server helps to run apps on Amazon EC2. It can also be taken as a smaller part of a large computer that has its own network connection, hard drive, operating system, etc. But all these services are virtual only. Practically, you could have multiple tiny computers on a single machine all these machines are named as instances. How are they different from services, let us understand with an example below

1. EC2 is a service with other Amazon web services like S3 or more.
2. When we use EC2 with any other services then it is taken as the instance.

Access Amazon EC2:

Amazon EC2 provides a web-based user interface, the Amazon EC2 console. If you've signed up for an AWS account, you can access the Amazon EC2 console by signing into the AWS Management Console and selecting EC2 from the console home page.

If you prefer to use a command line interface, you have the following options:

1. AWS Command Line Interface (CLI): Provides commands for a broad set of AWS products, and is supported on Windows, Mac, and Linux
2. AWS Tools for Windows PowerShell: Provides commands for a broad set of AWS products for those who script in the PowerShell environment

Pricing for Amazon EC2:

When you sign up for AWS, you can get started with Amazon EC2 for free using the AWS Free Tier.

Amazon EC2 provides the following purchasing options for instances:

1. On-Demand Instances: Pay for the instances that you use by the second, with no long-term commitments or upfront payments.
2. Savings Plans: You can reduce your Amazon EC2 costs by making a commitment to a consistent amount of usage, in USD per hour, for a term of 1 or 3 years.
3. Reserved Instances: You can reduce your Amazon EC2 costs by making a commitment to a specific instance configuration, including instance type and Region, for a term of 1 or 3 years.
4. Spot Instances: Request unused EC2 instances, which can reduce your Amazon EC2 costs significantly.

Why should you use AWS EC2?

1. If you are the developer then you will buy servers as needed but during scaling up you have to buy some extra storage space or computing resources that could be expensive.
2. The EC2 web service works wonderfully because you don't have to worry about these things and you could focus on development work only.
3. So, a fraction of costs is included here to manage the app development and deployment.

Conclusion:

This case study helped understand the basic concepts of Amazon AWS and its computing service EC2, features of EC2 pricing details of EC2 and why one can use Amazon EC2.