

AWS – weekly test

Varnika Mulay

1. What is AWS?

Ans: AWS stands for Amazon Web Services. It is a cloud-based platform developed by Amazon that offers an enormous range of cloud-based services and products which include storage options, machine learning, IoT, networking, etc. The main advantage of these services is that they are available on-demand by the client and are developed to help organizations and developers manage their products and applications effectively.

2. Describe what AWS is and its significance in cloud computing.

Ans: AWS is one of the widely used cloud-computing platforms developed by Amazon. It offers various products and services like storage, networking, AI, etc. to companies and organizations to help manage their applications in a promising manner. It has a significant impact in the development of Cloud Computing:

- Cost effective: AWS is a user-friendly and cost-effective platform which bills the users according to the services or products they use. Which means there is no fixed sum that the user has to pay rather just pay for the resources they use.
- Security: AWS ensures secure data management that means it ensures that the services used or the work done is protected.
- Scalability: AWS is a highly scalable platform i.e., it allows companies and organizations to scale their resources according to the client needs and in turn reduce costs.

3. Explain the key components of AWS architecture.

Ans: The key components of AWS architecture are:

- Regions: AWS has different geographical areas called regions where it has data centers. You can choose a region near your users to make your application faster and more reliable.
- Availability Zones (AZs): Each region is divided into multiple Availability Zones. These are separate data centers within the region. If one AZ has a problem, others in the same region can keep your application running. It helps with reliability and redundancy.
- EC2: Elastic Compute Cloud (EC2) are virtual servers in the cloud that you can use to run your applications. You can quickly create and manage these servers to scale your application based on your needs.
- S3: Simple Storage Service is a cloud storage service where you can store and retrieve files. It's easy to use for storing data like website files, backups or large datasets.
- RDS: Relational Database Service is a managed database service that handles setup, operation, and scaling of databases. You don't have to manage the database hardware or software as AWS takes care of it for you.

- ELB: Elastic Load Balancing is a service that distributes incoming traffic across multiple servers. It ensures that no single server gets too much traffic, which keeps your application running smoothly.
- Auto Scaling: It is a service that automatically adjusts the number of servers you have based on demand. It helps handle more traffic when needed and saves costs by reducing servers when traffic is low.
- Lambda: It is a service that lets you run code in the cloud without managing servers. It runs your code automatically in response to events, and you only pay for the time your code runs.
- IAM: Identity and Access Management is a service for managing who has access to your AWS resources and what they can do. It helps you control permissions and ensure that only authorized users can access or modify your resources.

4. Discuss services like EC2, S3, RDS, and IAM.

Ans: AWS provides various services like:

- EC2: EC2 stands for Elastic Cloud Computing. It is the fastest cloud computing services provided by Amazon. Developers can access resources easily through this service and can also leverage EC2 to access cloud computing at a web-scale. EC2 provides scalability, networking, and storage systems for organizations and developers to dynamically scale applications as per requirement, choose the optimal processor, OS and networking options to enhance their applications.
- RDS: RDS stands for Relational Database Service. It is one of the most secure and easily available service provided by AWS. Using RDS, the developers can organize, store, and scale databases on the cloud. One of its main advantages is that it provides high performance by automating various tasks like database configuration and backups. It is a good choice for organizations looking for resource security, compatibility and performance. It is compatible with various engines like Oracle, MySQL, etc. out of which the user can choose based on their requirements.
- S3: S3 stands for Simple Storage Service. It is one of the best storage services provided by Amazon as it is easy-to-use, scalable, secure and high-performing. It is also cost-effective as there is no need of extra investment for storing and managing data. Its main focus is optimal data handling and management. Here, data is stored in storage classes. The added functionalities of S3 are version control, data replication for managing accidental deletion, and data handling.
- IAM: IAM stands for Identity and Access Management. It is one of the most important services provided by Amazon for access permissions and authorization purposes. IAM is used by organizations who want complete access to the products and resources and who want to impose certain restrictions for people. It gives the organization the right to have control over who has the authority to access the resources. It can also help in creating separate permissions depending upon the user's role in the company.

5. What are the benefits of using cloud computing with AWS?

Ans: The benefits of using cloud computing with AWS:

- Global connectivity: AWS has data centers all around the world, so organizations can run applications closer to their clients, making them faster and more efficient.
- Performance: AWS provides tools to help users monitor and improve how well their applications perform.
- Security: AWS provides strong security features to protect user data and applications, helping them meet industry standards and regulations.
- Reliability: AWS is designed to keep the users' applications running even if something goes wrong, with features that help them avoid downtime.
- Cost effective: You only pay for what you use with AWS, which means the users can avoid large upfront costs for hardware.
- Disaster Management: AWS makes it easy to back up data and recover quickly in case of any emergency, ensuring data is safe.

6. Focus on scalability, flexibility, cost-efficiency, and security.

Ans: Advantages of AWS:

- Scalability: AWS lets users add or remove resources easily as required, so they can handle big workloads or network traffic without spending too much capital.
- Security: AWS provides strong security features to protect user data and applications, helping them meet industry standards and regulations.
- Reliability: AWS is designed to keep the users' applications running even if something goes wrong, with features that help them avoid downtime.
- Cost effective: You only pay for what you use with AWS, which means the users can avoid large upfront costs for hardware.
- Flexibility: AWS offers a wide range of services, so users can build almost any type of application using the latest technology.

7. How does AWS pricing work?

Ans: AWS pricing is flexible and based on how much the users use the provided services. There are various pricing models but the pay-as-you-go is the default pricing model provided by AWS. This model basically defines that you pay only for the resources and services you use. Other models include: Free Tier, Spot instances, reserved instances, etc.

8. Explain the pay-as-you-go model, reserved instances, and free tier.

Ans: Here is the explanation of the same:

- Pay-as-you-go model: In this model, you pay for the cloud services you use, like storage or networking, etc. as you use them. For example, if you run a virtual server for 5 hours, you only pay for these 5 hours of use. Organizations looking for flexible pricing and those who don't want any long-term commitment plans can choose the pay-as-you-go pricing model.
- Reserved instances: In this model, you commit to using a specific type of virtual server for 1 or 3 years, and you get a discount compared to pay-as-you-go pricing. For

example, if you know you'll need a server continuously for a year, you can reserve it in advance and save money. Users who have stable, predefined, and predictable needs who want to save on costs can choose this pricing model.

- Free tier: In this model, AWS offers a limited amount of free usage for certain services for the first 12 months after you sign up. You might get a certain amount of free storage or computing time each month without any charge.

9. Explain cloud computing models.

Ans: Below are the cloud computing models:

- IaaS: IaaS stands for Infrastructure as a Service. It provides the basic building blocks for cloud computing, like virtual servers, storage, and networks. It's like renting physical hardware but in the cloud. Users get access to virtual servers, storage space, and networking resources that they can configure and manage themselves. They are responsible for setting up the operating systems, applications, and configurations. Businesses that need flexibility and control over their infrastructure, like deploying custom applications can use IaaS.
- PaaS: PaaS stands for Platform as a Service. It provides a ready-to-use platform for developing, running, and managing applications. It includes the underlying infrastructure but hides much of the complexity. Users can use a pre-built platform with development tools, databases, and runtime environments. The cloud provider handles the server maintenance, OS, and software updates. Developers who want to build applications quickly without managing hardware or OS can opt for PaaS. It is also ideal for app development, testing and deployment.
- SaaS: SaaS stands for Software as a Service. It delivers software applications over the internet on a subscription basis. Users can access the software via a web browser or an app. The software provides manages everything from the infrastructure to application updates. The users can simply use the software without any installation and maintenance. Some commonly used services like Gmail or Microsoft 365 are SaaS applications. The users use them online, and the provider handles all the backend operations, including server maintenance and software upgrades.

10. Explain AWS Snowball

Ans: AWS snowball is a service designed to help users move large amounts of data into and out of the AWS quickly and securely. It is basically a physical device provided by AWS that users can use to transfer large volumes of data to AWS without relying on internet bandwidth.

Working of AWS Snowball:

- Request a Snowball: You order a Snowball device from AWS through the AWS Management Console.
- Receive the Device: AWS ships the device to your location.
- Transfer your data: Connect the Snowball to your local network and copy your data onto it. The device is built to handle large data loads securely.
- Send it back: Once the data transfer is complete, you ship the Snowball back to AWS.

- AWS imports your data: AWS receives the Snowball and uploads the data to your specified AWS storage service, like Amazon S3.

11. Explain Load Balancing

Ans: AWS Load balancing helps manage and distribute internet traffic across multiple servers in the cloud. It acts like a traffic manager that directs user requests to multiple servers so that no single server gets overloaded. This helps the application remain fast and reliable.

Working of AWS Load Balancer:

- Set up a Load Balancer: You create a load balancer using AWS services.
- Direct traffic: When users access your application or website, the load balancer directs their requests to different servers you have set up in AWS.
- Distribute work: The load balancer evenly spread out the traffic to make sure no single server gets too much work. This helps keep your application running smoothly.

12. Explain Auto Scaling

Ans: AWS Auto Scaling is a service that automatically adjusts the number of servers you have based on how much traffic or workload you're experiencing. It adds servers when needed and removes them when they're not, helping the application remain fast and cost-effective.

Working of AWS Auto Scaling:

- Set up Auto Scaling: You create an auto-scaling group and define rules for when to add or remove servers.
- Monitor usage: AWS watches your servers to see how much work they're doing like how many requests they're handling or how much CPU they're using.
- Adjusts automatically: If your servers are getting too busy, AWS automatically adds more servers to handle the extra load. If the traffic goes down, it reduces the number of servers to save costs.

13. Explain AWS Lambda Service

Ans: AWS Lambda is a service that lets you run code in the cloud without having to manage servers. It's simple, cost-effective, and automatically scales to handle varying workloads.

Working of AWS Lambda Service:

- Write your code: You write a small piece of code that performs a specific task.
- Upload the code: You upload this code to AWS Lambda.
- Set triggers: You define what events will trigger your code to run, like a file upload or a scheduled time.
- Run automatically: AWS Lambda automatically runs your code in response to those triggers, and then stops running when it's done.