

## CLOUD COMPUTING

### ASSIGNMENT-1

Q1. EC<sub>2</sub>

Amazon Elastic Compute Cloud aka Amazon EC<sub>2</sub> 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 EC<sub>2</sub>'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.

Q2. 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 or familiar servers such as Apache, Nginx, Passenger, and IIS.

You can simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, auto-scaling to application health monitoring. At the same time, you retain full control over the AWS resources powering your application & can access the underlying resources at any time.

Q3. IAM

AWS Identity and Access Management - IAM enables you to manage access to AWS services and resources securely. Using IAM, you can create and manage AWS users and groups, and use permissions to allow and deny their access to AWS resources.

#### Q4. ELB

Elastic Load Balancing automatically distributes incoming applications traffic across multiple targets, such as Amazon EC2 instances, containers, IP address .es, Lambda functions and virtual appliances.

It can handle the varying load of your application traffic in a single Availability Zone or across multiple Availability zones.

Elastic Load Balancing offers four types of load balancers that all feature the high availability, automatic scaling, and robust security necessary to make your applications fault tolerant.

#### Q5. S3

Amazon Simple Storage Service - Amazon S3 is an object storage service that offers industry-leading scalability, data availability, security, and performance.

This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use cases, such as data lakes, websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics.

S3 provides easy-to-use management features so you can organize your data and configure finely-tuned access controls to meet your specific business, organizational, and compliance requirements. Amazon S3 is designed for durability, and stores data for millions of applications for companies all around the world.

### Q6. EBS

Amazon Elastic Block Store - EBS is an easy to use, high-performance, block storage service designed for use with Amazon Elastic Compute Cloud - EC2 for both throughput and transaction intensive workloads at any scale. A broad range of workloads, such as relational and non-relational databases, enterprise applications, containerized applications, big data analytics engines, file systems, and media workflows are widely deployed on Amazon EBS.

### Q7. FSx for Lustre

Amazon FSx for Lustre is a fully managed service that provides cost-effective, high-performance, scalable storage for compute workloads. Many workloads such as machine learning, high-performance computing (HPC), video rendering and financial simulations depend on compute instances accessing the same set of data through high-performance shared storage.

Powered by Lustre, the world's most popular high-performance file system, FSx for Lustre offers sub-millisecond latencies, up to hundreds of gigabytes per second of throughput, and millions of IOPS. It provides multiple deployment options and storage types to optimize cost and performance for your workload requirements.

### Q8. Glacier

Amazon S3 Glacier is a secure, durable, and extremely low-cost Amazon S3 storage class for data archiving and long-term backup.

With S3 Glacier, customers can store their data cost effectively for months, years, or even decades. S3 Glacier enables customers to offload the administrative burdens of operating and scaling storage to AWS, so they don't have to pay worry about capacity planning, hardware have to worry provisioning, data replication, hardware failure detection and recovery, or time-consuming hardware migrations.

#### Q9. SageMaker

Amazon SageMaker is a fully managed machine learning service. With SageMaker, data scientists and developers can quickly and easily build and train machine learning models, and then directly deploy them into a production-ready hosted environment.

It provides an integrated Jupyter authoring notebook instance for easy access to your data sources for exploration and analysis, so you don't have to manage servers.

It also provides common machine learning algorithms that are optimized to run efficiently against extremely large data in a distributed environment.

With native support for bring-your-own-algorithms and frameworks, SageMaker offers flexible distributed training options that adjust to your specific workflows.

Deploy a model into a secure & scalable env by launching it with a few clicks from SageMaker Studio or the SageMaker console Training and hosting are billed by minutes of usage, with no minimum fees and no up-front commitments.

#### Q10. Recognition

Amazon Recognition makes it easy to add image and video analysis to your applications using proven, highly scalable, deep learning technology that requires no machine learning expertise to use. With Amazon Recognition, you can identify objects, people, text, scenes, and activities in images and videos, as well as detect any inappropriate content.

Amazon Recognition also provides highly accurate facial analysis and facial search capabilities that you can use to detect, analyze, and compare faces for a wide variety of user verification, people counting, and public safety use cases.

With Amazon Rekognition custom labels, you can identify the objects and scenes in images that are specific to your business needs. For example, you can build a model to classify specific machine parts on your assembly line or to detect unhealthy plants.

Amazon Rekognition custom labels takes care of the heavy lifting of model development for you, so no machine learning experience is required.

You simply need to supply images of objects or scenes you want to identify, and the service handles the rest.

#### Q11. SNS

Amazon Simple Notification Service Amazon SNS is a fully managed messaging service for both application-to-application (A2A) and application-to-person (A2P) communication.

The A2A pub, sub functionality provides topics for high-throughput, push-based, many-to-many messaging between distributed systems, microservices, and event-driven serverless applications.

Using Amazon CNS topics,

your publisher systems can fanout messages to a large number of subscriber systems including Amazon SQS queues, AWS Lambda functions and HTTPS endpoints, for parallel processing, and Amazon Kinesis Data Firehose.

The A2P functionality enables you to send messages to users at scale via SMS, mobile push, and email.

#### Q12. SES

Amazon Simple Email Service SES is a cost-effective, flexible, and scalable email service that enables developers to send mail from within any application. You can configure Amazon SES quickly to support several email use cases, including transactional marketing, or mass email communications.

#### Amazon SES's flexible IP

deployment and email authentication options help derive higher deliverability and protect sender reputation, while sending analytics measure the impact of each email. With Amazon SES, you can send email securely, globally, and at scale.

#### Q13. Lambda

AWS Lambda is a serverless compute service that lets you run code without provisioning or managing servers, creating workload-aware cluster scaling logic, maintaining event integrations,

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over managing runtimes. With Lambda, you can run code for virtually any type of application or backend service—all with zero administration. Just upload your code as a ZIP file or container image, and Lambda automatically and precisely allocates compute execution power and runs your code based on the incoming request or event, for any scale of traffic.

You can set up your code to automatically trigger from 140 AWS services or call it directly from any web or mobile app.

You can write Lambda functions in your favorite language—Node.js, Python, Go, Java, .NET, and more—and use both serverless and container tools, such as AWS SAM or Docker CLI, to build, test, and deploy your functions.

#### Q10. RDS

Amazon Relational Database Service Amazon RDS makes it easy to set up, operate, and scale a relational database in the cloud.

It provides cost-efficient and resizable capacity while automatically time-consuming administration tasks such as hardware provisioning, database setup, patching and backups.

#### Q15 Cloud9

AWS Cloud9 is a cloud-based integrated development environment IDE that lets you write, run, and debug your code with just a browser. It includes a code editor, debugger, and terminal. Cloud9

comes prepackaged with essential tools for popular programming languages, including JavaScript, Python, PHP, and more, so you don't need to install files or configure your development machine to start new projects.

Since your Cloud9 IDE is cloud-based, you can work on your projects from your office, home, or anywhere using an internet-connected machine.

Cloud9 also provides a seamless experience for developing serverless applications, enabling you to easily define resources, debug, and switch between local and remote execution of serverless applications.

With Cloud9, you can quickly share your development environment with your team, enabling you to pair program and track each other's input in real time.

#### Q16. Cognito

Amazon Cognito lets you add user sign-up, sign-in, and access control to your web and mobile apps quickly and easily. Amazon Cognito scales to millions of users and supports sign-in with social identity providers, such as Apple, Facebook, Google, and Amazon, and enterprise identity providers via SAML 2.0 and OpenID Connect.

#### Q17. VPC.

Amazon Virtual Private Cloud - Amazon VPC is a service that lets you launch AWS resources in a logically isolated virtual network that you define.

You have complete control over your virtual networking environment, including selection of own

IP addresses range, creation of subnets, and configuration of route tables and network gateways.

You can use both IPv4 and IPv6 for most resources in your virtual private cloud, helping to ensure secure and easy access to resources and applications.

As one of AWS foundational services, Amazon VPC makes it easy to customize your VPC's network config. You can create a public facing subnet for your web servers that have access to the internet.

It also lets you place your backend systems, such as databases or application servers, in a private-facing subnet with no internet access.

Amazon VPC lets you to use multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet.

#### Q18 Route 53

Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service.

It is designed to give developers and businesses an extremely reliable and cost effective way to route end users to Internet applications by translating names like `www.example.com` into the numeric IP addresses like `192.0.2.1` that computers use to connect to each other. Amazon Route 53 is fully complaint with IPv6 as well.

Amazon Route 53 effectively connects user requests to infrastructure running in AWS - such as Amazon EC2 instances, Elastic Load Balancing load balancers, or Amazon S3 buckets - and can also be used to route users to infrastructure outside of AWS. You can use Amazon Route 53 to configure DNS health checks to route traffic to healthy endpoints or to independently monitor the health of your application and its endpoints. Amazon Route 53 Traffic flow makes it easy for you to manage traffic globally through a variety of routing types, including Latency Based Routing, Geo DNS, Geoproximity, and Weighted Round Robin - all of which can be combined with DNS.

failover in order to enable a variety of low-latency, fault-tolerant architectures.

Using Amazon Route 53 Traffic flows simple visual editor, you can easily manage how your end-users are routed to your applications endpoints - whether in a single AWS region or distributed around the globe.

Amazon Route 53 also offers Domain Name Registration you can purchase and manage domain names such as example.com and Amazon Route 53 will automatically configure DNS settings for your domains.