

Short answers

1. What is AWS STS?

AWS STS (AWS Security Token Service) is a service that provides temporary, limited-privilege credentials for accessing AWS resources. It enables secure authentication and authorization by issuing temporary credentials through operations like AssumeRole, GetFederationToken, and GetSessionToken.

2. What is the difference between using Launch Template and Launch Configuration?

Launch Template is a newer and more flexible feature for creating instance configurations with versioning support. It offers greater control and can be used across different AWS services. Launch Configuration is an older feature without versioning and is primarily used with EC2 Auto Scaling groups.

3. Explain IOPS credits of general-purpose EBS volume.

IOPS (Input/Output Operations Per Second) credits are a feature of Amazon Elastic Block Store (EBS) volumes, specifically the General Purpose (gp2) EBS volumes in AWS.

4. What is meaning AWS ASG?

AWS ASG stands for AWS Auto Scaling Group. It automatically adjusts the number of EC2 instances based on demand to ensure availability and scalability.

5. Name the roles of edge servers.

Edge servers have roles such as content delivery, load balancing, caching, security, protocol optimization, and global server load balancing.

6. What is Direct Connect in AWS?

AWS Direct Connect is a service that provides a dedicated, private network connection between an organization's on-premises data center and AWS. It offers high-bandwidth, low-latency connectivity, bypassing the public internet for more reliable and secure access to AWS resources.

7. What is the difference between NACL and SG?

NACL/Network Access Control Lists/: Operates at the subnet level, Stateless, Rule evaluation based on rule numbers, Network layer (Layer 3), More granular control over traffic

SG: Operates at the instance level, Stateful, Rule evaluation based on allow rules with implicit deny all, Instance layer (Layer 2/3), Simpler to manage, more flexible and dynamic control

8. What is the difference and similarities between IaaS and PaaS?

IaaS: Virtualized infrastructure with user control.

PaaS: Pre-configured platform for app development.

9. Connection in DB is expensive. What can you do for optimizing this in your application?

Optimize database connections in your application:

Use connection pooling, Reuse connections, Optimize queries, Batch operations, Set connection timeouts.

10. What can you do when the message delivery fails in SNS?

For failed message delivery in SNS: Retry, Log errors, Verify attributes, Check subscriptions.

11. What is meaning SNS?

SNS stands for Simple Notification Service. It's an AWS messaging service for sending notifications across different communication channels.

12. Explain the circuit breaker design pattern.

Circuit Breaker is a design pattern used in distributed systems to handle failures in remote service calls. It improves system resilience by monitoring the availability of a service and preventing cascading failures.

13. What is event-driven architecture?

Event-driven architecture allows components or services to communicate and react to events asynchronously, enabling loose coupling and scalability.

14. What is AWS Global Accelerator?

AWS Global Accelerator improves application performance and availability by routing user traffic through the nearest AWS edge locations, providing global availability, traffic routing control, and DDoS protection.

15. What is an evolvable application? Write about its characters and what architecture is used to build that.

An evolvable application is easily adaptable and extensible, characterized by modularity, loose coupling, and a microservices architecture. It exposes APIs, embraces CI/CD, and supports iterative updates and scalability.

16. What is meaning Route 53 on AWS?

Route 53 is AWS's DNS service for managing domain names, routing traffic, and performing health checks.

17. NACL?

NACL stands for Network Access Control List. It is a security feature in AWS that acts as a firewall at the subnet level, controlling inbound and outbound traffic based on rules defined by IP addresses, protocols, and port ranges.

18. Event-driven applications?

Event-driven applications are software applications that are structured around events or messages. They respond to specific occurrences or changes of state and are designed to be decoupled and flexible in handling those events.

19. ALB?

ALB stands for Application Load Balancer. It is an AWS service that distributes incoming application traffic across multiple targets to improve scalability and availability.

20. FAAS?

FaaS, or Function-as-a-Service, is a cloud model where developers write functions and let the cloud handle running them without worrying about infrastructure. It offers scalability, cost savings, and simplifies development.

21. Elastic Cache?

ElastiCache is a managed in-memory caching service provided by AWS.

22. EventBridge?

EventBridge is a serverless event bus service provided by AWS that enables the routing and processing of events from various sources to different targets for further action.

23. ELB?

ELB stands for Elastic Load Balancer. It is a managed load balancing service provided by AWS that distributes incoming traffic across multiple resources to improve availability and scalability.

24. EFS?

EFS stands for Elastic File System. It is a scalable and fully managed file storage service provided by AWS that allows multiple EC2 instances to access and share file data concurrently.

25. NLB?

NLB: /Network Load Balancer/ AWS load balancer for high-performance network-level traffic routing.

TRUE/FALSE

1. **T.** Think cloud as software that you utilize to build/run your modern and monolith applications.
2. **F.** Aurora DB has a standby instance for instant failover.
3. **F.** With the database parameter group, you can define which EC2 can access your database.
4. **T.** Transaction logs are backed up by RDS every 5 minutes, which gives us the ability to restore to any point in time except the last 5 minutes.
5. **F.** Starting last year, you can now read data from a standby instance.
6. **F.** During RDS failover, you have to change the URL and point it to the standby instance on Route53.
7. **T.** Producers of the SQS push the message to the queue.
8. **F.** In FIFO SNS, the message is sent to one subscriber in order.
9. **T.** A certain event can be processed by only one subscriber with the help of a rule in EventBridge.
10. **T.** EventBridge pipe replaces the work of writing ETLs manually.
11. **T.** In the cloud, stop thinking of your infrastructure as hardware, and instead, think of (and use) it as software.
12. **T.** SNS topic is asynchronous.
13. **T.** Raw messages don't contain metadata in SNS.

14. T. You can run multiple microservices behind ALB.
15. F. You cannot create ASG without an ELB.
16. F. Snapshots are triggered by RDS.
17. T. Data is replicated synchronously to standby instances.
18. T. IAM is a global service.
19. T. EFS requires SG to establish success connection between the EFS volume and EC2 instances.
20. F. SG is a firewall. You can write allow/deny rules.
21. T. NLB, ALB, and Gateway load balancers, all work at different OSI layers.
22. T. AWS IAM is similar to Administrators in a traditional infrastructure.
23. T. An elastic IP charges when it is not in use.
24. F. SG rules have priority numbers based on that one rule takes precedence over another.
25. F. The best practice is to use AWS-managed policies instead of writing your policies.
26. T. You should use AWS-managed services as much as possible.
27. T. In IAM, resource- based policies take precedence over identity-based policies.
28. T. When you log in to AWS Academy, it uses the IAM role, STS, and temporary tokens under the hood.
29. T. The S3 namespace is global whereas the bucket is regional.
30. F. Aurora supports all modern engines supported by RDS.
31. F. Target tracking scaling policy scales out when the specified metric is above the target value whereas step scaling policy scales based on one or more alarm breaches.
32. T. Is a NAT gateway used to connect a VPC to the internet?
33. T. IAM is a global service.
34. F. You created Load Balancer instances in us-east-1d and us-east-1b AZs. Can the ALB route traffic to an instance in us-east-1c AZ?
35. F. You are charged when you are using an Elastic IP.
36. F. An IAM role generates tokens. You can SSH into an EC2 instance with those tokens.
37. T. Latency-based routing policy in Route 53 routes requests to the closest country to ensure the lowest latency.
38. T. By default, EBS root volumes are deleted when terminating an instance.
39. T. Can we create MongoDB in RDS?
40. T. NACL rules are evaluated from highest to lowest based on rule number.

Section 2 – Multiple choice questions

1. What is the cloud we learned?
 - a. A white collection of water vapor in the sky.
 - b. A collection of services including blockchain, AI, VR, etc.
 - c. Storage where you can store your data and it's always available.
 - d. B and C.
2. You get hired at a startup as a software engineer. Your company uses data storage for storing images, videos etc. That storage costs a lot. Your company is looking for ways to reduce cost by utilizing services in the AWS cloud. What service would recommend?
 - a. EBS
 - b. EFS
 - c. RDS
 - d. S3
3. Which model of cloud services is best for building event-driven applications?
 - a. IaaS
 - b. FaaS

- c. SaaS
 - d. PaaS
4. How do you deploy a global application on AWS?
- a. Use only global services
 - b. Deploy to each region
 - c. Use global replication features like S3 global replication
 - d. Use backups and recover them in other regions
5. Which component of an ALB routes requests to one or more registered targets?
- a. ALB listener
 - b. Target Groups
 - c. ALB listener rules
 - d. None
6. You want to maintain the CPU utilization of EC2 instances in ASG at 70%. What scaling policy works best in this case?
- a. Target Tracking
 - b. Step Scaling
 - c. Scheduled Scaling
 - d. Predictive scaling
7. Assume you have different work files in your company that needs to be accessed differently. Some of the files are accessed daily, some frequently and some will probably have never got accessed. As an AWS developer, what is your solution to meet the usage needs and minimize storage cost?
- a. Destroy the never accessed files
 - b. Create S3 Object lifecycle rule
 - c. Zip the files
 - d. All
8. Which do we not attach a IAM Policy to?
- a. service
 - b. role
 - c. user
 - d. groups
9. What is included in the types of permissions used for S3 service?
- a. Identity-based
 - b. Resource-based
 - c. Access Control List
 - d. all of the above
10. Which DB engine delivers the most throughput?
- a. PostgreSQL
 - b. Amazon Aurora
 - c. MySQL
 - d. MariaDB
11. One of the following represents a collection of records that can be managed together, belonging to a single parent domain name.
- a. Route 53
 - b. Hosted zones
 - c. Subnet

- d. IAM policies
12. One of the following is not correct about Simple Queue Service?
- a. SQS provides approximately unlimited scalability like SNS.
 - b. For message size above 256 kb, we can store it in s3 then send the key as a message to the queue.
 - c. SQS automatically deletes messages from queue one consumer start process
 - d. We can store the message in the queue for up to 14 days.
13. ABC company uses AWS S3 services. You are working as a software developer in the company. Your immediate supervisor asked you to give the suggestion, where to implement the object lifecycle class police that helps to minimize the storage cost. Which one of the following is not the level to apply the policies?
- a. All bucket levels in the storage
 - b. One specific object in the bucket level
 - c. One specific folder in the bucket level.
 - d. Key level
14. You have an app developed for react project. This app works with the S3 buckets in the US East region. The app is hosted on an EC2 instance. Which of the following should ideally be used to ensure that the EC2 instance has the appropriate access to the S3 buckets?
- a. Users
 - b. Groups
 - c. IAM Roles
 - d. IAM Policies
15. The current MSD students of MIU are planning to host a development environment on the cloud. This consists of EC2 and RDS instances. This environment will probably only be required for 3 months. Which options of EC2 instances would you use for this purpose?
- a. On-Demand
 - b. Reserved
 - c. Spot
 - d. a and b
16. Which model of cloud service is said to be serverless?
- a. SaaS
 - b. FaaS
 - c. PaaS
 - d. IaaS
17. A Solutions Architect is developing a document sharing application and needs a storage layer. The storage should provide automatic support for versioning so that users can easily roll back to a previous version or recover a deleted account. Which AWS service will meet the above requirements?
- a. Amazon EBS
 - b. Amazon S3
 - c. Amazon EFS
 - d. Amazon RDS
18. You have an application in which users subscribe to a service using their email ID. They should be able to receive messages published by the service and this needs to be done using AWS Components. Which of the below would be a probable service included in this architecture?
- a. AWS SNS

- b. AWS SQS
- c. AWS S3
- d. AWS CloudWatch

19. Which of the following is true about key-pairs?

- a. Private key is used to encrypt the information while at the receiver's side.
- b. Public key is used to decrypt the information.
- c. Key-pairs allows you to access the instances securely
- d. All of the above correct

20. When a company needs service from AWS which requires computing capacity at a very low price and additional amount of computing capacity at an urgent need for a couple of days. Your application is developed in a way that it is not fault-tolerant. So underlying servers cannot be interrupted. Which pricing models for EC2 instances you recommend?

- a. Reserved instance
- b. Spot instances
- c. On-Demand instances
- d. Dedicated instances

21. Which of the following is used to map RDS and Elastic Cache?

- a. Alias
- b. CNAME
- c. A
- d. All

22. Which of the following load balancer is used for improving securities that functions at OSI layer 3?

- a. Gateway Load Balancer
- b. Application Load Balancer
- c. Network Load Balancer
- d. Classic Load Balancer

23. Which of the following is not true statement about Input/output in EC2?

- a. More IOPS means better volume performance
- b. More IOPS means faster R/W speeds
- c. More IOPS means more expensive
- d. More IOPS means more cheaper

24. Which of the following is not true about serverless computing?

- a. provider allocates machine resources on demand
- b. provider allocates machine resources without a server
- c. it is Pure pay as you go model
- d. all

25. You created a bucket on AWS S3 and performed actions below

- You uploaded a file to the bucket named 'file1'
- You enabled versioning on the bucket
- You uploaded a file 'file2'
- You uploaded a file 'file3'
- You uploaded a file 'file2'

Which of the following is true?

- a. There will be 1 version ID for file1, 2 version IDs for file 2, and 1 version ID for file3.
- b. The version ID for file1 will be null, 2 version IDs for file 2, and 1 version ID for file3.

- c. There will be 1 version ID for file1, 2 version IDs for file 2, and 2 version IDs for file3.
 - d. There will be 1 version ID for file1, 1 version ID for file 2, and 1 version ID for file3.
26. Your teammate has created a VPC with CIDR 20.0.0.0/24. Your coworker has created a public subnet with CIDR 20.0.0.0/25 and a private subnet CIDR 20.0.0.128/25. When creating an EC2 Auto Scaling Group, you select subnets where you selected all subnets. You have now instances in all subnets launched by the ASG. Which of the below options cannot be the correct private IP address for your instances?
- a. 20.0.0.36
 - b. 20.0.0.126
 - c. 20.0.0.255
 - d. 20.0.0.1
27. You hired as a software engineer at a startup that they develop cloud-native applications. You are responsible for developing their application that requires searches based on many attributes on a product. Currently, you are the only developer who develops that app. Workload for your development environment is infrequent. What database would you choose in your development environment for the app that should be cost effective, easy to manage, and scaling is done by AWS?
- a. MySQL
 - b. MongoDB
 - c. Aurora
 - d. Serverless Aurora
28. You are deploying your first EC2 instance in AWS and using the AWS console to do this. You have chosen the AMI, instance size and now in the step 3 where you provide instance details. One of the configs you define here is whether you want to auto-assign a public IP address or not. Most cases this config is inherited from the subnet setting that you selected. Assume that if you don't choose this, you can assign an Elastic IP address later. In that case, which assumption is correct?
- a. An elastic IP is free whereas you pay for a public IP.
 - b. With an elastic IP, you can mask the failure of an instance by remapping the address to another instance in your account.
 - c. You can have unlimited number of elastic IP addresses in your account. However, public IPs are limited in number.
 - d. You can't directly access to an elastic IP from the internet like public IPs. Hence, you use it only on the secure resources like NAT gateway.
29. What is one reason we might use a standard SQS queue versus a FIFO SQS queue?
- a. The standard queue is best when event order is important, FIFO only when unlimited throughput is needed.
 - b. The standard queue is best when unlimited throughput is needed, FIFO only when need consistency.
 - c. The standard queue is better than the FIFO queue, functionally.
 - d. The standard queue only processes messages once, where FIFO occasionally process them multiple times.
30. You'd like to process failed messages. What queue do you need?
- a. SQS standard queue
 - b. SQS dead letter queue
 - c. SQS delay queue
 - d. SQS FIFO queue

31. To make our front-end application hosted on S3 available to the world, we must provide public access to:

- a. Bucket
- b. Object
- c. Key
- d. A and B
- e. All