

# DUMPS ARENA

## AWS Certified Solutions Architect - Associate (SAA-C02)

Amazon AWS AWS-Certified-Solutions-Architect-Associate-  
SAA-C02

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**QUESTION NO: 1**

An application runs on Amazon EC2 instances across multiple Availability Zones. The instances run in an Amazon EC2 Auto Scaling group behind an Application Load Balancer. The application performs best when the CPU utilization of the EC2 instances is at or near 40%.

What should a solutions architect do to maintain the desired performance across all instances in the group?

- A. Use a simple scaling policy to dynamically scale the Auto Scaling group.
- B. Use a target tracking policy to dynamically scale the Auto Scaling group.
- C. Use an AWS Lambda function to update the desired Auto Scaling group capacity.
- D. Use scheduled scaling actions to scale up and scale down the Auto Scaling group.

**ANSWER: B****Explanation:**

“With target tracking scaling policies, you select a scaling metric and set a target value. Amazon EC2 AutoScaling creates and manages the CloudWatch alarms that trigger the scaling policy and calculates the scaling adjustment based on the metric and the target value. The scaling policy adds or removes capacity as required to keep the metric at, or close to, the specified target value. In addition to keeping the metric close to the target value, a target tracking scaling policy also adjusts to changes in the metric due to a changing load pattern. For example, you can use target tracking scaling to: Configure a target tracking scaling policy to keep the average aggregate CPU utilization of your Auto Scaling group at 40 percent. Configure a target tracking scaling policy to keep the request count per target of your

Application Load Balancer target group at 1000 for your AutoScaling group.”

Reference: <https://docs.aws.amazon.com/autoscaling/ec2/userguide/as-scaling-target-tracking.html>

**QUESTION NO: 2**

A company has deployed a server less application that invokes an AWS Lambda function when new documents are uploaded to an Amazon S3 bucket. The application uses the Lambda function to process the documents. After a recent marketing campaign, the company noticed that the application did not process many of the documents.

What should a solutions architect do to improve the architecture of this application?

- A. Set the Lambda function's runtime timeout value to 15 minutes
- B. Configure an S3 bucket replication policy. Stage the documents in the S3 bucket for later processing
- C. Deploy an additional Lambda function. Load balance the processing of the documents across the two Lambda functions
- D. Create an Amazon Simple Queue Service (Amazon SQS) queue. Send the requests to the queue. Configure the queue as an event source for Lambda.

**ANSWER: B****QUESTION NO: 3**

A company is running a publicly accessible serverless application that uses Amazon API Gateway and AWS Lambda. The application's traffic recently spiked due to fraudulent requests from botnets. Which steps should a solutions architect take to block requests from unauthorized users? (Choose two.)

- A. Create a usage plan with an API key that is shared with genuine users only.
- B. Integrate logic within the Lambda function to ignore the requests from fraudulent IP addresses.
- C. Implement an AWS WAF rule to target malicious requests and trigger actions to filter them out.
- D. Convert the existing public API to a private API. Update the DNS records to redirect users to the new API endpoint.
- E. Create an IAM role for each user attempting to access the API. A user will assume the role when making the API call.

**ANSWER: A E****Explanation:**

Reference:

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiR\\_oHhu5DyAhVvA2MBHWEbDhgQFjAGegQIIhAD&url=https%3A%2F%2Faws.amazon.com%2Fblogs%2Fmedia%2Ftag%2Famazon-api-gateway%2Ffeed%2F&usg=AOvVaw2OaNcctRRtgVJ-d60ePyu](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiR_oHhu5DyAhVvA2MBHWEbDhgQFjAGegQIIhAD&url=https%3A%2F%2Faws.amazon.com%2Fblogs%2Fmedia%2Ftag%2Famazon-api-gateway%2Ffeed%2F&usg=AOvVaw2OaNcctRRtgVJ-d60ePyu)

**QUESTION NO: 4**

A company runs its two-tier ecommerce website on AWS. The web tier consists of a load balancer that sends traffic to Amazon EC2 instances. The database tier uses an Amazon RDS DB instance. The EC2 instances and the RDS DB instance should not be exposed to the public internet. The EC2 instances require internet access to complete payment processing of orders through a third-party web service. The application must be highly available.

Which combination of configuration options will meet these requirements? (Choose two.)

- A. Use an Auto Scaling group to launch the EC2 instances in private subnets. Deploy an RDS Multi-AZ DB instance in private subnets.
- B. Configure a VPC with two private subnets and two NAT gateways across two Availability Zones. Deploy an Application Load Balancer in the private subnets.
- C. Use an Auto Scaling group to launch the EC2 instances in public subnets across two Availability Zones. Deploy an RDS Multi-AZ DB instance in private subnets.
- D. Configure a VPC with one public subnet, one private subnet, and two NAT gateways across two Availability Zones. Deploy an Application Load Balancer in the public subnet.
- E. Configure a VPC with two public subnets, two private subnets, and two NAT gateways across two Availability Zones. Deploy an Application Load Balancer in the public subnets.

**ANSWER: A B****QUESTION NO: 5**

A company wants to improve the availability and performance of its hybrid application. The application consists of a stateful TCP-based workload hosted on Amazon EC2 instances in different AWS Regions and a stateless UOP-based workload hosted on premises.

Which combination of actions should a solutions architect take to improve availability and performance? (Choose two.)

- A.** Create an accelerator using AWS Global Accelerator. Add the load balancers as endpoints.
- B.** Create an Amazon CloudFront distribution with an origin that uses Amazon Route 53 latency-based routing to route requests to the load balancers.
- C.** Configure two Application Load Balancers in each Region. The first will route to the EC2 endpoints and the second will route to the on-premises endpoints.
- D.** Configure a Network Load Balancer in each Region to address the EC2 endpoints. Configure a Network Load Balancer in each Region that routes to the on-premises endpoints.
- E.** Configure a Network Load Balancer in each Region to address the EC2 endpoints. Configure an Application Load Balancer in each Region that routes to the on-premises endpoints

**ANSWER: A D****QUESTION NO: 6**

A company is migrating a large, mission-critical database to AWS. A solutions architect has decided to use an Amazon RDS for MySQL Multi-AZ DB instance that is deployed with 80,000 Provisioned IOPS for storage. The solutions architect is using AWS Database Migration Service (AWS DMS) to perform the data migration. The migration is taking longer than expected, and the company wants to speed up the process. The company's network team has ruled out bandwidth as a limiting factor.

Which actions should the solutions architect take to speed up the migration? (Choose two.)

- A.** Disable Multi-AZ on the target DB instance.
- B.** Create a new DMS instance that has a larger instance size.
- C.** Turn off logging on the target DB instance until the initial load is complete.
- D.** Restart the DMS task on a new DMS instance with transfer acceleration enabled.
- E.** Change the storage type on the target DB instance to Amazon Elastic Block Store (Amazon EBS) General Purpose SSD (gp2).

**ANSWER: C D**

**QUESTION NO: 7**

A company recently started using Amazon Aurora as the data store for its global ecommerce application. When large reports are run, developers report that the ecommerce application is performing poorly. After reviewing metrics in Amazon CloudWatch, a solutions architect finds that the ReadIOPS and CPU Utilization metrics are spiking when monthly reports run.

What is the MOST cost-effective solution?

- A. Migrate the monthly reporting to Amazon Redshift.
- B. Migrate the monthly reporting to an Aurora Replica.
- C. Migrate the Aurora database to a larger instance class.
- D. Increase the Provisioned IOPS on the Aurora instance.

**ANSWER: D****QUESTION NO: 8**

A company is running a multi-tier web application on premises. The web application is containerized and runs on a number of Linux hosts connected to a PostgreSQL database that contains user records. The operational overhead of maintaining the infrastructure and capacity planning is limiting the company's growth. A solutions architect must improve the application's infrastructure. Which combination of actions should the solutions architect take to accomplish this? (Choose two.)

- A. Migrate the PostgreSQL database to Amazon Aurora.
- B. Migrate the web application to be hosted on Amazon EC2 instances.
- C. Set up an Amazon CloudFront distribution for the web application content.
- D. Set up Amazon ElastiCache between the web application and the PostgreSQL database.
- E. Migrate the web application to be hosted on AWS Fargate with Amazon Elastic Container Service (Amazon ECS).

**ANSWER: C D****QUESTION NO: 9**

A solutions architect is designing a two-tier web application. The application consists of a public-facing web tier hosted on Amazon EC2 in public subnets. The database tier consists of Microsoft SQL Server running on Amazon EC2 in a private subnet. Security is a high priority for the company.

How should security groups be configured in this situation? (Select TWO.)

- A. Configure the security group for the web tier to allow inbound traffic on port 443 from 0.0.0.0/0.
- B. Configure the security group for the web tier to allow outbound traffic on port 443 from 0.0.0.0/0.

- C. Configure the security group for the database tier to allow inbound traffic on port 1433 from the security group for the web tier.
- D. Configure the security group for the database tier to allow outbound traffic on ports 443 and 1433 to the security group for the web tier.
- E. Configure the security group for the database tier to allow inbound traffic on ports 443 and 1433 from the security group for the web tier.

**ANSWER: A C**

**Explanation:**

"Security groups create an outbound rule for every inbound rule." Not completely right. Statefull does NOT mean that if you create an inbound (or outbound) rule, it will create an outbound (or inbound) rule. What it does mean is: suppose you create an inbound rule on port 443 for the X ip. When a request enters on port 443 from X ip, it will allow traffic out for that request in the port 443. However, if you look at the outbound rules, there will not be any outbound rule on port 443 unless explicitly create it. In ACLs, which are stateless, you would have to create an inbound rule to allow incoming requests and an outbound rule to allow your application responds to those incoming requests.

[https://docs.aws.amazon.com/vpc/latest/userguide/VPC\\_SecurityGroups.html#SecurityGroupRules](https://docs.aws.amazon.com/vpc/latest/userguide/VPC_SecurityGroups.html#SecurityGroupRules)

**QUESTION NO: 10**

A company plans to host a survey website on AWS. The company anticipates an unpredictable amount of traffic. This traffic results in asynchronous updates to the database. The company wants to ensure that writes to the database hosted on AWS do not get dropped.

How should the company write its application to handle these database requests?

- A. Configure the application to publish to an Amazon Simple Notification Service (Amazon SNS) topic. Subscribe the database to the SNS topic.
- B. Configure the application to subscribe to an Amazon Simple Notification Service (Amazon SNS) topic. Publish the database updates to the SNS topic.
- C. Use Amazon Simple Queue Service (Amazon SQS) FIFO queues to queue the database connection until the database has resources to write the data.
- D. Use Amazon Simple Queue Service (Amazon SQS) FIFO queues for capturing the writes and draining the queue as each write is made to the database.

**ANSWER: A**

**QUESTION NO: 11**

A company has an application workflow that uses an AWS Lambda function to download and decrypt files from Amazon S3. These files are encrypted using AWS Key Management Service Customer Master Keys (AWS KMS CMKs). A solutions architect needs to design a solution that will ensure the required permissions are set correctly.

Which combination of actions accomplish this? (Choose two.)

- A. Attach the kms:decrypt permission to the Lambda function's resource policy.
- B. Grant the decrypt permission for the Lambda IAM role in the KMS key's policy.
- C. Grant the decrypt permission for the Lambda resource policy in the KMS key's policy.
- D. Create a new IAM policy with the kms:decrypt permission and attach the policy to the Lambda function.
- E. Create a new IAM role with the kms:decrypt permission and attach the execution role to the Lambda function.

**ANSWER: B E**

#### QUESTION NO: 12

A company wants to migrate a high performance computing (HPC) application and data from on-premises to the AWS Cloud. The company uses tiered storage on premises with hot high-performance parallel storage to support the application during periodic runs of the application, and more economical cold storage to hold the data when the application is not actively running.

Which combination of solutions should a solutions architect recommend to support the storage needs of the application? (Choose two.)

- A. Amazon S3 for cold data storage
- B. Amazon Elastic File System (Amazon EFS) for cold data storage
- C. Amazon S3 for high-performance parallel storage
- D. Amazon FSx for Lustre for high-performance parallel storage
- E. Amazon FSx for Windows for high-performance parallel storage

**ANSWER: A D**

#### QUESTION NO: 13

A company is running a media store across multiple Amazon EC2 instances distributed across multiple Availability Zones in a single VPC. The company wants a high-performing solution to share data between all the EC2 instances, and prefers to keep the data within the VPC only.

What should a solutions architect recommend?

- A. Create an Amazon S3 bucket and call the service APIs from each instance's application.

- B. Create an Amazon S3 bucket and configure all instances to access it as a mounted volume.
- C. Configure an Amazon Elastic Block Store (Amazon EBS) volume and mount it across all instances.
- D. Configure an Amazon Elastic File System (Amazon EFS) file system and mount it across all instances.

**ANSWER: D**

**Explanation:**

Reference: <https://docs.aws.amazon.com/efs/latest/ug/mt-test.html>

**QUESTION NO: 14**

A solutions architect is designing the architecture for a new web application. The application will run on AWS Fargate containers with an Application Load Balancer (ALB) and an Amazon Aurora PostgreSQL database. The web application will perform primarily read queries against the database.

What should the solutions architect do to ensure that the website can scale with increasing traffic? (Choose two.)

- A. Enable auto scaling on the ALB to scale the load balancer horizontally.
- B. Configure Aurora Auto Scaling to adjust the number of Aurora Replicas in the Aurora cluster dynamically.
- C. Enable cross-zone load balancing on the ALB to distribute the load evenly across containers in all Availability Zones.
- D. Configure an Amazon Elastic Container Service (Amazon ECS) cluster in each Availability Zone to distribute the load across multiple Availability Zones.
- E. Configure Amazon Elastic Container Service (Amazon ECS) Service Auto Scaling with a target tracking scaling policy that is based on CPU utilization.

**ANSWER: B E**

**QUESTION NO: 15**

A solutions architect is designing the cloud architecture for a new application being deployed on AWS. The process should run in parallel while adding and removing application nodes as needed based on the number of jobs to be processed. The processor application is stateless. The solutions architect must ensure that the application is loosely coupled and the job items are durably stored.

Which design should the solutions architect use?

- A. Create an Amazon SNS topic to send the jobs that need to be processed. Create an Amazon Machine Image (AMI) that consists of the processor application. Create a launch configuration that uses the AMI. Create an Auto Scaling group using the launch configuration. Set the scaling policy for the Auto Scaling group to add and remove nodes based on CPU usage.
- B. Create an Amazon SQS queue to hold the jobs that need to be processed. Create an Amazon Machine Image (AMI) that consists of the processor application. Create a launch configuration that uses the AMI. Create an Auto Scaling group using

the launch configuration. Set the scaling policy for the Auto Scaling group to add and remove nodes based on network usage.

**C.** Create an Amazon SQS queue to hold the jobs that need to be processed. Create an Amazon Machine Image (AMI) that consists of the processor application. Create a launch template that uses the AMI. Create an Auto Scaling group using the launch template. Set the scaling policy for the Auto Scaling group to add and remove nodes based on the number of items in the SQS queue.

**D.** Create an Amazon SNS topic to send the jobs that need to be processed. Create an Amazon Machine Image (AMI) that consists of the processor application. Create a launch template that uses the AMI. Create an Auto Scaling group using the launch template. Set the scaling policy for the Auto Scaling group to add and remove nodes based on the number of messages published to the SNS topic.

**ANSWER: C**

**Explanation:**

Amazon Simple Queue Service

Amazon Simple Queue Service (SQS) is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications. SQS eliminates the complexity and overhead associated with managing and operating message oriented middleware, and empowers developers to focus on differentiating work. Using SQS, you can send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available. Get started with SQS in minutes using the AWS console, Command Line Interface or SDK of your choice, and three simple commands.

SQS offers two types of message queues. Standard queues offer maximum throughput, best-effort ordering, and at-least-once delivery. SQS FIFO queues are designed to guarantee that messages are processed exactly once, in the exact order that they are sent.

Scaling Based on Amazon SQS

There are some scenarios where you might think about scaling in response to activity in an Amazon SQS queue. For example, suppose that you have a web app that lets users upload images and use them online. In this scenario, each image requires resizing and encoding before it can be published. The app runs on EC2 instances in an Auto Scaling group, and it's configured to handle your typical upload rates. Unhealthy instances are terminated and replaced to maintain current instance levels at all times. The app places the raw bitmap data of the images in an SQS queue for processing. It processes the images and then publishes the processed images where they can be viewed by users. The architecture for this scenario works well if the number of image uploads doesn't vary over time. But if the number of uploads changes over time, you might consider using dynamic scaling to scale the capacity of your Auto Scaling group.

Reference:

<https://aws.amazon.com/sqs/#:~:text=Amazon%20SQS%20leverages%20the%20AWS,queues%20provide%20nearly%20unlimited%20throughput> <https://docs.aws.amazon.com/autoscaling/ec2/userguide/as-using-sqs-queue.html>

**QUESTION NO: 16**

A solutions architect has created a new AWS account and must secure AWS account root user access.

Which combination of actions will accomplish this? (Choose two.)

**A.** Ensure the root user uses a strong password.

- B. Enable multi-factor authentication to the root user.
- C. Store root user access keys in an encrypted Amazon S3 bucket.
- D. Add the root user to a group containing administrative permissions.
- E. Apply the required permissions to the root user with an inline policy document.

**ANSWER: A B**

#### QUESTION NO: 17

A company has a remote factory that has unreliable connectivity. The factory needs to gather and process machine data and sensor data so that it can sense products on its conveyor belts and initiate a robotic movement to direct the products to the right location. Predictable low-latency compute processing is essential for the on-premises control systems.

Which solution should the factory use to process the data?

- A. Amazon CloudFront Lambda@Edge functions
- B. An Amazon EC2 instance that has enhanced networking enabled
- C. An Amazon EC2 instance that uses an AWS Global Accelerator
- D. An Amazon Elastic Block Store (Amazon EBS) volume on an AWS Snowball Edge cluster

**ANSWER: A**

#### QUESTION NO: 18

A company is running an ecommerce application on Amazon EC2. The application consists of a stateless web tier that requires a minimum of 10 instances, and a peak of 250 instances to support the application's usage. The application requires 50 instances 80% of the time.

Which solution should be used to minimize costs?

- A. Purchase Reserved Instances to cover 250 instances.
- B. Purchase Reserved Instances to cover 80 instances. Use Spot Instances to cover the remaining instances.
- C. Purchase On-Demand Instances to cover 40 instances. Use Spot Instances to cover the remaining instances.
- D. Purchase Reserved Instances to cover 50 instances. Use On-Demand and Spot Instances to cover the remaining instances.

**ANSWER: D**

**Explanation:**

## Reserved Instances

Having 50 EC2 RIs provide a discounted hourly rate and an optional capacity reservation for EC2 instances. AWS Billing automatically applies your RI's discounted rate when attributes of EC2 instance usage match attributes of an active RI.

If an Availability Zone is specified, EC2 reserves capacity matching the attributes of the RI. The capacity reservation of an RI is automatically utilized by running instances matching these attributes.

You can also choose to forego the capacity reservation and purchase an RI that is scoped to a region. RIs that are scoped to a region automatically apply the RI's discount to instance usage across AZs and instance sizes in a region, making it easier for you to take advantage of the RI's discounted rate.

## On-Demand Instance

On-Demand instances let you pay for compute capacity by the hour or second (minimum of 60 seconds) with no long-term commitments. This frees you from the costs and complexities of planning, purchasing, and maintaining hardware and transforms what are commonly large fixed costs into much smaller variable costs.

The pricing below includes the cost to run private and public AMIs on the specified operating system ("Windows Usage" prices apply to Windows Server 2003 R2, 2008, 2008 R2, 2012, 2012 R2, 2016, and

2019). Amazon also provides you with additional instances for Amazon EC2 running Microsoft Windows with SQL Server, Amazon EC2 running SUSE Linux Enterprise Server, Amazon EC2 running Red Hat Enterprise Linux and Amazon EC2 running IBM that are priced differently.

## Spot Instances

A Spot Instance is an unused EC2 instance that is available for less than the On-Demand price. Because Spot Instances enable you to request unused EC2 instances at steep discounts, you can lower your Amazon EC2 costs significantly. The hourly price for a Spot Instance is called a Spot price. The Spot price of each instance type in each Availability Zone is set by Amazon EC2, and adjusted gradually based on the long-term supply of and demand for Spot Instances. Your Spot Instance runs whenever capacity is available and the maximum price per hour for your request exceeds the Spot price.

Reference: <https://aws.amazon.com/ec2/pricing/reserved-instances/> <https://aws.amazon.com/ec2/pricing/on-demand/>

<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/using-spot-instances.html>

## QUESTION NO: 19

A company is Re-architecting a strongly coupled application to be loosely coupled. Previously the application used a request/response pattern to communicate between tiers. The company plans to use Amazon Simple Queue Service (Amazon SQS) to achieve decoupling requirements. The initial design contains one queue for requests and one for responses. However, this approach is not processing all the messages as the application scales.

What should a solutions architect do to resolve this issue?

- A. Configure a dead-letter queue on the ReceiveMessage API action of the SQS queue.
- B. Configure a FIFO queue, and use the message deduplication ID and message group ID.
- C. Create a temporary queue, with the Temporary Queue Client to receive each response message.
- D. Create a queue for each request and response on startup for each producer, and use a correlation ID message attribute.

**ANSWER: A****QUESTION NO: 20**

A solutions architect is redesigning a monolithic application to be a loosely coupled application composed of two microservices: Microservice A and Microservice B.

Microservice A places messages in a main Amazon Simple Queue Service (Amazon SQS) queue for Microservice B to consume. When Microservice B fails to process a message after four retries, the message needs to be removed from the queue and stored for further investigation.

What should the solutions architect do to meet these requirements?

- A.** Create an SQS dead-letter queue. Microservice B adds failed messages to that queue after it receives and fails to process the message four times.
- B.** Create an SQS dead-letter queue. Configure the main SQS queue to deliver messages to the dead-letter queue after the message has been received four times.
- C.** Create an SQS queue for failed messages. Microservice A adds failed messages to that queue after Microservice B receives and fails to process the message four times.
- D.** Create an SQS queue for failed messages. Configure the SQS queue for failed messages to pull messages from the main SQS queue after the original message has been received four times.

**ANSWER: B**