# SAP-C02 Q&As

AWS Certified Solutions Architect - Professional

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**QUESTION 1**

An enterprise company is using a multi-account AWS strategy. There are separate accounts for development staging and production workloads. To control costs and improve governance the following requirements have been defined:

1.

The company must be able to calculate the AWS costs for each project.

2.

The company must be able to calculate the AWS costs for each environment development staging and production.

3.

Commonly deployed IT services must be centrally managed.

4.

Business units can deploy pre-approved IT services only.

5.

Usage of AWS resources in the development account must be limited.

Which combination of actions should be taken to meet these requirements? (Choose three.)

A. Apply environment, cost center, and application name tags to all taggable resources.

B. Configure custom budgets and define thresholds using Cost Explorer.

C. Configure AWS Trusted Advisor to obtain weekly emails with cost-saving estimates.

D. Create a portfolio for each business unit and add products to the portfolios using AWS CloudFormation in AWS Service Catalog.

E. Configure a billing alarm in Amazon CloudWatch.

F. Configure SCPs in AWS Organizations to allow services available using AWS.

Correct Answer: ADF

AWS Service Catalog = Usage of AWS resources in the development account must be limited https://aws.amazon.com/blogs/aws-cloud-financial-management/cost-control-blog-series-2-automate-cost-control-using-aws-service-catalog-aws-budgets/

**QUESTION 2**

A scientific company needs to process text and image data from an Amazon S3 bucket. The data is collected from several radar stations during a live, time-critical phase of a deep space mission. The radar stations upload the data to the source S3 bucket. The data is prefixed by radar station identification number.

The company created a destination S3 bucket in a second account. Data must be copied from the source S3 bucket to

the destination S3 bucket to meet a compliance objective. The replication occurs through the use of an S3 replication rule to cover all objects in the source S3 bucket.

One specific radar station is identified as having the most accurate data. Data replication at this radar station must be monitored for completion within 30 minutes after the radar station uploads the objects to the source S3 bucket.

What should a solutions architect do to meet these requirements?

A. Set up an AWS DataSync agent to replicate the prefixed data from the source S3 bucket to the destination S3 bucket. Select to use all available bandwidth on the task, and monitor the task to ensure that it is in the TRANSFERRING status. Create an Amazon EventBridge (Amazon CloudWatch Events) rule to trigger an alert if this status changes.

B. In the second account, create another S3 bucket to receive data from the radar station with the most accurate data. Set up a new replication rule for this new S3 bucket to separate the replication from the other radar stations. Monitor the maximum replication time to the destination. Create an Amazon EventBridge (Amazon CloudWatch Events) rule to trigger an alert when the time exceeds the desired threshold.

C. Enable Amazon S3 Transfer Acceleration on the source S3 bucket, and configure the radar station with the most accurate data to use the new endpoint. Monitor the S3 destination bucket\\'s TotalRequestLatency metric. Create an Amazon EventBridge (Amazon CloudWatch Events) rule to trigger an alert if this status changes.

D. Create a new S3 replication rule on the source S3 bucket that filters for the keys that use the prefix of the radar station with the most accurate data. Enable S3 Replication Time Control (S3 RTC). Monitor the maximum replication time to the destination. Create an Amazon EventBridge (Amazon CloudWatch Events) rule to trigger an alert when the time exceeds the desired threshold.

Correct Answer: D

https://docs.aws.amazon.com/AmazonS3/latest/userguide/replication-time-control.html

**QUESTION 3**

A company is changing the way that it handles patching of Amazon EC2 instances in its application account. The company currently patches instances over the internet by using a NAT gateway in a VPC in the application account.

The company has EC2 instances set up as a patch source repository in a dedicated private VPC in a core account. The company wants to use AWS Systems Manager Patch Manager and the patch source repository in the core account to patch the EC2 instances in the application account. The company must prevent all EC2 instances in the application account from accessing the internet.

The EC2 instances in the application account need to access Amazon S3, where the application data is stored. These EC2 instances need connectivity to Systems Manager and to the patch source repository in the private VPC in the core account.

Which solution will meet these requirements?

A. Create a network ACL that blocks outbound traffic on port 80. Associate the network ACL with all subnets in the application account. In the application account and the core account, deploy one EC2 instance that runs a custom VPN server. Create a VPN tunnel to access the private VPC. Update the route table in the application account.

B. Create private VIFs for Systems Manager and Amazon S3. Delete the NAT gateway from the VPC in the application account. Create a transit gateway to access the patch source repository EC2 instances in the core account. Update the route table in the core account.

C. Create VPC endpoints for Systems Manager and Amazon S3. Delete the NAT gateway from the VPC in the application account. Create a VPC peering connection to access the patch source repository EC2 instances in the core account. Update the route tables in both accounts.

D. Create a network ACL that blocks inbound traffic on port 80. Associate the network ACL with all subnets in the application account. Create a transit gateway to access the patch source repository EC2 instances in the core account. Update the route tables in both accounts.

Correct Answer: C

**QUESTION 4**

A company has a photo sharing social networking application. To provide a consistent experience for users, the company performs some image processing on the photos uploaded by users before publishing on the application. The image processing is implemented using a set of Python libraries.

The current architecture is as follows:

The image processing Python code runs in a single Amazon EC2 instance and stores the processed images in an Amazon S3 bucket named ImageBucket. The front-end application, hosted in another bucket, loads the images from ImageBucket to display to users.

With plans for global expansion, the company wants to implement changes in its existing architecture to be able to scale for increased demand on the application and reduce management complexity as the application scales.

Which combination of changes should a solutions architect make? (Select TWO.)

A. Place the image processing EC2 instance into an Auto Scaling group.

B. Use AWS Lambda to run the image processing tasks.

C. Use Amazon Rekognition for image processing.

D. Use Amazon CloudFront in front of ImageBucket.

E. Deploy the applications in an Amazon ECS cluster and apply Service Auto Scaling.

Correct Answer: BD

https://prismatic.io/blog/why-we-moved-from-lambda-to-ecs/

**QUESTION 5**

A company has a platform that contains an Amazon S3 bucket for user content. The S3 bucket has thousands of terabytes of objects, all in the S3 Standard storage class. The company has an RTO of 6 hours The company must replicate the data from its primary AWS Region to a replication S3 bucket in another Region

The user content S3 bucket contains user-uploaded files such as videos and photos. The user content S3 bucket has an unpredictable access pattern. The number of users is increasing quickly, and the company wants to create an S3 Lifecycle policy to reduce storage costs

Which combination of steps will meet these requirements MOST cost-effectively\\'? (Select TWO )

A. Move the objects in the user content S3 bucket to S3 Intelligent-Tiering immediately

B. Move the objects in the user content S3 bucket to S3 Intelligent-Tiering after 30 days

C. Move the objects in the replication S3 bucket to S3 Standard-Infrequent Access (S3 Standard-IA) after 30 days and to S3 Glacier after 90 days

D. Move the objects in the replication S3 bucket to S3 One Zone-Infrequent Access (S3 One Zone-IA) after 30 days and to S3 Glacier Deep Archive after 90 days

E. Move the objects in the replication S3 bucket to S3 Standard-infrequent Access (S3 Standard-IA) after 30 days and to S3 Glacier Deep Archive after 180 days

Correct Answer: AD

**QUESTION 6**

A company is hosting a monolithic REST-based API for a mobile app on five Amazon EC2 instances in public subnets of a VPC. Mobile clients connect to the API by using a domain name that is hosted on Amazon Route 53. The company

has created a Route 53 multivalue answer routing policy with the IP addresses of all the EC2 instances. Recently, the app has been overwhelmed by large and sudden increases to traffic. The app has not been able to keep up with the traffic.

A solutions architect needs to implement a solution so that the app can handle the new and varying load.

Which solution will meet these requirements with the LEAST operational overhead?

A. Separate the API into individual AWS Lambda functions. Configure an Amazon API Gateway REST API with Lambda integration for the backend. Update the Route 53 record to point to the API Gateway API.

B. Containerize the API logic. Create an Amazon Elastic Kubernetes Service (Amazon EKS) cluster. Run the containers in the cluster by using Amazon EC2. Create a Kubernetes ingress. Update the Route 53 record to point to the Kubernetes ingress.

C. Create an Auto Scaling group. Place all the EC2 instances in the Auto Scaling group. Configure the Auto Scaling group to perform scaling actions that are based on CPU utilization. Create an AWS Lambda function that reacts to Auto Scaling group changes and updates the Route 53 record.

D. Create an Application Load Balancer (ALB) in front of the API. Move the EC2 instances to private subnets in the VPC. Add the EC2 instances as targets for the ALB. Update the Route 53 record to point to the ALB.

Correct Answer: A

By breaking down the monolithic API into individual Lambda functions and using API Gateway to handle the incoming requests, the solution can automatically scale to handle the new and varying load without the need for manual scaling actions. Additionally, this option will automatically handle the traffic without the need of having EC2 instances running all the time and only pay for the number of requests and the duration of the execution of the Lambda function. By updating the Route 53 record to point to the API Gateway, the solution can handle the traffic and also it will direct the traffic to the correct endpoint.

**QUESTION 7**

A company has implemented a new security requirement. According to the new requirement, the company must scan all traffic from corporate AWS instances in the company\\'s VPC for violations of the company\\'s security policies. As a result of these scans, the company can block access to and from specific IP addresses.

To meet the new requirement, the company deploys a set of Amazon EC2 instances in private subnets to serve as transparent proxies. The company installs approved proxy server software on these EC2 instances. The company modifies the route tables on all subnets to use the corresponding EC2 instances with proxy software as the default route. The company also creates security groups that are compliant with the security policies and assigns these security groups to the EC2 instances.

Despite these configurations, the traffic of the EC2 instances in their private subnets is not being properly forwarded to the internet.

What should a solutions architect do to resolve this issue?

A. Disable source/destination checks on the EC2 instances that run the proxy software.

B. Add a rule to the security group that is assigned to the proxy EC2 instances to allow all traffic between instances that have this security group. Assign this security group to all EC2 instances in the VPC.

C. Change the VPCs DHCP options set. Set the DNS server options to point to the addresses of the proxy EC2 instances.

D. Assign one additional elastic network interface to each proxy EC2 instance. Ensure that one of these network interfaces has a route to the private subnets. Ensure that the other network interface has a route to the internet.

Correct Answer: A

**QUESTION 8**

A company is processing videos in the AWS Cloud by using Amazon EC2 instances in an Auto Scaling group. It takes 30 minutes to process a video. Several EC2 instances scale in and out depending on the number of videos in an Amazon Simple Queue Service (Amazon SQS) queue.

The company has configured the SQS queue with a redrive policy that specifies a target dead-letter queue and a maxReceiveCount of 1. The company has set the visibility timeout for the SQS queue to 1 hour. The company has set up an Amazon CloudWatch alarm to notify the development team when there are messages in the dead-letter queue.

Several times during the day, the development team receives notification that messages are in the dead-letter queue and that videos have not been processed properly. An investigation finds no errors in the application logs.

How can the company solve this problem?

A. Turn on termination protection for the EC2 instances.

B. Update the visibility timeout for the SOS queue to 3 hours.

C. Configure scale-in protection for the instances during processing.

D. Update the redrive policy and set maxReceiveCount to 0.

Correct Answer: C

The issue is that the messages are being moved to the dead-letter queue because the visibility timeout is not long enough for the processing time of the videos. The visibility timeout is the amount of time that a message is invisible in

the queue after a worker retrieves it. If a worker does not delete or extend the visibility timeout before the timeout expires, the message becomes visible again and another worker can process it. By updating the visibility timeout for the SQS queue to 3 hours, the company can ensure that the messages are not moved to the dead-letter queue before the processing is complete, solving the problem. You can refer to the AWS SQS documentation for more information on how to use this service:https://aws.amazon.com/sqs/You can refer to the AWS CloudWatch Alarms documentation for more information on how to use this service:https:// aws.amazon.com/cloudwatch/And you can refer to the AWS EC2 documentation for more information on how to use this service:https://aws.amazon.com/ec2/ It\\'s worth mentioning that the other options are not directly related to the problem, Termination protection helps to prevent accidental termination, Scale-in protection prevents instances from being terminated when scale in occurs, and maxReceiveCount is the number of times a message is delivered to the queue before being moved to the dead-letter queue.

**QUESTION 9**

A company uses a Grafana data visualization solution that runs on a single Amazon EC2 instance to monitor the health of the company\\'s AWS workloads. The company has invested time and effort to create dashboards that the company wants to preserve. The dashboards need to be highly available and cannot be down for longer than 10 minutes. The company needs to minimize ongoing maintenance.

Which solution will meet these requirements with the LEAST operational overhead?

A. Migrate to Amazon CloudWatch dashboards. Recreate the dashboards to match the existing Grafana dashboards. Use automatic dashboards where possible.

B. Create an Amazon Managed Grafana workspace. Configure a new Amazon CloudWatch data source. Export dashboards from the existing Grafana instance. Import the dashboards into the new workspace.

C. Create an AMI that has Grafana pre-installed. Store the existing dashboards in Amazon Elastic File System (Amazon EFS). Create an Auto Scaling group that uses the new AMI. Set the Auto Scaling group\\'s minimum, desired, and maximum number of instances to one. Create an Application Load Balancer that serves at least two Availability Zones.

D. Configure AWS Backup to back up the EC2 instance that runs Grafana once each hour. Restore the EC2 instance from the most recent snapshot in an alternate Availability Zone when required.

Correct Answer: B

Option B is correct, however read this, https://docs.aws.amazon.com/grafana/latest/userguide/AMG-workspace-content-migration.html

**QUESTION 10**

A company runs a content management application on a single Windows Amazon EC2 instance in a development environment. The application reads and writes static content to a 2 TB Amazon Elastic Block Store (Amazon EBS) volume that is attached to the instance as the root device. The company plans to deploy this application in production as a highly available and fault-tolerant solution that runs on at least three EC2 instances across multiple Availability Zones.

A solutions architect must design a solution that joins all the instances that run the application to an Active Directory domain. The solution also must implement Windows ACLs to control access to file contents. The application always must maintain exactly the same content on all running instances at any given point in time.

Which solution will meet these requirements with the LEAST management overhead?

A. Create an Amazon Elastic File System (Amazon EFS) file share. Create an Auto Scaling group that extends across three Availability Zones and maintains a minimum size of three instances. Implement a user data script to install the

application, join the instance to the AD domain, and mount the EFS file share.

B. Create a new AMI from the current EC2 instance that is running. Create an Amazon FSx for Lustre file system. Create an Auto Scaling group that extends across three Availability Zones and maintains a minimum size of three instances. Implement a user data script to join the instance to the AD domain and mount the FSx for Lustre file system.

C. Create an Amazon FSx for Windows File Server file system. Create an Auto Scaling group that extends across three Availability Zones and maintains a minimum size of three instances. Implement a user data script to install the application and mount the FSx for Windows File Server file system. Perform a seamless domain join to join the instance to the AD domain.

D. Create a new AMI from the current EC2 instance that is running. Create an Amazon Elastic File System (Amazon EFS) file system. Create an Auto Scaling group that extends across three Availability Zones and maintains a minimum size of three instances. Perform a seamless domain join to join the instance to the AD domain.

Correct Answer: C

https://docs.aws.amazon.com/fsx/latest/WindowsGuide/what-is.html
https://docs.aws.amazon.com/directoryservice/latest/admin-guide/ms_ad_join_instance.html

**QUESTION 11**

A retail company has an on-premises data center in Europe. The company also has a multi-Region AWS presence that includes the eu-west-1 and us-east-1 Regions. The company wants to be able to route network traffic from its on-premises infrastructure into VPCs in either of those Regions. The company also needs to support traffic that is routed directly between VPCs in those Regions. No single points of failure can exist on the network.

The company already has created two 1 Gbps AWS Direct Connect connections from its on-premises data center. Each connection goes into a separate Direct Connect location in Europe for high availability. These two locations are named DX-A and DX-B, respectively. Each Region has a single AWS Transit Gateway that is configured to route all inter-VPC traffic within that Region.

Which solution will meet these requirements?

A. Create a private VIF from the DX-A connection into a Direct Connect gateway. Create a private VIF from the DX-B connection into the same Direct Connect gateway for high availability. Associate both the eu-west-1 and us-east-1 transit gateways with the Direct Connect gateway. Peer the transit gateways with each other to support cross-Region routing.

B. Create a transit VIF from the DX-A connection into a Direct Connect gateway. Associate the eu-west-1 transit gateway with this Direct Connect gateway. Create a transit VIF from the DX-B connection into a separate Direct Connect gateway. Associate the us-east-1 transit gateway with this separate Direct Connect gateway. Peer the Direct Connect gateways with each other to support high availability and cross-Region routing.

C. Create a transit VIF from the DX-A connection into a Direct Connect gateway. Create a transit VIF from the DX-B connection into the same Direct Connect gateway for high availability. Associate both the eu-west-1 and us-east-1 transit gateways with this Direct Connect gateway. Configure the Direct Connect gateway to route traffic between the transit gateways.

D. Create a transit VIF from the DX-A connection into a Direct Connect gateway. Create a transit VIF from the DX-B connection into the same Direct Connect gateway for high availability. Associate both the eu-west-1 and us-east-1 transit gateways with this Direct Connect gateway. Peer the transit gateways with each other to support cross-Region routing.

Correct Answer: D

in this solution, two transit VIFs are created - one from the DX-A connection and one from the DX-B connection - into the same Direct Connect gateway for high availability. Both the eu-west-1 and us-east-1 transit gateways are then associated with this Direct Connect gateway. The transit gateways are then peered with each other to support cross-Region routing. This solution meets the requirements of the company by creating a highly available connection between the on-premises data center and the VPCs in both the eu-west-1 and us-east-1 regions, and by enabling direct traffic routing between VPCs in those regions.

**QUESTION 12**

A company wants to migrate a 30 TB Oracle data warehouse from on premises to Amazon Redshift The company used the AWS Schema Conversion Tool (AWS SCT) to convert the schema of the existing data warehouse to an Amazon Redshift schema The company also used a migration assessment report to identify manual tasks to complete.

The company needs to migrate the data to the new Amazon Redshift cluster during an upcoming data freeze period of 2 weeks The only network connection between the on- premises data warehouse and AWS is a 50 Mops internet connection

Which migration strategy meets these requirements?

A. Create an AWS Database Migration Service (AWS DMS) replication instance. Authorize the public IP address of the replication instance to reach the data warehouse through the corporate firewall Create a migration task to run at the beginning of the data freeze period.

B. Install the AWS SCT extraction agents on the on-premises servers. Define the extract, upload, and copy tasks to send the data to an Amazon S3 bucket. Copy the data into the Amazon Redshift cluster. Run the tasks at the beginning of the data freeze period.

C. install the AWS SCT extraction agents on the on-premises servers. Create a Site-to-Site VPN connection Create an AWS Database Migration Service (AWS DMS) replication instance that is the appropriate size Authorize the IP address of the replication instance to be able to access the on-premises data warehouse through the VPN connection

D. Create a job in AWS Snowball Edge to import data into Amazon S3 Install AWS SCT extraction agents on the on-premises servers Define the local and AWS Database Migration Service (AWS DMS) tasks to send the data to the Snowball Edge device When the Snowball Edge device is returned to AWS and the data is available in Amazon S3, run the AWS DMS subtask to copy the data to Amazon Redshift.

Correct Answer: D

AWS Database Migration Service (AWS DMS) can use Snowball Edge and Amazon S3 to migrate large databases more quickly than by other methodshttps://docs.aws.amazon.com/dms/latest/userguide/CHAP_LargeDBs.html https://www.calctool.org/CALC/prof/computing/transfer_time

**QUESTION 13**

A company built an application based on AWS Lambda deployed in an AWS CloudFormation stack. The last production release of the web application introduced an issue that resulted in an outage lasting several minutes. A solutions architect must adjust the deployment process to support a canary release.

Which solution will meet these requirements?

A. Create an alias for every new deployed version of the Lambda function. Use the AWS CLI update-alias command with the routing-config parameter to distribute the load.

B. Deploy the application into a new CloudFormation stack. Use an Amazon Route 53 weighted routing policy to distribute the load.

C. Create a version for every new deployed Lambda function. Use the AWS CLI update- function-configuration command with the routing-config parameter to distribute the load.

D. Configure AWS CodeDeploy and use CodeDeployDefault.OneAtATime in the Deployment configuration to distribute the load.

Correct Answer: A

https://aws.amazon.com/blogs/compute/implementing-canary-deployments-of-aws-lambda-functions-with-alias-traffic-shifting/ https://docs.aws.amazon.com/lambda/latest/dg/configuration-aliases.html

**QUESTION 14**

A company has developed a hybrid solution between its data center and AWS. The company uses Amazon VPC and Amazon EC2 instances that send application togs to Amazon CloudWatch. The EC2 instances read data from multiple relational databases that are hosted on premises.

The company wants to monitor which EC2 instances are connected to the databases in near-real time. The company already has a monitoring solution that uses Splunk on premises. A solutions architect needs to determine how to send networking traffic to Splunk.

How should the solutions architect meet these requirements?

A. Enable VPC flows logs, and send them to CloudWatch. Create an AWS Lambda function to periodically export the CloudWatch logs to an Amazon S3 bucket by using the pre-defined export function. Generate ACCESS_KEY and SECRET_KEY AWS credentials. Configure Splunk to pull the logs from the S3 bucket by using those credentials.

B. Create an Amazon Kinesis Data Firehose delivery stream with Splunk as the destination. Configure a pre-processing AWS Lambda function with a Kinesis Data Firehose stream processor that extracts individual log events from records sent by CloudWatch Logs subscription filters. Enable VPC flows logs, and send them to CloudWatch. Create a CloudWatch Logs subscription that sends log events to the Kinesis Data Firehose delivery stream.

C. Ask the company to log every request that is made to the databases along with the EC2 instance IP address. Export the CloudWatch logs to an Amazon S3 bucket. Use Amazon Athena to query the logs grouped by database name. Export Athena results to another S3 bucket. Invoke an AWS Lambda function to automatically send any new file that is put in the S3 bucket to Splunk.

D. Send the CloudWatch logs to an Amazon Kinesis data stream with Amazon Kinesis Data Analytics for SOL Applications. Configure a 1 -minute sliding window to collect the events. Create a SQL query that uses the anomaly detection template to monitor any networking traffic anomalies in near-real time. Send the result to an Amazon Kinesis Data Firehose delivery stream with Splunk as the destination.

Correct Answer: B

https://docs.aws.amazon.com/firehose/latest/dev/creating-the-stream-to-splunk.html

**QUESTION 15**

A company\\'s solution architect is designing a diasaster recovery (DR) solution for an application that runs on AWS. The application uses PostgreSQL 11.7 as its database. The company has an PRO of 30 seconds. The solutions

architect must design a DR solution with the primary database in the us-east-1 Region and the database in the us-west-2 Region.

What should the solution architect do to meet these requirements with minimum application change?

A. Migrate the database to Amazon RDS for PostgreSQL in us-east-1. Set up a read replica up a read replica in us-west-2. Set the managed PRO for the RDS database to 30 seconds.

B. Migrate the database to Amazon for PostgreSQL in us-east-1. Set up a standby replica in an Availability Zone in us-west-2, Set the managed PRO for the RDS database to 30 seconds.

C. Migrate the database to an Amazon Aurora PostgreSQL global database with the primary Region as us-east-1 and the secondary Region as us-west-2. Set the managed PRO for the Aurora database to 30 seconds.

D. Migrate the database to Amazon DynamoDB in us-east-1. Set up global tables with replica tables that are created in us-west-2.

Correct Answer: A