SAP-C02 Q&As

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QUESTION 1

A company runs its sales reporting application in an AWS Region in the United States. The application uses an Amazon API Gateway Regional API and AWS Lambda functions to generate on-demand reports from data in an Amazon RDS for MySQL database. The frontend of the application is hosted on Amazon S3 and is accessed by users through an Amazon CloudFront distribution. The company is using Amazon Route 53 as the DNS service for the domain. Route 53 is configured with a simple routing policy to route traffic to the API Gateway API.

In the next 6 months, the company plans to expand operations to Europe. More than 90% of the database traffic is read-only traffic. The company has already deployed an API Gateway API and Lambda functions in the new Region.

A solutions architect must design a solution that minimizes latency for users who download reports.

Which solution will meet these requirements?

A. Use an AWS Database Migration Service (AWS DMS) task with full load to replicate the primary database in the original Region to the database in the new Region. Change the Route 53 record to latency-based routing to connect to the API Gateway API.

B. Use an AWS Database Migration Service (AWS DMS) task with full load plus change data capture (CDC) to replicate the primary database in the original Region to the database in the new Region. Change the Route 53 record to geolocation routing to connect to the API Gateway API.

C. Configure a cross-Region read replica for the RDS database in the new Region. Change the Route 53 record to latency-based routing to connect to the API Gateway API.

D. Configure a cross-Region read replica for the RDS database in the new Region. Change the Route 53 record to geolocation routing to connect to the API

Correct Answer: C

The company should configure a cross-Region read replica for the RDS database in the new Region. The company should change the Route 53 record to latency-based routing to connect to the API Gateway API. This solution will meet the requirements because a cross- Region read replica is a feature that enables you to create a MariaDB, MySQL, Oracle, PostgreSQL, or SQL Server read replica in a different Region from the source DB instance. You can use cross-Region read replicas to improve availability and disaster recovery, scale out globally, or migrate an existing database to a new Region1. By creating a cross-Region read replica for the RDS database in the new Region, the company can have a standby copy of its primary database that can serve read-only traffic from users in Europe. A latency-based routing policy is a feature that enables you to route traffic based on the latency between your users and your resources. You can use latency-based routing to route traffic to the resource that provides the best latency2. By changing the Route 53 record to latency-based routing, the company can minimize latency for users who download reports by connecting them to the API Gateway API in the Region that provides the best response time. The other options are not correct because: Using AWS Database Migration Service (AWS DMS) to replicate the primary database in the original Region to the database in the new Region would not be as cost-effective or simple as using a cross-Region read replica. AWS DMS is a service that enables you to migrate relational databases, data warehouses, NoSQL databases, and other types of data stores. You can use AWS DMS to perform one-time migrations or continuous data replication with high availability and consolidate databases into a petabyte-scale data warehouse3. However, AWS DMS requires more configuration and management than creating a cross- Region read replica, which is fully managed by Amazon RDS. AWS DMS also incurs additional charges for replication instances and tasks. Creating an Amazon API Gateway Data API service integration with Amazon Redshift would not help with disaster recovery or minimizing latency. The Data API is a feature that enables you to query your Amazon Redshift cluster using HTTP requests, without needing a persistent connection or a SQL client. It is useful for building applications that interact with Amazon Redshift, but not for replicating or recovering data from an RDS database. Creating an AWS Data Exchange datashare by connecting AWS Data Exchange to the Redshift cluster would not help with disaster recovery or minimizing latency. AWS Data Exchange is a service that makes it easy for AWS customers to exchange data in the cloud. You can use AWS Data Exchange to

subscribe to a diverse selection of third-party data products or offer your own data products to other AWS customers. A datashare is a feature that enables you to share live and secure access to your Amazon Redshift data across your accounts or with third parties without copying or moving the underlying data. It is useful for sharing query results and views with other users, but not for replicating or recovering data from an RDS database.

References: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.RDS_Fea _Regions_DB-eng.Feature.CrossRegionReadReplicas.html https://docs.aws.amazon.com/Route53/latest/DeveloperGuide/routing-policy.html#routing-policylatency https://aws.amazon.com/dms/ https://docs.aws.amazon.com/redshift/latest/mgmt/data-api.html https://aws.amazon.com/data-exchange/ https://docs.aws.amazon.com/redshift/latest/dg/datashare-overview.html

QUESTION 2

A company is developing a new service that will be accessed using TCP on a static port A solutions architect must ensure that the service is highly available, has redundancy across Availability Zones, and is accessible using the DNS name myservice.com, which is publicly accessible The service must use fixed address assignments so other companies can add the addresses to their allow lists.

Assuming that resources are deployed in multiple Availability Zones in a single Region, which solution will meet these requirements?

A. Create Amazon EC2 instances with an Elastic IP address for each instance Create a Network Load Balancer (NLB) and expose the static TCP port Register EC2 instances with the NLB Create a new name server record set named my service com, and assign the Elastic IP addresses of the EC2 instances to the record set Provide the Elastic IP addresses of the EC2 instances to the other companies to add to their allow lists

B. Create an Amazon ECS cluster and a service definition for the application Create and assign public IP addresses for the ECS cluster Create a Network Load Balancer (NLB) and expose the TCP port Create a target group and assign the ECS cluster name to the NLB Create a new A record set named my service com and assign the public IP addresses of the ECS cluster to the record set Provide the public IP addresses of the ECS cluster to the other companies to add to their allow lists

C. Create Amazon EC2 instances for the service Create one Elastic IP address for each Availability Zone Create a Network Load Balancer (NLB) and expose the assigned TCP port Assign the Elastic IP addresses to the NLB for each Availability Zone Create a target group and register the EC2 instances with the NLB Create a new A (alias) record set named my service com, and assign the NLB DNS name to the record set.

D. Create an Amazon ECS cluster and a service definition for the application Create and assign public IP address for each host in the cluster Create an Application Load Balancer (ALB) and expose the static TCP port Create a target group and assign the ECS service definition name to the ALB Create a new CNAME record set and associate the public IP addresses to the record set Provide the Elastic IP addresses of the Amazon EC2 instances to the other companies to add to their allow lists

Correct Answer: C

https://docs.aws.amazon.com/Route53/latest/DeveloperGuide/routing-to-elb-load-balancer.html

Create a Network Load Balancer (NLB) and expose the assigned TCP port. Assign the Elastic IP addresses to the NLB for each Availability Zone. Create a target group and register the EC2 instances with the NLB. Create a new A (alias) record set named my.service.com, and assign the NLB DNS name to the record set. As it uses the NLB as the resource in the A-record, traffic will be routed through the NLB, and it will automatically route the traffic to the healthy instances based on the health checks and also it provides the fixed address assignments as the other companies can add the NLB\\'s Elastic IP addresses to their allow lists.

QUESTION 3

A company has a website that runs on four Amazon EC2 instances that are behind an Application Load Balancer (ALB). When the ALB detects that an EC2 instance is no longer available, an Amazon CloudWatch alarm enters the ALARM state. A member of the company\\'s operations team then manually adds a new EC2 instance behind the ALB.

A solutions architect needs to design a highly available solution that automatically handles the replacement of EC2 instances. The company needs to minimize downtime during the switch to the new solution.

Which set of steps should the solutions architect take to meet these requirements?

A. Delete the existing ALB. Create an Auto Scaling group that is configured to handle the web application traffic. Attach a new launch template to the Auto Scaling group. Create a new ALB. Attach the Auto Scaling group to the new ALB. Attach the existing EC2 instances to the Auto Scaling group.

B. Create an Auto Scaling group that is configured to handle the web application traffic. Attach a new launch template to the Auto Scaling group. Attach the Auto Scaling group to the existing ALB. Attach the existing EC2 instances to the Auto Scaling group.

C. Delete the existing ALB and the EC2 instances. Create an Auto Scaling group that is configured to handle the web application traffic. Attach a new launch template to the Auto Scaling group. Create a new ALB. Attach the Auto Scaling group to the new ALB. Wait for the Auto Scaling group to launch the minimum number of EC2 instances.

D. Create an Auto Scaling group that is configured to handle the web application traffic. Attach a new launch template to the Auto Scaling group. Attach the Auto Scaling group to the existing ALB. Wait for the existing ALB to register the existing EC2 instances with the Auto Scaling group.

Correct Answer: B

The Auto Scaling group can automatically launch and terminate EC2 instances based on the demand and health of the web application. The launch template can specify the configuration of the EC2 instances, such as the AMI, instance type, security group, and user data. The existing ALB can distribute the traffic to the EC2 instances in the Auto Scaling group. The existing EC2 instances can be attached to the Auto Scaling group without deleting them or the ALB. This option minimizes downtime and preserves the current setup of the web application. References: [What is Amazon EC2 Auto Scaling?], [Launch templates], [Attach a load balancer to your Auto Scaling group], [Attach EC2 instances to your Auto Scaling group]

QUESTION 4

A company is running a workload that consists of thousands of Amazon EC2 instances The workload is running in a VPC that contains several public subnets and private subnets The public subnets have a route for 0 0 0 0/0 to an existing internet gateway. The private subnets have a route for 0 0 0 0/0 to an existing NAT gateway

A solutions architect needs to migrate the entire fleet of EC2 instances to use IPv6 The EC2 instances that are in private subnets must not be accessible from the public internet

What should the solutions architect do to meet these requirements?

A. Update the existing VPC, and associate a custom IPv6 CIDR block with the VPC and all subnets. Update all the VPC route tables, and add a route for ::/0 to the internet gateway.

B. Update the existing VPC, and associate an Amazon-provided IPv6 CIDR block with the VPC and all subnets. Update the VPC route tables for all private subnets, and add a route for ::/0 to the NAT gateway.

C. Update the existing VPC, and associate an Amazon-provided IPv6 CIDR block with the VPC and all subnets. Create

an egress-only internet gateway. Update the VPC route tables for all private subnets, and add a route for ::/0 to the egress-only internet gateway.

D. Update the existing VPC, and associate a custom IPv6 CIDR block with the VPC and all subnets. Create a new NAT gateway, and enable IPv6 support. Update the VPC route tables for all private subnets, and add a route for ::/0 to the IPv6-enabled NAT gateway.

Correct Answer: C

QUESTION 5

A company has built a high performance computing (HPC) cluster in AWS for a tightly coupled workload that generates a large number of shared files stored in Amazon EFS. The cluster was performing well when the number of Amazon EC2 instances in the cluster was 100. However, when the company increased the cluster size to 1,000 EC2 instances, overall performance was well below expectations

Which collection of design choices should a solutions architect make to achieve the maximum performance from the HPC cluster? (Select THREE.)

A. Ensure the HPC cluster is launched within a single Availability Zone.

B. Launch the EC2 instances and attach elastic network interfaces in multiples of four.

C. Select EC2 instance types with an Elastic Fabric Adapter (EFA) enabled

D. Ensure the cluster is launched across multiple Availability Zones.

E. Replace Amazon EFS with multiple Amazon EBS volumes in a RAID array.

F. Replace Amazon EFS with Amazon FSx for Lustre.

Correct Answer: ACF

A. High performance computing (HPC) workload cluster should be in a single AZ.

C. Elastic Fabric Adapter (EFA) is a network device that you can attach to your Amazon EC2 instances to accelerate High Performance Computing (HPC) F. Amazon FSx for Lustre - Use it for workloads where speed matters, such as

machine learning, high performance computing (HPC), video processing, and financial modeling.

Cluster packs instances close together inside an Availability Zone. This strategy enables workloads to achieve the low-latency network performance necessary for tightly-coupled node-to-node communication that is typical of HPC

applications.

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/placement-groups.html