Module 2 – Worksheet

AWS Certified Solutions Architect – Associate

Module 2: Overview

Domain 1 – System Design (Part A)
System Architecture: Designing for High Availability and Fault Tolerance

- Distinguishing Between High Availability and Fault Tolerance
- Design for Continuous Availability and Self Healing
- Achieving High Availability and Fault Tolerance on AWS
- AWS Services with Native High Availability and Fault Tolerance

Sample Questions

QUESTION 1

A week before Cyber Monday last year, your corporate data center experienced a failed air conditioning unit that caused flooding into the server racks. The resulting outage cost your company significant revenue. Your CIO mandated a move to the cloud for customer-facing applications, but he is still concerned about catastrophic failures in a data center. What can you do to alleviate his concerns? *(Choose the best answer)*

a. ( ) Distribute the application architecture across multiple Availability Zones.

b. ( ) Use an Amazon Virtual Private Cloud (Amazon VPC) instance with subnets.

c. ( ) Launch the compute for your application servers in a placement group.

d. ( ) Purchase Reserved Instances for your application servers.

QUESTION 2

How is data stored in Amazon Simple Storage Service (Amazon S3) for high durability? *(Choose the best answer)*

a. ( ) Data is automatically replicated to other regions.

b. ( ) Data is automatically replicated within a region.

c. ( ) Data is only replicated if versioning is enabled on the bucket.

d. ( ) Data is automatically backed up on tape and restored if needed.

*See solution at end of document

Personal Preparation Plan

Check off the items you've already completed. Mark items to complete before your exam:

Identify Personal Knowledge Gaps:

The certification exam validates the following proficiencies. When you are ready for the certification exam, you should feel comfortable with the following concepts. Based on your self-assessment of your own knowledge gaps, mark those items on which you should build proficiency before your exam:

- ❑ Be familiar with best practices for system designs that are highly available or fault-tolerant. Be able to distinguish the difference.
- ❑ Know which services are inherently fault-tolerant or highly available.

Resources

Related labs:

❑ Working with Elastic Load Balancing
❑ Maintaining High Availability with Auto Scaling (for Linux)
https://qwiklabs.com/learning_paths/10/lab_catalogue?locale=en

Related whitepapers:

❑ Architecting for the AWS Cloud: Best Practices
❑ AWS Well-Architected Framework
http://aws.amazon.com/whitepapers/

AWS Certified Solutions Architect – Associate web site:
http://aws.amazon.com/certification/certified-solutions-architect-associate/

Sample Question Solutions

QUESTION 1

A week before Cyber Monday last year, your corporate data center experienced a failed air conditioning unit that caused flooding into the server racks. The resulting outage cost your company significant revenue. Your CIO mandated a move to the cloud for customer facing applications, but he is still concerned about catastrophic **failures in a data center**. What can you do to alleviate his concerns?

a. (•) Distribute the application architecture across multiple availability zones.
Correct: An Availability Zone is comprised of one or more data centers within a region that are designed to be isolated from failures in other Availability Zones. Adopting a "Multi-AZ" architecture helps to ensure that the applications are isolated from failures in a single Availability Zone (or data center).

b. ( ) Use an Amazon Virtual Private Cloud (Amazon VPC) with subnets.
Incorrect: You have the control to design an Amazon VPC in any fashion that you choose. You can design an Amazon VPC across one or more Availability Zones. Simply using an Amazon VPC will not ensure your applications are designed for high availability across multiple Availability Zones.

c. ( ) Launch the compute for the your application servers in a placement group.
Incorrect: A placement group is a logical grouping of instances within a single Availability Zone that enables applications to participate in a low-latency, 10 Gigabits per second (Gbps) network. Adding the application servers to a placement group will not ensure your applications are designed for high availability across multiple Availability Zones.

d. ( ) Purchase Reserved Instances for your application servers.
Incorrect: Reserved Instances are a billing discount and capacity reservation that is applied to instances to lower hourly running costs. Purchasing Reserved Instances will not ensure your applications are designed for high availability across multiple Availability Zones.

QUESTION 2

How is data stored in Amazon Simple Storage Service (Amazon S3) for high durability?

a. ( ) Data is automatically replicated to other regions.
Incorrect: AWS customers retain ownership and control of their content. They choose which region to store their data and it doesn't move unless the customer decides to move it. Therefore, AWS does not automatically replicate data to other regions.

b. (•) Data is automatically replicated within a region.
Correct: Amazon S3 Standard and Standard - IA redundantly stores your objects on multiple devices across multiple facilities within an Amazon S3 Region. The service is designed to sustain concurrent device failures by quickly detecting and repairing any lost redundancy.

c. ( ) Data is only replicated if versioning is enabled on the bucket.
Incorrect: Versioning allows you to preserve, retrieve, and restore every version of every object stored in an Amazon S3 bucket. Enabling versioning on a bucket is not related to how Amazon S3 achieves high durability.

d. ( ) Data is automatically backed up on tape and restored if needed.
Incorrect: Customer data in Amazon S3 is not backed up to tape. Instead Amazon S3 redundantly stores your objects on multiple devices across multiple facilities within an Amazon S3 Region to achieve high durability.