**Tutorials Dojo – Practice Exam – Review Mode – 4**

**Final Results – 78.46% (51/65) – 05/31/2023**

**CSAA – Design Cost-Optimized Architectures - 57.14%**

**CSAA – Design High-Performing Architectures - 77.27%**

**CSAA – Design Resilient Architectures - 77.78%**

**CSAA – Design Secure Architectures - 88.89%**

KMS

* Automatic key rotation is disabled by default on customer managed keys but authorized users can enable and disable it. When you enable (or re-enable) automatic key rotation, AWS KMS automatically rotates the key KMR one year after the enable date and every year thereafter
* AWS KMS automatically rotates AWS Managed Keys every year. You cannot enable or disable key rotation for AWS managed keys
* SSE-KMS provides an audit trail + automatic key rotation, SSE-S3 provides automatic key rotation, but no audit trail

Elastic Fabric Adapter

* A network device that you can attach to EC2 Instances to accelerate High Performance Computing and machine learning applications
* EFA provides lower and more consistent latency and higher throughput than the TCP transport traditionally used in cloud-based HPC systems. It enhances the performance of inter-instance communication which is critical for scaling HPC and machine learning applications.
* Integrates with Libfabric 1.9.0, and it supports Open MPI 4.0.2 and Intel MPI 2019 Update 6 for HPC applications and NVIDIA Collective Communications Library (NCCL) for machine learning applications
* The OS bypass capabilities of EFAs are not supported on Windows instances. If you attach an EFA to a Windows instance, the instance functions as an Elastic Network Adapter without the added EFA capabilities
* Elastic Network Adapters (ENAs) provide traditional IP networking features that are required to support VPC networking. EFAs provide all of the same traditional IP networking features as ENAs, and they also support OS-bypass capabilities. OS-bypass enables HPC and machine learning applications to bypass the operating system kernel and communicate directly with the EFA device

Amazon Cognito

* You can add MFA to a user pool to protect the identity of your users. You can choose to use SMS text messages, or time-based one time (TOTP) passwords as second factors in signing in users. You can also use adaptive authentication with its risk-based model to predict when you might need another authentication factor. It’s part of the user pool advanced security features, which also include protections against compromised credentials

AWS Directory Service

* Provides multiple ways to use Amazon Cloud Directory and Microsoft Active Direct (AD) with other AWS services

Amazon Comprehend Medical

* A Natural Language Processing (NLP) service that makes it easy to use machine learning to extract relevant information from unstructured text. Using Amazon Comprehend Medical, you can quickly and accurately gather information, such as medical conditions, medication, dosage, strength, and frequency from a variety of sources, like doctors’ notes, clinical trial reports, and patient health records

AWS Certificate Manager and IAM Certificate Store

* ACM lets you import third-party certificates from the ACM console, as well as programmatically. If ACM is not available in your region, use AWS CLI to upload your third-party certificate to the IAM Certificate Store (possible renamed to IAM Private Certificate Authority? confirm)

AWS Storage Gateway

* Connects an on-premises software appliance with cloud-based storage to provide seamless integration with data security features between your on-premises IT environment and the AWS storage infrastructure. You can use the service to store data in the AWS Cloud for scalable and cost-effective storage that helps maintain data security

EC2 Instance Metadata

* The best way to get an EC2 Instance’s associated IP addresses (public & private) is by using a Curl or Get Command to get the latest metadata information from <http://169.254.169.254/latest/meta-data>

RAID 0

* Enables you to improve your storage volumes’ performance by distributing the I/O across the volumes in a stripe. Therefore, if you add a storage volume, you get the straight addition of throughput and IOPS
* This configuration can be implemented on both EBS or Instance Store volumes.
* Good option when you need storage with very low latency and you don’t need the data to persist when the instance terminates

RAID 1

* Used for data mirroring

Amazon MQ

* A managed message broker service that makes it easy to migrate to a message broker in the cloud
* Supports – Apache ActiveMQ, RabbitMQ, and other message broker engine types
* A cluster deployment is a logical grouping of three RabbitMQ broker nodes behind an NLB, each sharing users, queues, and a distributed state across multiple AZs
* Amazon MQ creates a default system policy that sets the ha-mode to all and ha-sync-mode to automatic. This ensures that data is replicated to all nodes in the cluster across different AZs for better durability
* The default policy should not be deleted, if deleted, MQ will automatically recreate it. MQ will also ensure that HA properties are applied to all other policies that you create on a clustered broker. If you add a policy without the HA properties, MQ will add them for you.

ASG Predictive Scaling

* When an SA must devise a solution that launches capacity in advance based on a forecasted load in order to scale faster, configure the ASG to use predictive scaling
* Predictive Scaling uses machine learning to predict capacity requirements based on historical data from CloudWatch. The machine learning algorithm consumes the available historical data and calculates capacity that best fits the historical load pattern, and then continuously learns based on new data to make future forecasts more accurate

ASG Launch Configuration

* You can only specify one launch configuration for an ASG at a time, and you can’t modify an LC after you’ve created it
* If you want to change the LC for an ASG, you must create a new LC and update your ASG with the new LC

Amazon RDS + Amazon CloudWatch Enhanced Monitoring Metrics

* OS Processes + RDS Child Processes are the enhanced monitoring metrics that Amazon CloudWatch gathers from RDS DB Instances which provides more accurate information
* RDS Processes
  + Shows a summary of the resources used by the RDS Management Agent, Diagnostics Monitoring Processes, and other AWS processes that are required to support RDS DB Instances
* OS Processes
  + Shows a summary of the kernel and system processes, which generally have minimal impact on performance

STS

* To integrate a Lightweight Directory Access Protocol (LDAP) directory service from on-premises data centers to AWS VPC using IAM
  + Develop an on-premises custom identity broker application and use STS to issue short-lived AWS credentials
    - AssumeRole or GetFederationToken