



# AWS Certified Solution Architect Associate Training Curriculum

## STRUCTURE



## **AWS Certified Solution Architect Associate Training Curriculum**

### **Course Objectives:**

- Pass the AWS Certified Solutions Architect - Associate Exam
- Design Highly Resilient and Scalable Websites on AWS
- Become Intimately Familiar with The AWS Platform
- Become Amazon Certified and Become A Cloud Guru.

### **Course Description:**

AWS Certified Solutions Architect is among the most valuable and highly sought-after cloud computing certifications in the world today. We designed this cloud architect certification training for anyone seeking to learn the major components of Amazon Web Services (AWS). By the end of the course, you'll be prepared to pass the associate-level AWS Certified Solutions Architect certification exam.

The AWS certification is a must-have for any IT professional, with average salaries above \$100,000 USD. A certificate in AWS Cloud technology can boost your salary up to 26 percent, and the average salary for certified IT professionals is, on average, 11.7 per cent higher than those without.

We'll start with a broad overview of the AWS platform. No programming knowledge is needed, and no prior AWS experience required. Even if you have never logged into the AWS platform before, you'll build the foundations to pass the AWS Certified Solutions Architect exam after completing our certification training.

### **Who this course is for:**

- AWS Absolute Beginners. No prior AWS experience necessary
- Existing Solutions Architects
- Programmers Interested in Deploying Applications on AWS
- People interested in hosting highly scalable, fault tolerant applications (such as WordPress and Joomla) on the AWS cloud.

### **Course Content Quick Overview:**

- Module 1: Introduction to Cloud Computing
- Module 2: Amazon EC2 and Amazon EBS
- Module 3: Amazon Storage Services S3 (Simple Storage Services)
- Module 4: Cloud Watch & SNS
- Module 5: Record Types/Page Layout
- Module 6: AWS VPC
- Module 7: Identity and Access Management Techniques (IAM)
- Module 8: Amazon Relational Database Service (RDS)
- Module 9: Multiple AWS Services and Managing the Resources' Lifecycle
- Module 10: AWS Architecture and Design
- Module 11: Migrating to Cloud & AWS
- Module 12: Router S3 DNS
- Module 13: Cloud Formation

- Module 14: Elastic Beanstalk
- Module 15: EFS / NFS (hands-on practice)
- Module 16: Hands-on practice on various Topics

## **Module 1: Introduction to Cloud Computing**

In this module, you will learn what Cloud Computing is and what are the different models of Cloud Computing along with the key differentiators of different models. We will also introduce you to virtual world of AWS along with AWS key vocabulary, services and concepts.

- A Short history
- Client Server Computing Concepts
- Challenges with Distributed Computing
- Introduction to Cloud Computing
- Why Cloud Computing?
- Benefits of Cloud Computing

## **Module 2: Amazon EC2 and Amazon EBS**

In this module, you will learn about the introduction to compute offering from AWS called EC2. We will cover different instance types and Amazon AMIs. A demo on launching an AWS EC2 instance, connect with an instance and hosting a website on AWS EC2 instance. We will also cover EBS storage Architecture (AWS persistent storage) and the concepts of AMI and snapshots.

- Amazon EC2
- EC2 Pricing
- EC2 Type
- Installation of Web server and manage like (Apache/ Nginx)
- Amazon EBS
- Demo of AMI Creation
- Backup, Restore
- Exercise
- Mock
- Hands on both Linux and Windows

## **Module 3: Amazon Storage Services S3 (Simple Storage Services)**

In this module, you will learn how AWS provides various kinds of scalable storage services. In this module, we will cover different storage services like S3, Glacier, Versioning, and learn how to host a static website on AWS.

- Versioning

- Static website
- Policy
- Permission
- Cross region Replication
- AWS-CLI
- Mount Point with S3
- Life cycle
- Classes of Storage
- AWS CloudFront
- Real scenario Practical
- Hands-on all above

#### **Module 4: Cloud Watch & SNS**

In this module, you will learn how to monitoring AWS resources and setting up alerts and notifications for AWS resources and AWS usage billing with AWS CloudWatch and SNS.

- Amazon Cloud Watch
- SNS - Simple Notification Services
- SQS
- Cloud Watch with Agent
- Cloud Watch with System Manager

#### **Module 5: Scaling and Load Distribution in AWS**

In this module, you will learn about 'Scaling' and 'Load distribution techniques' in AWS. This module also includes a demo of Load distribution & Scaling your resources horizontally based on time or activity.

- Amazon Auto Scaling
- Auto scaling policy with real scenario based
- Type of Load Balancer
- Path Based load balancer
- Hands on with scenario based
- Routing policy on Load balancer

#### **Module 6: AWS VPC**

In this module, you will learn introduction to Amazon Virtual Private Cloud. We will cover how you can make public and private subnet with AWS VPC. A demo on creating VPC. We will also cover overview of AWS Route 53.

- Amazon VPC with subnets
- Gateways

- Route Tables
- Subnet
- Cross region Peering
- Endpoint Creation with VPC

## **Module 7: Identity and Access Management Techniques (IAM)**

In this module, you will learn how to achieve distribution of access control with AWS using IAM.

- Amazon IAM
  - add users to groups,
  - manage passwords,
  - log in with IAM-created users.
- User
- Group
- Role
- Policy

## **Module 8: Amazon Relational Database Service (RDS)**

In this module, you will learn how to manage relational database service of AWS called RDS.

- Amazon RDS
- Type of RDS
- RDS Failover
- RDS Subnet
- RDS Migration
- Dynamo DB (No SQL DB)
- Redshift Cluster
- SQL workbench
- JDBC / ODBC

## **Module 9: Multiple AWS Services and Managing the Resources' Lifecycle**

In this module, you will get an overview of multiple AWS services. We will talk about how do you manage life cycle of AWS resources and follow the DevOps model in AWS. We will also talk about notification and email service of AWS along with Content Distribution Service in this module.

- Cloud Trail,
- SQS

## **Module 10: AWS Architecture and Design**

In this module, you will cover various architecture and design aspects of AWS. We will also cover the cost planning and optimization techniques along with AWS security best practices, High Availability (HA) and Disaster Recovery (DR) in AWS.

- AWS Backup and DR Setup
- AWS High Availability Design
- AWS Best Practices (Cost + Security)
- AWS Calculator & Consolidated Billing

## **Module 11: Migrating to Cloud & AWS**

In this module, you will learn how to migrate to cloud.

- Migration to Cloud
- Migration to AWS
- Step by step process

## **Module 12: Router S3 DNS**

- Public DNS
- Private DNS
- Routing policy
- Records
- Register DNS
- Work with third party DNS as well

## **Module 13: Cloud Formation**

- Stack
- Templet
- Json / Ymal

## **Module 14: Elastic Beanstalk**

## **Module 15: EFS / NFS (hands-on practice)**

## **Module 16: Hands-on practice on various Topics**

- ECS, EKS (Kubernetes), Docker
  - Comprehensive hands-on with Dockers & Kubernetes Components
  - Docker & Kubernetes Architecture & Components and installation
  - Get introduced to deploy stateful and stateless apps on the cluster
  - Learn how to expose the app outside the cluster and to auto scale apps
  - Expertise learning with use cases of Containers and Docker
- Linux

- Installation of Linux
  - Configuration
  - Manage
  - Installation of app on Linux (apache / Nginx etc)
  - AWS cli configuration on Linux
  - Complete hands-on on Linux.
- Python
  - Boto
  - DMS
  - System Manager
  - Mock
  - Interview preparation
  - Scenario based lab and practical
  - Each topic and services will be cover with lab and theory.
  - Security: KMS / SSM/ WAF
  - Storage: EFS, NFS, FSX, Storage Gateway

These topics will be covered with this AWS course with real scenario based.

## **AWS Certified Solutions Architect – Associate (SAA-C02) Exam Guide**

The AWS Certified Solutions Architect - Associate (SAA-C02) examination is intended for individuals who perform in a solutions architect role. This exam validates an examinee's ability to effectively demonstrate knowledge of how to architect and deploy secure and robust applications on AWS technologies.

### **It validates an examinee's ability to:**

- Define a solution using architectural design principles based on customer requirements.
- Provide implementation guidance based on best practices to an organization throughout the lifecycle of a project Architect – Associate (SAA-C02) Exam Guide.

### **Recommended AWS knowledge for the Exam:**

- 1 year of hands-on experience designing available, cost-effective, fault-tolerant, and scalable distributed systems on AWS.
- Hands-on experience using computing, networking, storage, and database AWS services.
- Hands-on experience with AWS deployment and management services.
- Ability to identify and define technical requirements for an AWS-based application.
- Ability to identify which AWS services meet a given technical requirement.
- Knowledge of recommended best practices for building secure and reliable applications on the AWS platform.
- An understanding of the basic architectural principles of building in the AWS Cloud.

- An understanding of the AWS global infrastructure.
- An understanding of network technologies as they relate to AWS.
- An understanding of security features and tools that AWS provides and how they relate to traditional services.

### **About the Exam:**

- Format: Multiple choice, multiple answer
- Passing Score: 720/1000
- Type: Associate
- Delivery Method: Testing center or online proctored exam
- Time: 130 minutes to complete the exam
- Cost: 150 USD (Practice exam: 20 USD)
- Language: Available in English, Japanese, Korean, and Simplified Chinese

### **Exam Content:**

#### **Response Types**

There are two types of questions on the examination:

- Multiple choice: Has one correct response and three incorrect responses (distractors).
- Multiple response: Has two correct responses out of five response options.

Select one or more responses that best complete the statement or answer the question. Distractors, or incorrect answers, are response options that an examinee with incomplete knowledge or skill would likely choose. However, they are generally plausible responses that fit in the content area defined by the test objective.

Unanswered questions are scored as incorrect; there is no penalty for guessing.

#### **Unscored Content**

Your examination may include unscored items that are placed on the test to gather statistical information. These items are not identified on the form and do not affect your score.

#### **Exam Results**

The AWS Certified Solutions Architect - Associate (SAA-C02) examination is a pass or fail exam. The examination is scored against a minimum standard established by AWS professionals who are guided by certification industry best practices and guidelines.

Your results for the examination are reported as a score from 100-1,000, with a minimum passing score of 720. Your score shows how you performed on the examination as a whole and whether or not you passed.

### **Exam Outline:**



Domain	% of Examination
Domain 1: Design Resilient Architectures	30%
Domain 2: Design High-Performing Architectures	28%
Domain 3: Design Secure Applications and Architectures	24%
Domain 4: Design Cost-Optimized Architectures	18%
<b>TOTAL</b>	<b>100%</b>

### Domain 1: Design Resilient Architectures

- Design a multi-tier architecture solution
- Design highly available and/or fault-tolerant architectures
- Design decoupling mechanisms using AWS services
- Choose appropriate resilient storage

### Domain 2: Design High-Performing Architectures

- Identify elastic and scalable compute solutions for a workload
- Select high-performing and scalable storage solutions for a workload
- Select high-performing networking solutions for a workload
- Choose high-performing database solutions for a workload

### Domain 3: Design Secure Applications and Architectures

- Design secure access to AWS resources
- Design secure application tiers
- Select appropriate data security options

### Domain 4: Design Cost-Optimized Architectures

- Identify cost-effective storage solutions
- Identify cost-effective compute and database services
- Design cost-optimized network architectures

### Sample Exam Questions:

**Question 1: A customer relationship management (CRM) application runs on Amazon EC2 instances in multiple Availability Zones behind an Application Load Balancer.**

If one of these instances fails, what occurs?

- A) The load balancer will stop sending requests to the failed instance.
  - B) The load balancer will terminate the failed instance.
  - C) The load balancer will automatically replace the failed instance.
  - D) The load balancer will return 504 Gateway Timeout errors until the instance is replaced.
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**Question 2: A company needs to perform asynchronous processing, and has Amazon SQS as part of a decoupled architecture. The company wants to ensure that the number of empty responses from polling requests are kept to a minimum.**

What should a solutions architect do to ensure that empty responses are reduced?

- A) Increase the maximum message retention period for the queue.
  - B) Increase the maximum receives for the redrive policy for the queue.
  - C) Increase the default visibility timeout for the queue.
  - D) Increase the receive message wait time for the queue.
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**Question 3: company currently stores data for on-premises applications on local drives. The chief technology officer wants to reduce hardware costs by storing the data in Amazon S3 but does not want to make modifications to the applications. To minimize latency, frequently accessed data should be available locally.**

What is a reliable and durable solution for a solutions architect to implement that will reduce the cost of local storage?

- A) Deploy an SFTP client on a local server and transfer data to Amazon S3 using AWS Transfer for SFTP.
  - B) Deploy an AWS Storage Gateway volume gateway configured in cached volume mode.
  - C) Deploy an AWS DataSync agent on a local server and configure an S3 bucket as the destination.
  - D) Deploy an AWS Storage Gateway volume gateway configured in stored volume mode.
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**Question 4: A company runs a public-facing three-tier web application in a VPC across multiple Availability Zones. Amazon EC2 instances for the application tier running in private subnets need to download software patches from the internet. However, the instances cannot be directly accessible from the internet.**

Which actions should be taken to allow the instances to download the needed patches?

(Select TWO.)

- A) Configure a NAT gateway in a public subnet.
  - B) Define a custom route table with a route to the NAT gateway for internet traffic and associate it with the private subnets for the application tier.
  - C) Assign Elastic IP addresses to the application instances.
  - D) Define a custom route table with a route to the internet gateway for internet traffic and associate it with the private subnets for the application tier.
  - E) Configure a NAT instance in a private subnet.
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**Question 5: solutions architect wants to design a solution to save costs for Amazon EC2 instances that do not need to run during a 2-week company shutdown. The applications running on the instances store data in instance memory (RAM) that must be present when the instances resume operation.**

Which approach should the solutions architect recommend to shut down and resume the instances?

- A) Modify the application to store the data on instance store volumes. Reattach the volumes while restarting them.
- B) Snapshot the instances before stopping them. Restore the snapshot after restarting the instances.
- C) Run the applications on instances enabled for hibernation. Hibernate the instances before the shutdown.
- D) Note the Availability Zone for each instance before stopping it. Restart the instances in the same Availability Zones after the shutdown.

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### **ANSWERS TO SAMPLE EXAM QUESTIONS**

1) A – An Application Load Balancer (ALB) sends requests to healthy instances only. An ALB performs periodic health checks on targets in a target group. An instance that fails health checks for a configurable number of consecutive times is considered unhealthy. The load balancer will no longer send requests to the instance until it passes another health check.

2) D – When the `ReceiveMessageWaitTimeSeconds` property of a queue is set to a value greater than zero, long polling is in effect. Long polling reduces the number of empty responses by allowing Amazon SQS to wait until a message is available before sending a response to a `ReceiveMessage` request.

3) B – An AWS Storage Gateway volume gateway connects an on-premises software application with cloud-backed storage volumes that can be mounted as Internet Small Computer System Interface (iSCSI) devices from on-premises application servers. In cached volumes mode, all the data is stored in Amazon S3 and a copy of frequently accessed data is stored locally.

4) A, B – A NAT gateway forwards traffic from the instances in the private subnet to the internet or other AWS services, and then sends the response back to the instances. After a NAT gateway is created, the route tables for private subnets must be updated to point internet traffic to the NAT gateway.

5) C – Hibernating an instance saves the contents of RAM to the Amazon EBS root volume. When the instance restarts, the RAM contents are reloaded.

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