

## AWS Architect Course

=====

### I. Introduction To AWS

**Learning Objectives:** In this module, you will learn about the different services provided by AWS. You will be provided with an overview of important resources required for architecting an application.

#### Topics:

- Cloud Computing
- Cloud deployment and service models
- AWS Global Infrastructure and its benefits
- AWS Services
- Ways to access AWS Services

#### Hands-on:

- Sign-up for AWS free-tier account
- Create a S3 bucket through Console
- Create a S3 bucket through AWS CLI
- Launch an EC2 instance

### II. Security Management In AWS

**Learning Objectives:** In this module, you will learn about security management in AWS using Identity Access Management (IAM) and Key Management Service.

#### Topics:

- User management through Identity Access Management (IAM)
- Various access policies across AWS Services
- API keys service access
- Best practices for IAM
- Key Management Service
- Access billing and create alerts on billing

#### Hands-on:

- Create new users who can login to AWS console
- Create role for an application to access S3
- Create policies for new user to have either admin or limited privileges
- Credential rotation for IAM users
- Login to AWS console via MFA
- Create API keys for accessing AWS Services
- Create Budget

### III. Object Storage Options

**Learning Objectives:** In this module, you will learn about the different Object Storage Services offered by AWS, identify when to

use a specific service, how to store/transfer data using these services and optimize the storage cost.

Topics:

- S3 bucket – Creation, Version Control, Security, Replication, Transfer Acceleration
- Storage classes in S3
- Life cycle policy in S3
- Cost optimization for S3
- CloudFront ñ Create and configure with S3
- Snowball
- Storage Gateway and its types

Hands-on:

- Hosting a Static Website on Amazon S3
- Versioning in AWS S3
- Replicating data across regions
- S3 Transfer acceleration
- Transfer and retrieve data from Glacier through lifecycle policy
- Upload a file to AWS S3 through a Website
- Accessing a static website through Cloud Front

#### IV. Amazon EC2

Learning Objectives: EC2 (Elastic Compute Cloud) is the backbone of AWS. In this module, you will learn about the concepts associated with an EC2 instance and their usage. This module covers different Amazon AMIs, a demo on launching an AWS EC2 instance, ways to connect with an instance and how to host a website on AWS EC2 instance.

Topics:

- Start, stop and terminate an EC2 Instance
- Security Group
- AMI
- VPC, ENI, Public and Private IP
- Storage services
- EBS and its types
- EFS
- Cost optimization

Hands-on:

- Host your website inside EC2
- Create an AMI
- Create an Elastic IP
- Attaching an EBS volume externally
- To create a snapshot
- Mount EFS volumes

#### V. Load Balancing, Auto-Scaling And Route 53

Learning Objectives: In this module, you will learn the concepts of Load Balancing, Auto-Scaling and Route 53 to manage traffic.

#### Topics:

- Elastic Load Balancer and its types
- Comparison of Classic, Network and Application Load Balancer
- Auto-Scaling
- Components of Auto-Scaling
- Lifecycle of Auto-Scaling
- Auto-Scaling policy
- Working of Route 53
- Various Routing Policies

#### Hands-on:

- Create a Classic Load Balancer
- Create a Network Load Balancer
- Work with Application Load Balancer and Auto-Scaling
- Auto-Scaling and Scaling policy
- Point a sub-domain to EC2 box in Route 53

### VI. Database Services And Analytics

**Learning Objectives:** In this module, you will learn about the different database services offered by AWS to handle structured and unstructured data. This module also gives you knowledge on how to analyze your data.

#### Topics:

- Amazon RDS and its benefits
- Amazon Aurora
- Amazon DynamoDB
- ElastiCache
- Amazon RedShift
- AWS Kinesis

#### Hands-on:

- Storing an application data in MySQL DB using Relational Database Service (RDS)
- Creating Tables, loading sample data and running queries
- Redis Cache
- Visualize the web traffic using Kinesis Data Stream

### VII. Networking And Monitoring Services

**Learning Objectives:** This module introduces you to the Amazon Virtual Private Cloud. You will learn to implement networking using public and private subnets with VPC. Also, this module demonstrates how to monitor your services.

#### Topics:

- VPC ñ Benefits and Components
- CIDR Notations
- Network Access Control List v/s Security Groups
- NAT ñ Network Address Translation
- VPC peering
- AWS CloudWatch
- AWS CloudTrail

## Trusted Advisor

### Hands-on:

- Create a Non-default VPC and attach it to an EC2 instance
- Accessing Internet Inside Private Subnet Using NAT Gateway
- Connect two instances in different VPCs using VPC peering
- Monitoring an EC2 instance using CloudWatch
- Enable CloudTrail and Store Logs in S3
- Explore the Trusted Advisor

## VIII. Applications Services And AWS Lambda

**Learning Objectives:** In this module, you will learn about the different Application services offered by AWS, that are used for sending e-mails, notifications, and processing message queues. This module also deals with the latest trend of Serverless architecture using AWS Lambda.

### Topics:

- AWS Simple Email Service (SES)
- AWS Simple Notification Service (SNS)
- AWS Simple Queue Service (SQS)
- AWS Simple Work Flow (SWF)
- AWS Lambda

### Hands-on:

- Send an email through AWS SES
- Send a notification through SNS
- Send an e-mail through Lambda when an object is added to S3
- Send a notification through Lambda when a message is sent to SQS

## IX. Configuration Management and Automation

**Learning Objectives:** This module helps you gain knowledge on various AWS services and tools used for configuration management and Automation.

### Topics:

- AWS CloudFormation
- AWS OpsWorks – OpsWorks for Chef Automate, OpsWorks for Stack, OpsWorks for Puppet Enterprises
- AWS Elastic Beanstalk
- Differentiate between CloudFormation, OpsWorks, and Beanstalk

### Hands-on:

- Installation of LAMP server in EC2 through CloudFormation
- AWS OpsWorks Stack
- Deploy a Web Application with DynamoDB using Beanstalk

## X. AWS Architectural Designs ñ I

**Learning Objectives:** This module gives you an idea about the importance of AWS guidelines for Well Architected Framework. You will also learn about the Resilient and Performant architecture designs.

Topics:

Determine how to design high-availability and fault-tolerant architectures  
Choose reliable/resilient storage  
Determine how to design decoupling mechanisms using AWS services  
Determine how to design a multi-tier architecture solution  
Disaster Recovery Solution  
Choose performant storage  
Apply caching to improve performance  
Design solutions for elasticity and scalability

XI. AWS Architectural Designs ñ II

Learning Objectives: Adding to Module 10, this module covers the remaining three concepts behind AWS Well-Architected Framework ñ Securing Applications and Architectures, Designing Cost-Optimized Architectures, Defining Operationally Excellent Architectures.

Topics:

Well-Architected Framework  
Specify Secure Applications and Architectures  
Design Cost-Optimized Architectures  
Define Operationally-Excellent Architectures

XII. AWS Certified Solutions Architect Certification Exam  
Questionnaires

Learning Objectives: This module mainly contains exam questionnaires that will be discussed along with the guidance on taking up AWS Solution Architect Certification Exam.

Topics:

AWS Solution Architect Certification Exam Guide  
Certification Exam Questionnaires

XIII. DevOps on AWS

Topics:

Overview of DevOps – Lifecycle, Stages in DevOps  
AWS CodeCommit  
AWS CodePipeline  
AWS Code Deploy

Hands-on:

Implement AWS CodeCommit  
Implement AWS CodePipeline