Amazon Web Services (AWS) SysOps & Architect Training

SOA-C01| SAA-C02

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Course Content

1. **Introduction to AWS**
   - Introduction to Cloud Computing
   - Introduction to AWS & Azure Cloud Computing
   - Understanding differences between On-premises and Cloud architecture.
   - Understanding AWS Regions & Availability Zones.
   - Understanding IP Addressing & Subnetting.
   - Understanding Shared Infra Structure and Isolation in AWS Cloud.

2. **Implementing and managing AWS Networking**

   - What is a VPC (Virtual Private Cloud)?
   - VPC Architecture and Internal working of VPC.
   - Design and Deploy Virtual Private Cloud.
   - Create Subnets, Internet gateway, Routing, Security Groups and deploy EC2 machine with Key Pair.
   - What is VPC Peering?
   - Single & Multi-Region VPC Peering.
   - Configure Intra VPC and Inter-VPC Peering.
   - Real time use cases of AWS VPC Peering.
   - Problems with VPC Peering and solutions.
   - What is Network Address Translation?
   - Configuring a NAT Gateway.
   - Securing inbound connectivity with NAT Gateway.
   - Understanding VPC Endpoints.
   - Testing the use case with VPC End Points.
   - How to monitor & secure VPC traffic?
   - What is a Security Group (SG)?
   - What is Network Access Control List (NACL)?
   - Differentiate SG vs NACL?
   - Testing Security Group & NACL
   - Understanding AWS Network Firewall
   - Creating Rule Groups, Firewall Policy and Deploy Firewall.
   - Restricting Websites and Application traffic using AWS Network Firewall.
   - Working with DNS Firewall
   - Overview of VPN Connectivity between AWS and On-Prem DC?
   - What is a Virtual Private Gateway (VPG)?
   - Creating a Virtual Private Gateway and establish VPN Connection?
   - Testing the VPN Connectivity between On-Premises and AWS on private networks.
   - Introduction to Software OpenVPN.
   - Configuring OpenVPN.

- Integrating AWS VPC with Azure using Site-to-Site VPN.
- Discussing VPC Peering issues.
- What is a Transit Gateway?
- Configuring Transit Gateway.
- Connecting multiple VPC using Transit Gateway.

3. **Implementing & Configuring AWS EC2 Compute**
   - Introduction to EC2 Instances and deployment options.
   - EC2 Metadata, Variable Creation and AMI Creation
   - EC2 Launch Templates, Spot Instances & Reservations.
   - Introduction to Elastic Block Storage (EBS) and Instance Store.
   - Creating and configuration EBS Storage.
   - Understanding AWS Snapshots.
   - Performing EBS backup using Snapshots and Life Cycle Manager

4. **Designing & Implementing AWS HA Solutions & Scaling**
   - Introduction to Application & Network Load Balancer.
   - Difference between Targets Groups and Load Balancer.
   - Deploy and Configure Network Load Balancer and perform load balancing.
   - Simulate Network Load Balancing Scenarios.
   - Deploy and configure Application Load Balancing.
   - Simulate Path-Based load balancing using multi-target groups.
   - SSL Certificate configuration using AWS Certificate Manager and 3rd Party Certificate Authorities.
   - Integrating NLB and ALB with Route53 Zones.
   - Introduction to EC2 Auto Scaling
   - Creating Custom AMI for Auto Scaling
   - Creating Launch Configuration and Auto Scaling Groups
   - Deploy the machines behind NLB and perform CPU stress testing
   - Simulate Auto Scaling Scenarios

5. **Managed AWS Infrastructure using Systems Manager**
   - Introduction to AWS Systems Manager
   - Using SSM RUN command for EC2 configuration Management.
   - Using SSM session manager for EC2 console access.
   - Overview on SSM Patching and Automation
   - AWS SMS Parameter Store
   - Accessing Sessions Managed using VPC Endpoints.

6. **Planning and implementing AWS S3 Storage**
   - Introduction to AWS Simple Storage Service(S3)
   - Creating S3 buckets, versioning, static hosting and log configuration
   - Creating bucket policies for granular S3 items access
   - Creating Bucket wide replication and Life Cycle Policies.

- Introduction to Elastic File System (EFS)
- Creating EFS between AZs and testing data consistency.
- Introduction to Storage Gateway and Deploying it.
- Introduction to AWS Glacier and creating vaults.
- Introduction to FSx and AWS Backup

7. **Planning and implementing AWS Databases**
   - Introduction Databases and SQL vs NoSQL
   - Deploy MySQL RDS Multi-AZ Database
   - Create a new DB on RDS and alter the data.
   - Perform Failover and Failback of RDS Database
   - Introduction to DynamoDB
   - Create a Serverless application using DynamoDB, API Gateway & AWS Lambda.
   - Introduction to AWS RedShift
   - Create RedShift Cluster and upload data , query the data.
   - Introduction to ElastiCache

8. **Configuring AWS Monitoring and Reporting**
   - Introduction Cloudwatch, Dashboards, Alarms,
   - Cloud Watch Logs and Schedules with Lambda
   - Infra as a Code(IaaC) with Cloudformation and version with GitHub
   - AWS AP & Resource audit with Cloud Trial & AWS Config.
   - Automation with OpsWorks and Automated deployment with Aws Elastic BeanStalk.
   - Working with Trusted Advisor, Service Catalog, License Manager & Personal Health Dashboard

9. **Implementing AWS Security**
   - Introduction to AWS IAM (Identity & Access Management)
   - Creating Users, Roles, Groups and Security Policies.
   - Restricting User Access and Cross Account Roles.
   - Deploy AWS AD Directory Service, Create AWS Organization.
   - Integration AWS Active Directory Service with Single Sign On.
   - Introduction to AWS Resource Access manager (RAM), Inspector and Guard Duty.
   - Understanding Cognito, KMS, Macie, CloudHSM & WAF.
   - Introduction AWS Certificate Manager
   - Creating SSL Certificates in ACM and Importing 3rd Party certificates with ACM.
   - Create Route 53 domain and Application Load Balancer.
   - Import SSL certificates to Load Balancer and convert HTTP to HTTPS
   - Configuring Route53 Failover Policies.
   - Introduction to CloudFront.
   - Configuring S3 Static Website with CloudFront.

- Introduction to AWS Direct Connect and Global Accelerator.

10. Designing and Developing AWS Micro Service Solutions
- Introduction to Container Services.
- Installing and configuring Docker.
- Understand Docker Hub and download images.
- Creating containers on Docker pushing images to Docker Hub.
- Introduction to ECR and ECS.
- Creating a repository in ECR and uploading the images
- Create ECS Cluster with EC2 Machines.
- Creating Task Definitions for deploying containers.
- Deploy Tasks and Services on ECS Cluster.
- Deploy applications using Fargate.
- Deploying AWS EKS Cluster.
- Deploying PODs, Deployments & Services on EKS.

11. AWS Migration Services
- AWS migration overview
- Deploying AWS Service Migration Service.
- Integrate SMS with VMware vSphere environment.
- Create replication job for copying On-prem machine to AWS.
- Introduction to Database Migration Service (DMS).
- Overview of migration a MySQL to RDS using DMS.
- Migrate data using DataSync.
- Introduction of AWS Migration Hub

12. Working with AWS Developer Tools
- Introduction to AWS Developer Tools.
- Create code repository and version control with CodeCommit.
- Understanding AWS Code Build.
- Building the Code from CodeCommit to WAR file using Code Build.
- Deploying Code with AWS Code Deploy.
- Creating Code pipelines and integrating with GitHub.
- Understanding the CI/CD process.
- Introduction to SNS/SES/SQS & Step Functions.

13. AWS Automation Tools
- Introduction to Automation & Configuration Tools.
- Understanding Infra as a Code (IaaC)
- Deploy infrastructure using CloudFormation, Stacksets.
- CloudFormation macros and Nested stacks.
- Introduction to Terraform.
- Understanding Terraform Vs CloudFormation.
- Deploying & Destroying AWS environment with Terraform.

- Introduction to Packer

14. AWS Day to Day Ops

- Day-to-Day Activities of AWS Admin.
- AWS Environment Security Best Practices.
- AWS project explanation.
- Job Market
- Interview Preparation