

AWS Solutions Architect course outline

- 1. Introduction** **(Week 1: Day 1)**
 - a. History of AWS
 - b. 10,000 foot overview
 - c. How to sign up for AWS?
 - d. AWS certifications
 - e. What does the exam cover?
 - f. Create a billing alarm (lab)
- 2. Identity Access Management (IAM)** **(Week 1: Day 1)**
 - a. AWS Regions and Availability Zones (AZ)
 - b. IAM introduction (lab)
 - c. IAM roles and policies (lab)
 - d. Policy simulator
 - e. Quiz
- 3. Simple Storage Service (S3)** **(Week 1: Day 1)**
 - a. Introduction
 - b. Buckets and objects
 - c. Versioning
 - d. Encryption
 - e. Security and bucket policies (lab)
 - f. Websites hosted on S3
 - g. Cross Origin Resource Sharing (CORS) (lab)
 - h. Consistency model
 - i. MFA delete
 - j. Default encryption
 - k. Access logs
 - l. Replication (cross region and same region)
 - m. Pre-signed URLs
 - n. Storage tiers + Glacier
 - o. Lifecycle policies (lab)
 - p. Performance
 - q. Select and Glacier Select
 - r. Event Notifications
 - s. Lock policies and Glacier Vault Lock
 - t. Quiz
- 4. CloudFront and Global Accelerator** **(Week 1: Day 1)**
 - a. CloudFront overview
 - b. CloudFront with S3 (lab)
 - c. Signed URLs and cookies
 - d. Global Accelerator overview (lab)
 - e. Quiz
- 5. Other storage services** **(Week 1: Day 1)**
 - a. Snowball and Snowmobile
 - b. Storage Gateway
 - c. FSx overview (lab)
 - d. AWS storage options compared
 - e. Quiz
- 6. Elastic Cloud Compute (EC2)** **(Week 1: Day 2)**
 - a. Introduction

- b. SSH overview
- c. SSH using Windows, Mac and Linux (lab)
- d. EC2 Instance Connect
- e. Security Group introduction
- f. Security Groups deep dive
- g. Instance launch types (lab)
- h. Spot instances and spot fleet
- i. Instance Types Deep Dive
- j. Amazon Machine Images (AMIs) (lab)
- k. Cross account AMI copy
- l. Private vs Public vs Elastic IP (lab)
- m. Install Apache on EC2 (lab)
- n. EC2 user data
- o. EC2 Instance Metadata
- p. SDK Overview
- q. Quiz
- r. EC2 Storage
 - i. Elastic Block Storage (EBS) (lab)
 - ii. EBS volume types
 - iii. EBS operations:
 - 1. Snapshots
 - 2. Volume Migration
 - 3. Volume Encryption
 - iv. EBS vs Instance Store
 - v. EBS RAID configurations
 - vi. Elastic File System (EFS) (Lab)
 - vii. EFS vs EBS
 - viii. Quiz
- s. EC2 Placement Groups
- t. ENI vs ENA vs EFA
- u. EC2 Hibernate (lab)

7. High availability and scalability

(Week 1: Day 2)

- a. Introduction
- b. Elastic Load Balancing (ELB)
- c. Types of Load Balancers
 - i. Classic Load Balancer (CLB) (lab)
 - ii. Application Load Balancer (ALB) (lab)
 - iii. Network Load Balancer (NLB) (lab)
- d. ELB stickiness
- e. ELB cross zone load balancing
- f. ELB SSL Certificates
- g. ELB connection draining
- h. Auto Scaling Groups (ASGs) (lab)
- i. ASG scaling policies
- j. Quiz

8. Databases on AWS

(Week 2: Day 3)

- a. Relational Database Service (RDS) overview
- b. RDS replicas vs multi AZ (lab)
- c. RDS encryption and security
- d. Aurora (lab)
- e. ElastiCache (lab)

- f. DynamoDB
- g. S3 as database
- h. Athena
- i. Redshift
- j. Neptune
- k. ElasticSearch
- l. Choosing the right database
- m. Quiz

9. Route53

(Week 2: Day 3)

- a. Introduction
- b. Route53 and EC2 Setup (lab)
- c. Time To Live (TTL)
- d. CNAME vs Alias
- e. Health checks
- f. Routing policies
 - i. Simple
 - ii. Weighted
 - iii. Latency
 - iv. Failover
 - v. Geolocation
 - vi. Multi value
- g. 3rd party domains
- h. Quiz

10. Virtual Private Cloud (VPC)

(Week 2: Day 3)

- a. Introduction
- b. CIDR, private vs public IP
- c. Default VPC (lab)
- d. Subnet (lab)
- e. Internet Gateway and Route Tables
- f. NAT Instances
- g. NAT Gateway
- h. DNS Resolution Options and Route 53 private zones
- i. NACL and security groups
- j. VPC peering
- k. VPC Endpoints
- l. VPC Flow Logs and Athena
- m. Bastion Hosts
- n. Site to site VPN, Virtual Private Gateway and Customer Gateway
- o. Direct Connect & Direct Connect Gateway
- p. Egress only internet gateway
- q. PrivateLink VPC Endpoint Service
- r. ClassicLink
- s. VPN CloudHub
- t. Transit gateway
- u. Networking costs in AWS
- v. Quiz

11. Monitoring and audit

(Week 2: Day 4)

- a. Introduction
- b. CloudWatch:
 - i. Metrics
 - ii. Dashboards

- iii. Logs
- iv. Alarms
- v. Events
- c. CloudTrail
- d. Config (lab)
- e. CloudTrail vs CloudWatch vs Config
- f. Quiz

12. Security and encryption

(Week 2: Day 4)

- a. Introduction
- b. Encryption 101
- c. Key Management Service (KMS) (lab)
- d. Systems Management Agent (SSM)
- e. SSM parameter store (2 labs CLI/Lambda)
- f. Secrets Manager (lab)
- g. Cloud Hardware Security Module (HSM)
- h. Shield for DDoS protection
- i. Web Application Firewall (WAF) (lab)
- j. Shared Responsibility Model
- k. Quiz
- l. IAM advanced concepts
 - i. Security Token Service (STS) overview
 - ii. Identity Federation and Cognito
 - iii. Directory Services overview
 - iv. Organizations overview (lab)
 - v. IAM advanced topics
 - vi. IAM policy evaluation logic
 - vii. Resource Access Manager (RAM)
 - viii. AWS Single Sign On (SSO) overview (lab)
 - ix. Quiz

13. Decoupling applications

(Week 2: Day 4)

- a. Introduction
- b. Simple Queue Service (SQS) (lab)
- c. SQS FIFO queues
- d. SQS and auto scaling group
- e. Simple Notification Service (SNS) (lab)
- f. Kinesis Data Streams (lab)
- g. Kinesis Firehose and Data Analytics
- h. Data ordering for Kinesis vs SQS FIFO
- i. SQS vs SNS vs Kinesis
- j. Message Queue (MQ)
- k. Quiz

14. Serverless

(Week 2: Day 4)

- a. Introduction
- b. Lambda (lab)
- c. Lambda limits
- d. Lambda@Edge
- e. DynamoDB (lab)
- f. DynamoDB advance features
- g. API Gateway (lab)
- h. API Gateway security
- i. Cognito

- j. Serverless Application Model
- k. Quiz

15. Disaster recovery and migrations

(Week 3: Day 5)

- a. Introduction
- b. Database Migration Service (DMS) (lab)
- c. On-premise strategies with AWS
- d. DataSync
- e. Transferring large datasets into AWS
- f. Quiz

16. Other services and applications

(Week 3: Day 5)

- a. Continuous Integration Continuous Delivery (CICD)
- b. CloudFormation (lab)
- c. CloudFormation extras
- d. Elastic Container Service (ECS)
- e. ECS extras
- f. Elastic Kubernetes Service (EKS)
- g. Step Functions and Simple Workflow Service (SWF)
- h. Elastic Map Reduce (EMR)
- i. Glue
- j. OpsWorks
- k. ElasticTranscoder
- l. Workspaces
- m. AppSync
- n. Quiz

17. Other topics and solution architectures

(Week 3: Day 5)

- a. Beanstalk Overview (lab)
- b. Developing on AWS Introduction
- c. CLI Setup on Windows
- d. CLI Setup on Mac OS X
- e. CLI Setup on Linux
- f. CLI Configuration
- g. CLI on EC2
- h. CLI Practice with S3
- i. Event Processing in AWS
- j. Caching Strategies in AWS
- k. Blocking an IP Address in AWS
- l. High Performance Computing (HPC) on AWS
- m. EC2 Instance High Availability
- n. Bastion Host High Availability

18. Exam preparation discussions

(Week 3: Day 5)

- a. Whitepapers
 - i. Well Architected Framework and Well Architected Tool
 - ii. AWS Trusted Advisor
- b. Sample architectures discussion
 - i. WhatsTheTime.com
 - ii. MyClothes.com
 - iii. MyWordPress.com
 - iv. Instantiating applications quickly
 - v. Serverless:
 - 1. Mobile application MyToDoList
 - 2. Website MyBlog.com

3. MicroServices Architecture
4. Distributing paid content
5. Software updates distribution
6. Big Data ingestion pipeline

c. Get extra 30 minutes for the AWS exam

19. Sample exams (6 exams)

(Week 3: Day 6)

- a. 1 sample exam with discussion