Architecting on AWS - Accelerator

Course ID #: 7000-737-ZZ-Z
Hours: 35

Course Content

Course Description:

In this course, you will cover all aspects of how to architect for the cloud over 5 days.
You will learn how to design cloud architectures, starting small and working to large-scale enterprise level designs—and everything in between. Starting with the Well Architected Framework, you will be immersed in AWS services like compute, storage, database, networking, security, monitoring, automation, optimization, benefits of de-coupling applications and serverless, building for resilience, and understanding costs. Using hands-on labs, you will apply knowledge from lectures to gain skills. This course combines Architecting on AWS and Advanced Architecting on AWS to offer a comprehensive, immersive course in cloud architecture.

Course Objectives:

In this course, you will:

- Make architectural decisions based on AWS architectural principles and best practices
- Use AWS services to make your infrastructure scalable, reliable, and highly available
- Use AWS Managed Services to enable greater flexibility and resiliency in an infrastructure
- Make an AWS-based infrastructure more efficient to increase performance and reduce costs
- Use the Well-Architected Framework to improve architectures with AWS solutions

Prerequisites:

AWS Technical Essentials (recommended)

Target Audience:

- Solutions Architects who are new to designing and building cloud architectures
- Data Center Architects who are migrating from on-premises environment to cloud architectures
- Other IT/cloud roles who want to understand how to design and build cloud architectures

Topics:

Lesson 1: Introduction

- The real story of AWS
- Well-Architected Framework
- Six advantages of the cloud
- Global infrastructure

Lesson 2: The Simplest Architectures

- Amazon Simple Storage Service (Amazon S3)
- Amazon S3 Glacier
- Choosing AWS Regions for your architectures

Lab: Hosting a Static Website

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Lesson 3: Adding a Compute Layer
- Amazon Elastic Compute Cloud (Amazon EC2)
- Storage solutions for instances
- Purchasing options such as dedicated host vs instances

Lesson 4: Adding a Database Layer
- Relational vs non-relational
- Managed databases
- Amazon Relational Database Service (Amazon RDS)
- Amazon DynamoDB
- Amazon Neptune

Lab: Deploying a Web Application on AWS

Lesson 5: Networking in AWS – Part 1
- Amazon Virtual Private Cloud (Amazon VPC)
- CIDR and subnets
- Public vs private subnets
- NAT and internet gateway
- Security groups

Lesson 6: Networking in AWS – Part 2
- Virtual Private Gateway
- VPN
- Direct Connect
- VPC peering
- Transit Gateway
- VPC Endpoints
- Elastic Load Balancer
- Route 53

Lab: Creating a VPC

Lesson 7: AWS Identity and Access Management (IAM)
- Account users and AWS IAM
- Federating users
- Amazon Cognito

Lesson 8: Organizations
- Organizations
- Multiple account management
- Tagging strategies

Lesson 9: Elasticity, High Availability, and Monitoring
- Elasticity vs inelasticity
- Monitoring with CloudWatch, CloudTrail, and VPC Flow Logs
- Auto scaling
- Scaling databases

Lab: Creating a highly available environment

Lesson 10: Automation
- Why automate?
- AWS CloudFormation
- AWS Quick Starts
- AWS Systems Manager
- AWS OpsWorks
- AWS Elastic Beanstalk

Lesson 11: Deployment Methods
- Why use a deployment method?
- Blue green and canary deployment
- Tools to implement your deployment methods
- CI/CD

Lab: Automating infrastructure deployment

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Lesson 12: Caching
- When and why you should cache your data
- Caching on AWS with Amazon CloudFront
- Amazon ElastiCache (Redis/Memcached)
- Amazon DynamoDB Accelerator (DAX)

Lesson 13: Security of Your Data
- Shared responsibility model
- Data classification
- Encryption
- Automatic data security

Lesson 14: Building Decoupled Architecture
- Tight coupling vs loose coupling
- Amazon Simple Queue Service (SQS)
- Amazon Simple Notification Service (SNS)

Lesson 15: Optimizations and Review
- Review questions
- Best practices

Activity: Design and architecture - two trues and one lie

Lesson 16: Microservices
- What is a microservice?
- Containers
- ECS
- Fargate
- EKS

Lesson 17: Serverless
- Why use serverless?
- Lambda
- API Gateway
- AWS Step Functions

Lab: Implementing a serverless architecture with AWS Managed Services

Lesson 18: Building for Resilience
- Using managed services greatly increases resiliency
- Serverless for resiliency
- Issues with microservices to be aware of
- DDoS

Lab: Amazon CloudFront content delivery and automating WAF rules

Lesson 19: Networking in AWS Part 3
- Elastic Network Adapter
- Maximum transmission units
- Global Accelerator
- Site to site VPN
- Transit Gateway

Lesson 20: Understanding Costs
- Simple monthly calculator
- Right sizing your instances
- Price sensitive architecture examples

Lesson 21: Migration Strategies
- Cloud migration strategies
- Planning
- Migrating
- Optimizing

Lab: Application deployment using AWS Fargate

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Lesson 22: RTO/RPO and Backup Recovery Setup

- Disaster planning
- Recovery options

Lesson 23: Final Review

- Architecting advice
- Service use case questions
- Example test questions

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