

Title of Course: Academy Cloud Architecting (ACA)

SKU: CUR-TF-200-ACACAD-10-EN

Description

Academy Cloud Architecting covers the fundamentals of building IT infrastructure on Amazon Web Services, or AWS. The course is designed to teach solutions architects how to optimize the use of the AWS Cloud by understanding AWS services and how these services fit into cloud-based solutions. Because architectural solutions can differ depending on industry, type of applications, and size of business, this course emphasizes best practices for the AWS Cloud, and it recommends various design patterns to help you think through the process of architecting optimal IT solutions on AWS. It also presents case studies throughout the course, which showcase how some AWS customers have designed their infrastructures, and the strategies and services that they implemented. Finally, this course also provides opportunities to build a variety of infrastructures via a guided, hands-on approach.

Intended Audience

This advanced (Level 200) course is intended for AWS Academy member institutions.

Prerequisites

To ensure success in this course, it is preferred that you have:

- Completed the Academy Cloud Foundations (ACF) course or have equivalent experience
- A working knowledge of distributed systems
- Familiarity with general networking concepts
- A working knowledge of multi-tier architectures
- Familiarity with cloud computing concepts

Delivery Method

This course is delivered through a mix of:

- Instructor-Led Training (ILT)
- Videos
- LMS-hosted eLearning Modules
- Discussions
- Projects
- Assessments

- Hands-On Labs

Hands-On Activity

This course allows you to test new skills and apply knowledge to your working environment through a variety of discussions and practical exercises.

Duration

40 Hours

Course Outline

Module 0: AWS Review (Optional)

- **Part 1:** Introduction to AWS Cloud
- **Part 2:** Cloud Scenarios
- **Part 3:** Infrastructure Overview
- **Part 4:** Introduction to AWS Foundation Services

Module 1: Course Welcome

- **Part 1:** Course Prerequisites, Objectives, and Overview
- **Part 2:** Create Your AWS Training Portal Account
- **Part 3:** Access Your Course Materials
- Optional
 - **Part 4:** Create Your AWS Free Tier Account
 - **Part 5:** Create Your AWS Educate Account

Module 2: Designing Your Environment

- **Part 1:** Choosing a Region
- **Part 2:** Selecting Availability Zones
- **Part 3:** Virtual Private Cloud (VPC)
- **Part 4:** Dividing VPCs and Subnets
- **Part 5:** Default VPCs and Default Subnets
- **Part 6:** Controlling VPC Traffic
- **Part 7:** Connecting Multiple VPCs
- **Part 8:** Integrating On-Premises Components
- **Part 9:** VPC Best Practices
- **Exercise 1: Improve this Architecture**

Module 3: Designing for High Availability – Section I

- **Part 1:** Load Balancing and Fault Tolerance
- **Exercise 2: Improve this Architecture**
- **Part 2:** High Availability Across Regions

- **Part 3:** Connections Outside of AWS
- **Lab: Making Your Environment Highly Available**
- **Group Discussion 1: Forklifting an Existing Application**

Module 4: Designing for High Availability – Section II

- **Part 1:** Best Practice - Scalability
- **Part 2:** Determining if Scaling is Needed
- **Part 3:** Automatic Scaling
- **Exercise 3: Improve this Architecture**
- **Part 4:** Scaling Data Stores
- **Part 5:** AWS Lambda and Event-Driven Scaling
- **Lab: Using Auto-Scaling with AWS Lambda**

Module 5: Automating Your Infrastructure

- **Part 1:** Manual environment configuration
- **Part 2:** Infrastructure as code on AWS
- **Part 3:** Grouping resources in a template
- **Part 4:** Resources not supported by AWS CloudFormation

Module 6: Decoupling Your Infrastructure

- **Part 1:** Loose Coupling
- **Part 2:** Loose Coupling Strategies
- **Part 3:** Communicating Easily and Reliably Among Components
- **Part 4:** Communicating with Loose Coupling and Amazon DynamoDB
- **Part 5:** Amazon API Gateway
- **Part 6:** Serverless Architectures
- **Part 7:** Decoupling Examples

Module 7: Designing Web-Scale Media

- **Part 1:** Storing Web-Accessible Content with Amazon S3
- **Part 2:** Caching with Amazon CloudFront
- **Part 3:** Managing NoSQL databases
- **Part 4:** Storing Relational Data in Amazon RDS.
- **Lab: Implementing a Serverless Architecture with AWS Managed Services**
- **Group Discussion 2: Scalable Web Application**

Project 1: Designing a Cloud Solution

Module 8: Is Your Infrastructure Well-Architected?

- **Part 1:** Introduction to the Well-Architected Framework
- **Part 2:** Pillars of the Well-Architected Framework

- **Part 3:** Well-Architected Design Principles

Module 9: Well-Architected Pillar 1: Operational Excellence

- **Part 1:** Principles of the Operational Excellence Pillar
- **Part 2:** Drive Operational Excellence
- **Part 3:** Operational Excellence Pillar Questions

Module 10: Well-Architected Pillar 2: Security

- **Part 1:** Principles of the Security Pillar
- **Part 2:** Preventing Common Security Exploits
- **Part 3:** Securing Data in CloudFront
- **Part 4:** Encrypting Data
- **Part 5:** Authentication

Module 11: Well-Architected Pillar 3: Reliability

- **Part 1:** Principles of The Reliability Pillar
- **Part 2:** Making Your Infrastructure More Reliable
- **Exercise 4: Improve This Architecture**
- **Lab: Multi-Region Failover with Amazon Route 53**
- **Part 3:** Reliability Pillar Questions

Module 12: Well-Architected Pillar 4: Performance Efficiency

- **Part 1:** Principles of the Performance Efficiency Pillar
- **Part 2:** Infrastructure Efficiency Improvements
- **Exercise 5:** Improve the Architecture
- **Part 4:** Performance Efficiency Pillar Questions and Best Practices

Module 13: Well-Architected Pillar 5: Cost Optimization

- **Part 1:** Principles of the Cost-Optimization Pillar
- **Part 2:** Optimizing the Cost of Your Infrastructure
- **Part 3:** Dedicated Instances and Dedicated Hosts
- **Part 4:** Trusted Advisor
- **Part 5:** Optimizing Costs with Caching
- **Part 6:** AWS Cost Calculation Tools
- **Exercise 6: Improve this Architecture**
- **Appendix A:** Cost Optimization Questions

Module 14: Troubleshooting

- **Part 1:** Troubleshooting Steps
- **Part 2:** AWS Support Options

Module 15: Design Patterns and Sample Architectures

- **Part 1:** High-Availability Design Patterns
- **Part 2:** Stream Processing Example
- **Part 3:** Sensor Network Data Ingestion and Processing Example
- **Part 4:** Application Backend Example
- **Part 5:** Transcoding and Serving Video Files Example

Project 2: Go Green Insurance Company – Designing a “Paperless” Solution