AWS-DEV2
Advanced Developing on AWS

Course description.

The Advanced Developing on AWS course uses the real-world scenario of taking a legacy, on-premises monolithic application and refactoring it into a serverless microservices architecture. This three-day advanced course covers advanced development topics such as architecting for a cloud-native environment; deconstructing on-premises, legacy applications and repackaging them into cloud-based, cloud native architectures; and applying the tenets of the Twelve-Factor Application methodology.

- Course level: Advanced.
- Duration: 3 days.

Activities.

This course includes presentations, group exercises, and hands-on labs.

Course objectives.

In this course, you will:

- Analyze a monolithic application architecture to determine logical or programmatic break points where the application can be broken up across different AWS services.
- Apply Twelve-Factor Application manifesto concepts and steps while migrating from a monolithic architecture.
- Recommend the appropriate AWS services to develop a microservices based cloud-native application.
- Use the AWS API, CLI, and SDKs to monitor and manage AWS services.
- Migrate a monolithic application to a microservices application using the 6 Rs of migration.
- Explain the SysOps and DevOps interdependencies necessary to deploy a microservices application in AWS

Intended audience.

This course is intended for experienced software developers who are already familiar with AWS services.

Prerequisites.

We recommend that attendees of this course have:

- In-depth knowledge of at least one high-level programming language.
- Working knowledge of core AWS services and public cloud implementation.
- Completion of the Developing on AWS classroom training, and then a minimum of 6 months of application of those concepts in a real world environment.

Course outline.
Module 1: The cloud journey.

- Common off-cloud architecture.
- Introduction to Cloud Air.
- Monolithic architecture.
- Migration to the cloud.
- Guardrails.
- The six R's of migration.
- The Twelve-Factor Application Methodology.

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- Architectural styles and patterns.
- Overview of AWS Services.
- Interfacing with AWS Services.
- Authentication.
- Infrastructure as code and Elastic Beanstalk.

Demonstration: Walk through creating base infrastructure with AWS CloudFormation in the AWS console.

Hands-on lab: Deploy your monolith application using AWS Elastic Beanstalk.

Module 2: Gaining Agility.

- DevOps.
- CI/CD.
- Application configuration.
- Secrets management.
- CI/CD Services in AWS.

Demonstration: Demo AWS Secrets Manager.

Module 3: Monolith to MicroServices.

- Microservices.
- Serverless.
- A look at Cloud Air.
- Microservices using Lambda and API Gateway.
- SAM.
- Strangling the Monolith.

Hands-on lab: Using AWS Lambda to develop microservices.

Module 4: Polyglot Persistence & Distributed Complexity.

- Polyglot persistence.
- DynamoDB best practices.
- Distributed complexity.
- Step functions.

Module 5: Resilience and Scale.

- Decentralized data stores.
- Amazon SQS.
- Amazon SNS.
- Amazon Kinesis Streams.
- AWS IoT Message Broker.
- Serverless event bus.
- Event sourcing and CQRS.
- Designing for resilience in the cloud.

Hands-on lab: Exploring the AWS messaging options.

Module 6: Security and Observability.

- Serverless Compute with AWS Lambda.
- Authentication with Amazon Cognito.
- Debugging and traceability.

Hands-on lab:
- Developing microservices on AWS.
- Automating deployments with Cloud Formation.

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