

**DevOps Engineering on AWS**

**Course Number:** AWS-106
**Duration:** 3 days

**Overview**

Accelebrate's DevOps Engineering on AWS training course teaches attendees how to use DevOps cultural philosophies, practices, and tools to increase their organizations’ ability to develop, deliver, and maintain applications and services at high velocity on AWS.

This AWS course covers continuous integration (CI), continuous delivery (CD), infrastructure as code, microservices, monitoring, logging, communication, and collaboration. Participants gain experience building and deploying AWS CloudFormation templates and CI/CD pipelines that build and deploy applications on the Amazon Elastic Compute Cloud (Amazon EC2), as well as serverless applications and container-based applications.

Accelebrate is an AWS Training Partner (ATP) and this hands-on official AWS Classroom Training course is taught by an accredited Amazon Authorized Instructor (AAI).

**Prerequisites**

All students should have taken Accelebrate's [Developing on AWS classroom training](file:////training/aws-developing) or [System Operations on AWS classroom training](file:////training/systems-operations-aws) (or have the equivalent knowledge) and have:

* Working knowledge of one or more high-level programming languages (C#, Java, PHP, Ruby, Python, etc.)
* Intermediate knowledge of administering Linux or Windows systems at the command-line level
* Two or more years of experience provisioning, operating, and managing AWS environments

**Materials**

All AWS training students receive comprehensive courseware.

**Software Needed on Each Student PC**

A modern web browser and an Internet connection free of restrictive firewalls, so that the student can connect by SSH or Remote Desktop (RDP) into AWS virtual machines.

**Objectives**

* Use DevOps best practices to develop, deliver, and maintain applications and services at high velocity on AWS
* List the advantages, roles, and responsibilities of small autonomous DevOps teams
* Design and implement an infrastructure on AWS that supports DevOps development projects
* Leverage AWS Cloud9 to write, run and debug your code
* Deploy various environments with AWS CloudFormation
* Host secure, highly scalable, and private Git repositories with AWS CodeCommit
* Integrate Git repositories into CI/CD pipelines
* Automate build, test, and packaging code with AWS CodeBuild
* Securely store and leverage Docker images and integrate them into your CI/CD pipelines
* Build CI/CD pipelines to deploy applications on Amazon EC2, serverless applications, and container-based applications
* Implement common deployment strategies such as “all at once,” “rolling,” and “blue/green”
* Integrate testing and security into CI/CD pipelines
* Monitor applications and environments using AWS tools and technologies

**Outline**

* Introduction
	+ Course objective
	+ Suggested prerequisites
	+ Course overview breakdown
* Introduction to DevOps
	+ What is DevOps?
	+ The Amazon journey to DevOps
	+ Foundations for DevOps
* Infrastructure Automation
	+ Introduction to Infrastructure Automation
	+ Diving into the AWS CloudFormation template
	+ Modifying an AWS CloudFormation template
	+ AWS CloudFormation template structure, parameters, stacks, updates, importing resources, and drift detection
* AWS Toolkits
	+ Configuring the AWS CLI
	+ AWS Software Development Kits (AWS SDKs)
	+ AWS SAM CLI
	+ AWS Cloud Development Kit (AWS CDK)
	+ AWS Cloud9
	+ AWS CLI and AWS CDK
	+ Using AWS CloudFormation to provision and manage a basic infrastructure
* Continuous Integration and Continuous Delivery (CI/CD) with Development Tools
	+ CI/CD Pipeline and Dev Tools
	+ CI/CD pipeline displaying some actions from AWS CodeCommit, AWS CodeBuild, AWS CodeDeploy, and AWS CodePipeline
	+ Deploying an application to an EC2 fleet using AWS CodeDeploy
	+ AWS CodePipeline
	+ AWS integration with Jenkins
	+ Automating code deployments using AWS CodePipeline
* Introduction to Microservices
	+ Introduction to Microservices
* DevOps and Containers
	+ Deploying applications with Docker
	+ Amazon Elastic Container Service and AWS Fargate
	+ Amazon Elastic Container Registry and Amazon Elastic Kubernetes service
	+ CI/CD pipeline deployment in a containerized application
* DevOps and Serverless Computing
	+ AWS Lambda and AWS Fargate
	+ AWS Serverless Application Repository and AWS SAM
	+ AWS Step Functions
	+ AWS Lambda and characteristics
	+ AWS SAM quick start in AWS Cloud9
	+ Deploying a serverless application using AWS Serverless Application Model (AWS SAM) and a CI/CD Pipeline
* Deployment Strategies
	+ Continuous Deployment
	+ Deployments with AWS Services
* Automated Testing
	+ Introduction to testing
	+ Tests: Unit, integration, fault tolerance, load, and synthetic
	+ Product and service integrations
* Security Automation
	+ Introduction to DevSecOps
	+ Security of the Pipeline
	+ Security in the Pipeline
	+ Threat Detection Tools
	+ AWS Security Hub, Amazon GuardDuty, AWS Config, and Amazon Inspector
* Configuration Management
	+ Introduction to the configuration management process
	+ AWS services and tooling for configuration management
	+ Performing blue/green deployments with CI/CD pipelines and Amazon Elastic
	+ Container Service (Amazon ECS)
* Observability
	+ Introduction to observability
	+ AWS tools to assist with observability
	+ Using AWS DevOps tools for CI/CD pipeline automations
* Reference Architecture (optional module)
	+ Reference architectures
* Conclusion
	+ Components of DevOps practice
	+ CI/CD pipeline review
	+ AWS Certification