



DevOps Engineering on AWS

- 3 Days
- Lecture and Hands-on Labs

Course Overview

DevOps Engineering on AWS teaches you how to use the combination of DevOps cultural philosophies, practices, and tools to increase your organization's ability to develop, deliver, and maintain applications and services at high velocity on AWS. This course covers Continuous Integration (CI), Continuous Delivery (CD), infrastructure as code, microservices, monitoring and logging, and communication and collaboration. Handson labs give you experience building and deploying AWS Cloud Formation templates and CI/CD pipelines that build and deploy applications on Amazon Elastic Compute Cloud (Amazon EC2), serverless applications, and container-based applications. Labs for multi-pipeline workflows and pipelines that deploy to multiple environments are also included.

Review this course online at https://www.alta3.com/courses/awsdevops

Who Should Attend

- DevOps engineers
- DevOps architects
- Operations engineers
- System administrators
- Developers

What You'll Learn

- Use DevOps best practices to develop, deliver, and maintain applications at high velocity on AWS
- Design and implement infrastructure on AWS supporting DevOps projects
- Deploy various environments with AWS CloudFormation and automate CI/CD pipelines
- Monitor applications and environments using AWS tools and technologies

Outline

Module 0: Course overview

- 1. Course objective
- 2. Suggested prerequisites
- 3. Course overview breakdown #### Module 1: Introduction to DevOps
- 4. What is DevOps?
- 5. The Amazon journey to DevOps
- 6. Foundations for DevOps #### Module 2: Infrastructure Automation
- 7. Introduction to Infrastructure Automation
- 8. Diving into the AWS CloudFormation template
- 9. Modifying an AWS CloudFormation template
- 10. Demonstration: AWS CloudFormation template structure, parameters, stacks, updates, importing resources, and drift detection #### Module 3: AWS Toolkits
- 11. Configuring the AWS CLI

- 12. AWS Software Development Kits (AWS SDKs)
- 13. AWS SAM CLI
- 14. AWS Cloud Development Kit (AWS CDK)
- 15. AWS Cloud9
- 16. Demonstration: AWS CLI and AWS CDK
- 17. Hands-on lab: Using AWS CloudFormation to provision and manage a basic infrastructure #### Module 4: Continuous integration and continuous delivery (CI/CD) with development tools
- 18. CI/CD Pipeline and Dev Tools
- 19. Demonstration: CI/CD pipeline displaying some actions from AWS CodeCommit, AWS CodeBuild, AWS CodeDeploy and AWS CodePipeline
- 20. Hands-on lab: Deploying an application to an EC2 fleet using AWS CodeDeploy
- 21. AWS CodePipeline
- 22. Demonstration: AWS integration with Jenkins
- 23. Hands-on lab: Automating code deployments using AWS CodePipeline #### Module 5: Introduction to Microservices
- 24. Introduction to Microservices #### Module 6: DevOps and containers
- 25. Deploying applications with Docker
- 26. Amazon Elastic Container Service and AWS Fargate
- 27. Amazon Elastic Container Registry and Amazon Elastic Kubernetes service
- 28. Demonstration: CI/CD pipeline deployment in a containerized application #### Module 7: DevOps and serverless computing
- 29. AWS Lambda and AWS Fargate
- $30.~\mathrm{AWS}$ Serverless Application Repository and AWS SAM
- 31. AWS Step Functions
- 32. Demonstration: AWS Lambda and characteristics
- 33. Demonstration: AWS SAM quick start in AWS Cloud9
- 34. Hands-on lab: Deploying a serverless application using AWS Serverless Application Model (AWS SAM) and a CI/CD Pipeline #### Module 8: Deployment strategies
- 35. Continuous Deployment
- 36. Deployments with AWS Services #### Module 9: Automated testing
- 37. Introduction to testing
- 38. Tests: Unit, integration, fault tolerance, load, and synthetic
- 39. Product and service integrations #### Module 10: Security automation
- 40. Introduction to DevSecOps
- 41. Security of the Pipeline
- 42. Security in the Pipeline
- 43. Threat Detection Tools
- 44. Demonstration: AWS Security Hub, Amazon GuardDuty, AWS Config, and Amazon Inspector ##### Module 11: Configuration management
- 45. Introduction to the configuration management process
- 46. AWS services and tooling for configuration management
- 47. Hands-on lab: Performing blue/green deployments with CI/CD pipelines and Amazon Elastic Container Service (Amazon ECS) #### Module 12: Observability
- 48. Introduction to observability
- 49. AWS tools to assist with observability
- 50. Hands-on lab: Using AWS DevOps tools for CI/CD pipeline automations #### Module 13: Reference architecture (Optional module)
- 51. Reference architectures #### Module 14: Course summary
- 52. Components of DevOps practice
- 53. CI/CD pipeline review
- 54. AWS Certification

Labs

- Using AWS CloudFormation to provision and manage a basic infrastructure
- Deploying an application to an EC2 fleet using AWS CodeDeploy
- Automating code deployments using AWS CodePipeline
- Deploying a serverless application using AWS Serverless Application Model (AWS SAM) and a CI/CD Pipeline
- Performing blue/green deployments with CI/CD pipelines and Amazon Elastic Container Service (Amazon ECS)
- Using AWS DevOps tools for CI/CD pipeline automations

Prerequisites

- Previous attendance at the Systems Operations on AWS or Developing on AWS courses
- \bullet Working knowledge of one or more high-level programming languages, such as C#, Java, PHP, Ruby, Python
- 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