



# DEVOPS WITH AWS

**DURATION**  
**50 Days**

This comprehensive DevOps with AWS Training Program is designed to transform learners into industry-ready DevOps Engineers by combining cloud computing, automation, CI/CD pipelines, containerization, infrastructure as code, and monitoring, with extensive hands-on labs and real-world projects.

## MODULE 1: AWS SOLUTIONS ARCHITECT

### 1. INTRODUCTION TO CLOUD COMPUTING

- Definition and evolution of cloud computing
- Advantages of cloud computing over traditional infrastructure
- Cloud service models: IaaS, PaaS, SaaS
- Cloud deployment models: Public, Private, Hybrid
- Overview of AWS services and use cases
- AWS Regions, Availability Zones, and Global Infrastructure

### 2. AMAZON EC2 (ELASTIC COMPUTE CLOUD)

- Introduction to EC2 and compute services
- EC2 features and instance lifecycle
- Amazon Machine Images (AMI)
- Instance types and pricing models
- Instance purchasing options (On-Demand, Reserved, Spot)
- Public IP, Private IP, Elastic IP
- Placement groups and performance optimization
- Security groups and key pairs
- Hands-on LAB: Launching and managing EC2 instances

### **3. ELASTIC BLOCK STORE (EBS)**

- Introduction to EBS storage
- EBS volume types and performance
- Encryption and data security
- Root and data volumes
- AMI vs Snapshots
- Volume lifecycle management
- Hands-on LAB: Creating and attaching EBS volumes

### **4. ELASTIC FILE SYSTEM (EFS)**

- Introduction to EFS
- Comparison: EBS vs EFS
- Mount targets and supported OS
- Performance and throughput modes
- Use cases and benefits
- Hands-on LAB: Mounting EFS to EC2

### **5. SIMPLE STORAGE SERVICE (S3)**

- Buckets and objects
- Versioning and access logging
- Multipart uploads and object locking
- Data encryption
- Static website hosting
- Durability and availability concepts
- Storage classes and lifecycle policies
- Cross-region and same-region replication
- Introduction to CloudFront
- Hands-on LAB: S3 bucket management

### **6. VIRTUAL PRIVATE CLOUD (VPC)**

- CIDR and IP addressing
- Default and custom VPC
- Subnets and VPC sizing
- Security groups and NACLs
- Route tables and internet gateway

- NAT gateway and VPC peering
- VPN and Direct Connect
- VPC flow logs
- Hands-on LAB: Designing secure VPC architecture

## **7. DATABASE SERVICES**

- Amazon RDS overview
- Database engines supported
- Read replicas and Multi-AZ deployment
- Automatic and manual backups
- DynamoDB basics and architecture
- ElastiCache and Redshift overview
- Hands-on LAB: Deploying databases

## **8. ROUTE 53 (DNS MANAGEMENT)**

- Domain registration
- Hosted zones (public & private)
- Routing policies
- DNS query types
- Global Accelerator

## **9. IDENTITY AND ACCESS MANAGEMENT (IAM)**

- IAM users, groups, and roles
- Policy creation and attachment
- Multi-factor authentication
- AWS Organizations
- Hands-on LAB: Securing AWS accounts

## **10. AWS SECURITY & MONITORING**

- AWS Well-Architected Framework (5 pillars)
- Trusted Advisor
- CloudTrail logging and auditing
- CloudWatch monitoring and alerts

## 11. APPLICATION INTEGRATION SERVICES

- Amazon SNS (publish/subscribe model)
- Amazon SQS (message queues)
- FIFO vs Standard queues
- SNS vs SQS comparison
- Hands-on LAB: Messaging integration

## 12. LOAD BALANCING & AUTO SCALING

- Elastic Load Balancer (ELB) types
- Cross-zone load balancing
- Auto Scaling groups and policies
- High availability architecture
- Hands-on LAB: Scaling applications

## 13. OTHER AWS SERVICES

- AWS Lambda
- CloudFormation
- Migration services
- Snowball, Snowmobile
- Storage Gateway
- Certificate Manager

## MODULE 2: LINUX FUNDAMENTALS

- Linux architecture and distributions
- Basic Linux commands
- File and directory management
- User and permission management
- Shell scripting basics
- SSH and VI editor

### PRACTICALS:

- User creation
- SSH access
- File manipulation
- Writing shell scripts

## MODULE 3: DEVOPS OVERVIEW

- Waterfall vs Agile vs DevOps
- DevOps principles and benefits
- DevOps lifecycle
- Automation concepts
- CI/CD overview

## MODULE 4: DEVOPS ON CLOUD (AWS)

- AWS DevOps services
- CodeCommit, CodeBuild
- CodeDeploy, CodePipeline
- CloudFormation overview

## MODULE 5: GIT & GITHUB (SOURCE CODE MANAGEMENT)

- Version control concepts
- Git installation and configuration
- Repository creation
- Branching and merging
- Rebase, squash, stash
- GitHub integration
- VS Code integration
- Hands-on Practicals
  - Managing repositories
  - Resolving merge conflicts
  - Webhook integration

## MODULE 6: BUILD TOOLS – MAVEN

- Maven architecture
- Maven lifecycle and commands
- Plugins and archetypes
- Code coverage using Jacoco

## MODULE 7: JENKINS – CONTINUOUS INTEGRATION

- Jenkins architecture
- Installation and configuration
- Freestyle and pipeline jobs
- Declarative and scripted pipelines
- GitHub webhooks
- CI/CD pipeline creation
- Tomcat integration
- Email notifications

## MODULE 8: DOCKER & CONTAINERIZATION

- Virtualization vs containerization
- Docker architecture
- Docker images and containers
- Dockerfile and Docker Compose
- Docker volumes and networking
- Docker Swarm basics
- Hands-on LAB: Deploying containerized applications

## MODULE 9: KUBERNETES

- Kubernetes architecture
- Pods, deployments, services
- Minikube and EKS
- Scaling and rolling updates
- Namespaces and volumes
- Hands-on LAB: Kubernetes deployments

## MODULE 10: CONFIGURATION MANAGEMENT – ANSIBLE

- Ansible architecture
- Inventory and modules
- Ad-hoc commands
- Playbooks and roles
- Ansible Galaxy
- Hands-on LAB: Automating server configuration

## MODULE 11: INFRASTRUCTURE AS CODE – TERRAFORM

- Terraform architecture
- Providers and resources
- Terraform commands
- State management
- End-to-end AWS infrastructure creation

## MODULE 12: MONITORING – PROMETHEUS & GRAFANA

- Monitoring concepts
- Prometheus architecture
- Metrics collection
- Grafana dashboards and alerts

## MODULE 13: CAPSTONE PROJECTS

- Real-World Projects
  - 3-Tier Application Deployment on AWS
  - Online Ticketing & Event Management System
  - Food Ordering & Delivery Application Deployment

## SELF-LEARNING MODULE

- Python fundamentals (online access)
- Lifetime access to LMS videos

## CAREER OUTCOME

- Industry-ready DevOps Engineer
- Strong AWS & Cloud foundation
- CI/CD, Docker, Kubernetes expertise
- Real-world deployment experience