



# Learn the AWS Cloud with DevOps

(AWS Solution Architect + Developer + SysOps Admin+ DevOps)

## About the Course

A course designed to meet the ongoing need for professionals who gain good understanding of how companies use AWS Cloud and Deploy applications using DevOps to Cloud.

This course also helps you to understand about Continuous Integration (CI)/Continuous Deployments (CD) using pipelines for new age development.

This Course theory and practical based hands-on so that you can gain maximum exposure towards handling real time scenarios projects

## Who can take this course?

As every organization started to adapt to DevOps/Cloud, they expect every individual who directly or indirectly connected to IT jobs are to be aware of Complete DevOps process.

If you an individual aspiring to learn something new, and be part of newer SDLC, then this is right course for you. Be open to learn this new

## Prerequisites

To learn this course, you need to be familiar with the Linux environment and have a basic knowledge on networking and cloud computing system

Need to be familiar with the Windows environment and recommended knowledge on Software Development Life Cycles (SDLC)

## AWS AND DEVOPS COURSE CONTENT

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### Overview of AWS Cloud

- Introduction to AWS Cloud
- AWS Free Tier & billing
- AWS Cloud Services

### AWS Global Infrastructure

- What is Region?
- What is Availability Zone?
- Edge Locations
- Content Distribution Network (CDN)

### AWS Identity Access Management (IAM)

- Basics of IAM
- Groups, Users, Roles, Policies, MFA
- How to use IAM
- Active Directory /Web Identity Federation

### AWS Command Line Interface (CLI)

- Introduction to CLI
- Download and installation of CLI
- Configuring CLI and authenticate with your account

### AWS-Virtual Private Cloud (VPC)

- What is VPC, and Why VPC is required
- Launching VPC using VPC Wizard
- Designing Custom VPC
- Concepts about Network Address Translation (NAT)
- Create your own NAT Gateway
- Security Groups
- What is Bastion, and uses of Bastion?

### AWS-EC2

- What is Elastic Cloud Compute (EC2) service?
- EBS Volumes
- Windows EC2 Instances Launch
- Linux EC2 Instances Launch
- Windows and Linux based AMI
- Elastic Load Balancers (ELB)
- Auto Scaling Groups

### AWS-Route53

- What is DNS and Route53
- Understanding DNS
- What are different Route53 Policies

### AWS S3

- What is Storage as a Service (S3 over AWS)
- Basics of S3- Bucket/object/Namespaces
- Consistency Modeling
- Security & Tiered Storage
- SLAs for Availability and Durability

## AWS RDS

- DB as a Service (DBaaS) on AWS- RDS
- RDS Instances and supported DB Engines
- Automated Backups
- Multi-AZ & Read Replicas

## AWS Lambda

- Introduction to AWS Lambda
- Benefits for using AWS Lambda
- Lambda Functions
- Lambda Triggers

## Serverless Computing with AWS Lambda

- Introduction to Serverless Computing
- Serverless with AWS Lambda
- Real Time applications with AWS Lambda
- How to trigger Lambda with S3 Bucket?

## DevOps-Introduction to DevOps

- Overview of DevOps
- DevOps Pipelines
- Why DevOps?
- Roles and Responsibilities
- DevOps Ecosystem

## DevOps-Source Code Management-GIT/GITHUB

- What is Version Control System?
- GIT/GITHUB
- GITHUB Desktop
- Installation
- Configuration
- Basic Commands
- Branches
- Repositories

## DevOps-Build Management-MAVEN

- Automated Build Process
- Maven
- Maven Structure
- Maven Dependencies
- Maven Repositories
- Maven Plugins
- Integrated Maven Build

## DevOps-Continuous Integration Tool-Jenkins

- Installation
- Configuring Jenkins
- Configuring node
- Setting up a node
- Jobs/Plugins
- Creating Application Builds
- Cloning the sample Project
- Creating the Jenkins job and Configuring a Git Repo

- Compiling in Jenkins
- Browsing the workspace in Jenkins
- App Packaging in Jenkins
- Cleaning up past build

## DevOps-Middleware Tier-Apache Tomcat

- What is Apache Tomcat?
- Installation, Setup and configuration
- Running Apache Tomcat
- Jenkins Integration of Apache Tomcat

## DevOps-Image Building Tool –Packer

- What is Packer?
- Why do we use Packer?
- How to Install Packer?
- Running Packer to create AWS AMI Images

## DevOps-Provisioning Tool-TERRAFORM

- Use Cases
- Install Terraform
- Using Terraform
- Launching infra using Terraform
- Learn how to Create AWS Infrastructure using Terraform
- Learn how to manage AWS Infrastructure using Terraform

## DevOps-Source Code-AWS Code Commit

- What is AWS Code Commit?
- Using AWS Code Commit?
- Creation of IAM Code Commit Users
- SSH/HTTPS usage
- Code Commit Clone/Push

## DevOps-Build-AWS Code Build

- Introduction to AWS Code Build?
- Using AWS Code Build?
- Creation of project using Code Build

## DevOps-Deployment-AWS Code Deploy

- Introduction to AWS Code Deploy
- Components to AWS Code Deploy
- AppSpec File Configuration
- Deployment Using Code Deploy

## DevOps-Continuous Integration-AWS Code Pipeline

- What is Code Pipeline?
- Use cases of Code Pipeline?
- Configuring Test Builds
- Performing test Builds
- Pushing App to Production

## DevOps-Infrastructure as Code (IaC)-AWS CloudFormation

- What is Cloud Formation
- Using Cloud Formation
- Stack/Template
- Cloud Formation Summary

## DevOps-Platform as a Service (PaaS)-AWS Elastic Beanstalk

- What is Elastic Beanstalk
- Using Elastic Beanstalk
- Environment Provisioning

## DevOps-Containerization-DOCKER

- What is Docker
- Installing Docker on Windows, Linux
- Docker Pull, Build, Run
- Working with images
- Container Life cycle
- Dockerfile
- Pushing App to GitHub

## DevOps-Container Orchestration-Elastic Kubernetes Services (EKS)

- What is Kubernetes?
- Kubernetes Architecture
- Nodes
- Pods
- Services and Deployment
- AWS Elastic Kubernetes Services (EKS)
- Pushing App to Kubernetes Cluster

## DevOps-Configuration Management Tool-ANSIBLE

- Introduction to Ansible
- Installing Ansible
- Testing with First Ansible
- Ansible Configuration Basics
- Plays & Playbooks' basics
- Basic Play book
- Advanced Playbook usage

## DevOps-Continuous Code Inspection – SonarQube

- What is SonarQube?
- Installation on SonarQube?
- How to use SonarQube?
- Integration of SonarQube with Maven Project

## AWS Application Services

- What are App Services?
- What is SQS and SNS?
- What is SES?
- Implementing SES Service
- Implementing SNS and SQS

## AWS Monitoring Services

- Introduction to AWS CloudWatch
- Introduction to AWS CloudTrail
- CloudWatch Alarms/CloudWatch Logs  
CloudTrail API package

## AWS Certification Path

- Why AWS Certification
- Solution Architect Roadmap
- Developer Certification Road/SysOps Certification Roadmap

## REAL TIME PROJECTS TO BE COVERED (Hands-On Lab)

### Project-01:

Name of the Project: AWS Infrastructure project  
Targeted Module: Design and build highly available infra to host Multi-Tier Web Apps on AWS Cloud  
Services to be used: AWS IAM, VPC, EC2, ELB, Auto Scaling, Route53, CloudWatch, S3, RDS

### Project-02:

Name of the Project: Serverless Architecture Project  
Targeted Module: Build a Serverless Apps with AWS Lambda functions, triggered by file uploads to s3  
Services to be used: AWS Lambda, Serverless, VPC, IAM, S3, DynamoDB, CloudWatch, Python

### Project-03

Name of the Project: CI/CD with Complete DevOps Project  
Target Module: Set out CI/CD pipeline to release apps along with infrastructure automation  
Services to be used: GITHUB, MAVEN, APACHE TOMCAT, JENKINS, PACKER, TERRAFORM, AWS EC2

### Project-04:

Name of the Project: Cloud Native DevOps on AWS (Project A)  
Targeted Module: Build CI/CD pipeline to release the code to AWS Infrastructure  
Services to be used: AWS Code Commit, Code Deploy, Code Pipeline, EC2, VPC, IAM, ELB

### Project-05:

Name of the Project: Cloud Native DevOps on AWS (Project B)  
Targeted Module: Build CI/CD pipeline to release the code to AWS Infrastructure  
Services to be used: AWS Code Commit, Code Build, Elastic Bean stalk, Code Pipeline, EC2, VPC, IAM, ELB

### Project-06

Name of the Project: Kubernetes Project  
Target Module: Building Docker images using DevOps Pipeline and deploy to AWS EKS  
Services to be used: AWS EC2, Docker Hub, Dockerfile, GitHub, AWS VPC, AWS IAM, AWS EKS