

# DevOps with AWS

## What is DevOps

Introduction  
Stakeholders of DevOps  
What is SDLC  
Phases of SDLC  
Role Of Dev in SDLC  
Role of Ops in SDLC

## SDLC (Software Development Lifecycle)

What is SDLC?  
SDLC Methodologies  
Waterfall Model  
Advantages of Waterfall  
Dis-Advantages of Waterfall

## What is Agile and Scrum

Agile Development Process  
Agile Manifesto  
Agile Scrum Work Flow  
Agile Analysis Estimation Techniques  
Types of Roles and Responsibilities  
Problem That DevOps Solves

## DevOps Life Cycle

Introduction  
Tools  
DevOps Technology Categories  
Collaboration  
Planning  
Configuration Management  
Source Control  
Dev Environments  
Continuous Integration  
Continuous Testing  
Continuous Deployment

## Linux

Linux Overview  
What is Operating system  
What is Unix, Linux  
Linux vs Windows  
Linux flavors  
Linux Architecture  
Linux commands  
Reading files  
Redirection operators  
User management  
Group management  
File system management  
Editors



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## Shell Scripting

- Shell history and introduction
- Types of shells
- Shebang line in shell
- Command line arguments
- Variables
- Types of Operators
- Loops
- Case statement
- Functions

## GIT (Source Code Management)

- Introduction
- What is a Version Control System (VCS)?
- Distributed Vs Non-distributed VCS
- What is Git and where did it come from?
- Alternatives to Git
- Git Hub Account Setup
- Obtaining Git Installing Git
- Key Terminology
- Staging Vs Un-Staging
- Adding Files to Staging Areas
- Removing Files from Staging Area
- Commit to Local Repository
- Push to Central Repository
- Repository Cloning
- Stashes & Stash Apply
- Branching in Git
- Why We need Branches
- Cloning & Switching Branches

- Fetching Changes (git fetch) Rebasing (git rebase)
- Git Pull
- Git Conflicts
- Branch Merging
- Pull Request
- Merging & Re Basing
- Deleting a Branch

## MAVEN (Build Tool)

- What is Build Tool
- Automated build process
- Maven Introduction & Objectives
- Maven Installation
- Maven Terminology
- Maven Archetypes
- Maven Project Creation
- Maven Dependencies
- Maven Repositories
  - Local Repo
  - Central Repo
  - Remote Repo
- Maven Goals

## Continuous Integration Tool (Jenkins)

- Introduction
- How to achieve Continuous Integration with Jenkins
- JENKINS Server Setup



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- Jenkins Jobs
- How to integrate Jenkins with Maven
- Jenkins dashboard
- Jenkins plugins – how to download and use
- Setup and Running Jenkins Jobs
- Configure Dashboard Configure System Environment Global Properties
- Create and configure a job Run a job manually Triggering a Build Scheduled Build job Manual Build job
- Polling SCM
- Post-Build Actions Archiving Build Results
- Notifications
- Jenkins Plugins
- Jenkins Master Slave Architecture
- Jenkins Pipeline Introduction
- Multi Stage Pipeline
- Jenkins with Maven & Git Integration
- Jenkins with Sonar Integration
- Jenkins with Nexus Integration
- Jenkins with Docker Integration
- Jenkins with Kubernetes Integration

### Sona Type Nexus (Artifactory Repo)

- Introduction
- What is Artifact Repo
- Nexus Introduction
- Nexus Setup
- Snap Short Repository
- Release Repository
- Shared Libs

- Maven with Nexus Repo Integration
- Uploading Build Artifacts

### Configuration Management (ANSIBLE)

- What is Configuration Management
- What is Ansible
- Introduction
- Installing Ansible
- Testing with First Ansible Commands
- Introduction to Play Books
- YML File
- Writing Play Books
- Play Books Execution
- Tags
- Handlers
- Introduction to Roles
- Role Basics
- Creating Role
- Ansible Galaxy
- Ansible Tower

### DOCKER (Containerization Tool)

#### **Introduction**

- What is Docker
- Life without Docker
- Life with Docker
- Installing Docker on Linux
- What is container



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- Docker run command
- Working with images
- Container Life cycle
- Docker File
- Docker Network
- Docker Volumes
- Docker Compose
- Docker Swarm
- Spring Boot App with Docker
- Python App with Docker
- MySQL with Docker

## KUBERNETES

- What is Kubernetes
- Docker Swarm Vs Kubernetes
- Kubernetes Architecture
- Control Plane
- Worker Nodes
- Namespaces
- Pods
- Pod Life cycle
- Services
  - Cluster IP
  - Node Port
  - Load Balancer
- Replication Controller
- Replication Set
- Daemon Set

- Stateful Set
- Deployment
  - Recreate
  - Rolling Update
  - Blue Green Deployment
- Config Map
- Secrets
- Ingress Controller
- HELM Charts

## Monitoring Tools

- Grafana
- Prometheus
- ELK Stack

## INFRASTRUCTURE AS CODE (IAC)

### TERRAFORM

- Introduction to Terraform
- Terraform Vs Ansible
- Terraform installation
- Terraform Architecture
- Terraform Scripts
- Infrastructure Creation
- Credentials Management



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## AWS (AMAZON WEB SERVICES)

### Introduction to Cloud Computing

- What is Cloud Computing?
- Why Cloud?
- Types of Cloud Deployment Models
- Types of Cloud Services
- IaaS Vs. SaaS Vs. PaaS
- Future of Cloud Technologies
- Advantages and Disadvantages of Cloud
- Cloud Providers

### Introduction to Amazon Web Services (AWS)

- What is AWS?
- How to Subscribe for AWS account
- What is the AWS Free Usage Tier
- AWS Certification
- Introduction to the AWS management Console
- List of services given by AWS

### VM Creation in AWS

- Creating Windows VM
- Connecting to Windows VM using RDP
- Creating Linux VM
- Pem file & Ppk File
- Putty & Putty Gen
- MobaXterm
- Connecting to Linux VM using Putty
- Linux Introduction
- Linux Commands

### Elastic Compute Cloud (EC2)

- What is Amazon EC2?
- Features of Amazon EC2
- Managing the EC2 infrastructure
- EC2 Dashboard
- Pricing for Amazon EC2
- EC2 instance Types
- EC2 Families

### AWS Regions and Availability Zones

- Describing Regions
- Availability Zones, and Endpoints

### Amazon Machine Images (AMI)

- Managing AMIs
- Working with Windows, Linux AMIs
- Shared and Paid AMI
- Making an AMI Public

### EC2 Instances

- Instance Type
- Instance life cycle
- Differences between reboot, stop, and terminate
- Building an EC2 windows and linux instances
- To install instance in public and private subnet



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- Security via Key Pairs
- EC2 Class and VPC Security Groups
- Managing Elastic IP's
- Pricing model in EC2 instances
- EC2 with Amazon command line interface

### Amazon Elastic Block Store (EBS)

- Features of Amazon EBS
- Amazon EBS volumes
- Managing EBS volumes
- Increasing the volume size
- Volume Mounting
- Amazon EBS snapshots
- Life Cycle Manager

### Load Balancing (ELB)

- Creating a load balancer
- Internal and external load balancer
- Load balancing protocols
- Security groups for the load balancer
- Health check for the load balancer
- Cross-zone load balancing
- Target Groups
- Microservices Load Balancing

### Auto Scaling

- What is auto scaling?
- Auto scaling components
- Creation of launch configuration
- Configuration of auto scaling policies
- Advantages of using auto scaling with ELB

### Network & Security

- Security Groups
- Inbound Rules
- Outbound Rules
- Elastic IPs
- Placement Groups
- Key Pairs
- Network Interfaces

### Amazon Virtual Private Cloud (VPC)

- What is Amazon VPC?
- VPC Essentials
- Default and Non Default VPC
- VPC Networking and ACL
- Security Groups
- DNS and DHCP Options Sets
- VPC Peering and Endpoints
- Subnet Routing
- VPC Internet Gateway
- Elastic IP addresses and network interfaces
- VPC integration with many other AWS services
- Creating a NAT instance in a VPC
- Configuring a Web application in VPC
- Pricing for Amazon VPC



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## Amazon Route 53

- Route 53 as your DNS service
- Using Traffic Flow
- Route 53 Health Checks
- Configuring DNS Failover
- Latency Based Routing
- Weighted Routing Policies
- Hosting web portal using Route53
- Bucket Policies

## Security & Identity Services

### Identity Access Management (IAM)

- IAM Features
- Getting Started With IAM
- Creation of user, groups, roles
- Managing & Writing policies
- Credential Report
- IAM Console and the Sign-in Page

## Amazon S3

- What is object Storage?
- Data as objects
- Lifecycles of S3
- Managing Buckets
- Versioning
- Pre-Signed URL
- Bucket Policies
- Accessing S3 storage via tools
- Creation of a static website using S3 storage

## Relational Database Service (RDS)

- RDS Essentials
- Launching RDS instance
- Selecting the Engine
- Configuring the Database Engine
- Managing RDS Database
- Setting up automatic backups
- Authorizing access to the DB
- SQL Vs No SQL Databases

## Amazon Cloud Watch

- Amazon CloudWatch Architecture
- List of services monitored by CloudWatch
- Collect and track metrics
- Monitoring memory and disk Metrics
- Monitoring logs, Graphs
- Set Alarms

## Cloud Formation

- Building AWS infrastructure as a code
- Design a template
- Create a Stack
- Create a Template from your Existing Resources
- Introduction to JSON

## Amazon Simple Email Service (SES)

- Simple email service overview
- Configuring Amazon email service
- Amazon SES and Deliverability
- Amazon SES Email-Sending Process



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Email format and Limits of SES

### Amazon Simple Queue Service (SQS)

Simple Queue service overview  
SQS for background work task  
Creating a Queue  
Confirming the Queue exists  
Add a permission to the Queue

### Amazon Simple Notification Service (SNS)

Simple Notification Service overview  
SNS architecture  
Publishers and subscribers  
Creation of a topic  
Subscribing to topic via Email  
Setting notification for EC2 instance changes.

### Elastic Bean Stalk

What is Platform as a Service  
Bean Stack Advantages  
EC2 vs Bean Stack  
EC2 Pricing  
Deploy Web Application using BeanStack

### AWS Lambdas

What is Serverless Computing  
Advantages of Serverless Computing  
What is Lambda  
How to Create Lambda  
How to invoke Lambda  
Java App with Lambdas

### Interview Guide

Resume Preparation  
Frequently Asked Interview Questions  
Interview Tips & Tricks  
Certification Overview



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