# **DevOps Introduction and why DevOps Cloud is in so much Demand and highly Paid Job in Market**

DevOps is that **generic technology** which implements a practice of operations and development engineers participating together in the entire SDLC lifecycle, from design through the development process to production support.

As it is Generic Concept, **every team in IT is adopting this Culture by learning it and that is the reason it is in so much Demand** as IT professional are less in Market. There are companies who are providing **100% hike** on your current salary if you have good hold of Concepts plus Tools with respect to **Projects and not just only Tools.**

**This is Project Based Training mainly for clearing your JOB Interview** and here we will understand every Tools **with respect to Real Life Project,** so that you can get **showcase 4 years of Level 3 experience** in Interview**.**

# **Project Based Course Modules**

## **Major CICD Project 1 –** Deploying Developed Changes to Production server using Jenkins Plugin by Manual Configuration of the Servers.

### Module 1: DevOps Essentials Learning Objectives

* Introduction to DevOps
* DevOps Delivery Pipelines DevOps EcoSystem
* DevOps and SDLC
* Continuous Integration & Continuous Deployment
* Containerisation
* Configuration Management Tools

### **Module 2: AWS for DevOps** (Covered in the entire course Term wrt Projects)

**Project A – Migration of a web Application from On-premise to Cloud - AWS**

* Creating AWS account
* Free tier Eligible services
* Understanding AWS Regions and availability zones
* Understanding Network IP ranges like Public & Private and calculation of CIDR
* VPC (Virtual Private Cloud)
* EC2 (Elastic Computing Cloud)
* ACM (Amazon Certificate Manager)
* S3 (Simple Storage Service)
* EIP (Elastic IP address),
* EBS (Elastic Block Storage)
* Load Balancer
* IAM (Identity Access Management)
* AMI (Amazon Machine Image)

### **Module 3: Overview of Systems Administration - Linux** (Covered in the entire course Term wrt Projects)

**Project B – Writing a Shell Script using Linux Commands and shell scripting basics to install softwares and tools in Linux.**

* What is **Operating** System with Architecture
* Linux Role in DevOps
* Introduction to Linux Basics and Flavours of Linux
* Overview of Linux commands necessary for DevOps (Total 8 Chapters covering most of the commands)
* What is Shell and Shell Scripting
* Understanding Shell Script with Variables, Loops and Conditions and Covering Project 2
* Unix and Linux difference
* Changing file permissions and ownership
* Types of links soft and hard link
* Filter commands
* Simple filter and advance filter commands
* Start and stop services
* Find and kill the process with id and name
* Package installation using RPM and YUM
* Connecting windows and Linux instances from windows desktop and Linux machines (Covered while studying Chef)

### Module 4: Discussing Techstacks Apache, Tomcat

**Project C.1 – Run a Web Application on Single node Architecture**

**Project C.2 – Run a Web Application on Multi Node Architecture with HA and Failover**

**Project C.3 – Run multiple web Application in one Single Node**

**Project C.4 – Secure a Web Application from Hackers and increase SEO**

* Installing Apache, Tomcat and Maven
* Configuring Apache & Tomcat
* Troubleshooting Apache & Tomcat
* Performance tuning Tips for Apache & Tomcat
* Using Virtual Host Concepts
* Securing Apache using SSL and ACM
* Deploying web application in Tomcat Manually

### Module 5: Build Tool – Maven

**Project D.1 – Creating a Project and build a jar file**

**Project D.2 – Creating a Web Application Java Project and Deploy it to Tomcat Server using Maven**

* Installation and Configuration
* Build Pre-requisites & Creating Builds
* Understanding Maven Life Cycles and its components
* Maven Repository and POM Examples
* Maven Dependencies & Plugins
* Maven Project Creation & Structure
* Maven Deployment

### Module 6: Source Control Tool – Git

**Project E.1 – Merging code from develop to master branch**

**Project E.2 – Restore deleted commits**

**Project E.2 – Pushing code to Remote code repo**

* SVN (CVCS) vs GIT (DVCS)
* Introduction of Version Control Systems. GIT Workflow
* Important GIT Commands Setup and Configuration
* Setup and Configuration Creating Repositories
* Gitignore
* Understanding Git Branch & Git Remote
* Create and Configure Users
* Git Remote commands

### Module 7: Jenkins

**Project F.1 – Configure Jenkin job to auto deploy if git repo is committed with new code**

**Project F.2 – How to Change Home Directory and Port**

**Project F.3 – Disable Multiple Jenkins jobs from backend**

* Download and Install Jenkins
* Configuring and Managing Jenkins
* Create Jobs
* Download the Jenkins plugin
* Build a Job
* How to change the Home Directory, Port and thread
* Jenkins CLI
* Unlock Super accounts

## **Major CICD Project 2 –** Deploying Developed Changes to Production servers using Chef.

### **Module 8: Chef**

* What is Configuration management
* What is Chef and Chef Architecture
* Ruby and Chef Basics
* Recipes and Cookbooks
* Create Workstation
* Registration of Chef Nodes with the Chef Server - Bootstrapping
* Create a cookbook and create a recipe for the cookbook and test in your workstation – local nodes
* Upload Cookbook and add the RUN list of the node
* Run the chef-client in webserver1 and then put it in CRON
* Create a template folder in the Workstation server
* RUN the Recipe locally
* Run remotely from workstation directly
* Project

## **Major CICD Project 3 –** Deploying Developed Changes to Production servers using Ansible.

### **Module 9: Ansible**

* What is Ansible?
* Ansible Architecture
* Advantages of Ansible
* Install Ansible
* Validate
* Inventory File
* Configuration of Linux Server
* Ansible Ad-hoc commands
* YAML – Yet Another Markup Lang
* Ansible Playbook
* Ansible Roles
* Project

## **Major CICD Project 4 –** Deploying Developed Changes to Production servers using on Docker.

## **Major CICD Project 5 –** Docker Project - Auto Deploy without restart of Tomcat

### **Module 10: Docker**

* Problems Before Docker
* After Docker
* Docker Architecture
* Install Docker
* Docker Images and Pull
* Run Docker Images and check docker process
* Docker start/stop/attach/exec/inspect/detach
* Docker Port and Volume Mapping
* Dockerfile
* Docker Compose
* Project 4 & 5

## **Major CICD Project 6 –** Deploying Developed Changes to Production servers using on Docker Swarm.

## **Major CICD Project 7 –** Deploying Developed Changes to Production servers using on Docker Swarm using Ansible.

### **Module 11: Docker Swarm**

* Problems Before Docker Swarm
* What is Docker Swarm
* Docker Swarm Advantages
* Configure Docker Swarm
* Node Management
* How to Convert Worker Node as Manager Node
* Docker service creation & Management
* Service Scale Up and Down
* Deploy a stack to a swarm
* Set up a Docker registry
* Create the example application
* Test the app with Compose
* Push the generated image to the registry
* Deploy the stack to the swarm
* Project 6 & 7

## **Major CICD Project 8 –** Creating Kubernetes Cluster using Kubeadm

## **Major CICD Project 9 –** Creating Kubernetes Cluster using Kops in AWS

### **Module 12: KUBERNETES**

* Introduction
* Why and what is Kubernetes
* Kubernetes Objects
* Kubernetes Architecture
* Pods
* Service
* Volume
* Create a Cluster using Kubeadm, Minikube
* Using kubectl to Create a Deployment
* Using a Service to Expose Your App
* Scale Your App
* Kops ON AWS
* Using kubeadm to Create a Cluster