DEVOPS WITH AZURE

This course is aimed at teaching Azure Cloud Administration and DevOps Toolchain. This course gives theattendees the right theoretical and practical knowledge to prepare for a career switch or start acareer as DevOps/SRE Engineer. This course includes in-depth insights into Infrastructure as a Service [IaaS] on Azure Cloud and various technologies open-source tools such as Git, Jenkins, Maven, Nexus, SonarQube, Terraform, Ansible, Docker and Kubernetes. As there are a wide range of topics covered, attendees will need to rigorouslypractice and expand the knowledge apart from what is taught in this course to be ready for aDevOps with Cloud role.

COURSE AGENDA

DEVOPS OVERVIEW:

- **Introduction to DevOps**
- **Overview of DevOps Tools**
- **Legacy system before DevOps**
- **DevOps Lifecycle**
- **Waterfall Model**
- **Agile Model**

OPERATING SYSTEM & SHELL SCRIPT:

- **Datacenter Overview**
- **Linux Installation**
    - **Physical Machine**
    - **Virtual Machine**
    - **Cloud Services**
    - **Basic Requirements of installation**
- **Basic Commands**
- **User Management**
    - **Types of Users in Linux**
    - **Creating and deleting Users and Groups**
    - **Modifying Users profile**
    - **Adding Users into the Groups**
    - **Important system files related to User & Group administration**
    - **The Privileges of Root**
    - **Delegating Root Privileges with Sudo**
- **Package Management**

- Description of a Repository
- Difference between RPM and YUM
- Configuration of YUM server
- Installing and deleting software packages
- Querying and updating software packages
- **Backup and Recovery**
  - Introduction to various types of backup media
  - Backup and restoring using tar commands
- **File Permissions**
  - Importance of Permissions
  - Types of Permissions
  - User level Permissions
  - Group level Permissions
  - Setting Access Level Permissions on Users & Groups
- **SSH & SCP**
  - SSH Introduction
  - Installation and Configuration
  - Different ways to login using SSH
  - SCP file Transfer
  - Different ways to Copy files
- **Scripting Introduction**
  - Shell Basics Fundamentals
  - Searching and Replacing Techniques in files and Folders using grep,find sed,awk etc.
  - Bash Shell Syntax Overview
  - Using Variables and Loops
  - Automation techniques on Manual process

CONTINUOUS INTEGRATION:

GIT - Version Control

- **Introduction to GIT**
- **Types of Version Control**
- **GIT Architecture**
- **GIT Setup**
- **Local and Remote Repositories**
- **GIT and GIT-HUB integration**
- **GIT-HUB Activities**
- **Web-hooks and Pull Request**
- **GIT Basics and Advanced Commands**
- **GIT Branching and Merging Strategies**

- **GIT Real Time Scenarios**

MAVEN – Build Tool

- **Introduction with Maven**
- **Types of Build tools**
- **Maven Phases**
- **Installation of Maven**
- **Maven Configuration**
- **jar/war project structure**
- **Creating Projects from Scratch**
- **Working on Existing Projects**

NEXUS - Artifactory Management

- **Introduction to Nexus**
- **Installation and Configuration**
- **Repository Management**
- **Integration with Maven and Jenkins**
- **Deploying Artifacts from Jenkins**
- **Deploying Artifacts from Maven Command line**

SonarQube

- **Introduction to SonarQube**
- **Installation and Configuration**
- **Understanding of Static code Analysis,PMD, Check style**
- **Generating Token**
- **Walkthrough Administration tasks**
- **Integration with Maven and Jenkins**
- **Running Sonarfrom Maven and Jenkins**
- **Explanation about sonar properties**

Jenkins (UI) - Continuous Integration Tool

- Introduction to Jenkins
- Jenkins Installation
- User Profile
- User Management
- Plugins Management
- Tools Installation and Configuration
- Job Creation and Builds Setup
- Master – Slave Setup
- Distributed Builds
- Build & Delivery PipelineSetup
- Parameterized Builds
- Web-hooks Integration
- Scheduling Daily and Nightly Builds
- Troubleshooting Jenkins
- Integration with GIT-Hub, Maven,Tomcat, Nexus,Ansible etc.

CONTINUOUS DELIVERY

ANSIBLE - Configuration Management Tool

- Introduction to Ansible
- Types of Configuration Management tools
  - Ansible, Chef, Puppet
- Ansible Setup
  - Installation and Configuration
  - Ansible installation Repo
  - Different ways to install Ansible
- SSH Configuration and Root Privileges
  - SSH Key Generate
  - Password less Connection Setup
  - Providing Ansible user Sudo Privileges
  - Understanding Sudo Configuration
- Inventory Management
  - Default Inventory
  - Inventory Structure and Hierarchy
- Implementing Playbooks

- **Basic Playbook Structure**
- **Running Playbook**
- **Modules in Ansible**
  - **Setup**
  - **Command**
  - **Shell**
  - **User**
  - **File**
  - **Copy**
  - **Yum**
  - **Service**
  - **Debug**
- **Running Ad-hoc Commands using Modules**
- **Managing Multiple Tasks in Playbook**
  - **Tags**
  - **Registers**
  - **Handlers**
- **Managing Variables in Playbooks**
  - **Declaring Variables**
  - **Accessing Variables**
- **Ansible Roles**
- **Ansible Templates**
  - **Creation of Jinja2 Templates**
  - **Managing Variables for Templates**
- **Ansible Tips and Tricks**

TOMCAT WEB SERVER

- **Installation and Configuration**
- **Tomcat Manager**
- **Application Management**
- **App Deployment Methods**
- **Troubleshooting web application failures**

Docker and Kubernetes:

Docker:

- **Docker Introduction and Overview**
- **Docker Basics syntax and Advanced Commands**
- **Docker Installation and Configuration**
- **Docker Images**
- **Docker Containers**
- **Dockerfile Instructions and Dockerfile Creation**
- **Dockerhub Registries**
- **Docker Volumes**
- **Integration with Jenkins**

Kubernetes:

- **Introduction to Kubernetes**
- **Kubernetes Architecture**
- **Components of Kubernetes**
  - **API Server**
  - **ETCD**
  - **Scheduler**
  - **Controller**
  - **Container Runtime**
  - **Kubelet**
  - **Kubectl**
  - **Kubeadm**
- **POD's**
- **Replica Sets**
- **Deployments**
- **Deployment Strategies**
- **Services**
- **Kubernetes yamls**
- **Logging**
- **Volumes**
- **Namespaces**
- **Kubernetes Installation and Configuration**

- **Simple application Deployment**

Terraform:

- **Introduction to Infrastructure as Code.**
- **Terraform - Installation and configuration.**
- **Create and destroy infrastructure: Provider, Resources, Variables, Outputs.**
- **Multiple instances of resources: Count**

PROJECT:

- **Simple Web Application using CI/CD with no Manual Intervention.**

Cloud Engineering – AZURE

- **Introduction to Azure Cloud Computing**
- **Explanation about Global Infrastructure**
- **Azure Networking**
  - **Virtual Network**
  - **Subnets**
  - **Virtual Network NAT**
  - **Defined tables**
  - **Network Security Group**
  - **Static IP Address**
- **Azure Compute**
  - **Azure Virtual Machines creation**
  - **Managed disks**
  - **Snapshots**
  - **ARM**
- **Azure Load Balancers**
  - **Application Gateway**
  - **Load Balancer**
- **Azure Virtual Machine scale set & App service Auto scale**
- **Azure Identities and Governance**
  - **IAM users**
  - **IAM groups**
  - **IAM roles and policies**

- Azure Storage
  - Blob Storage
  - File Storage
- Azure DNS
  - Domain Name space Registration
  - Hosting Website
  - DNS Records

Interview

- Resume Preparation
- Interview Realtime Scenarios
- Interview Questions
- Self-Introduction preparation
- Technical Rounds preparation
- HR Round Salary Negotiation techniques
- Grooming for moving from non-technical to technical Background
- Grooming on Behavioral Skills and Mind Set Change

Additional sharing with Students:

- Running Notes
- Diagrams
- Documentations
- Recorded Videos
- Scenario based Notes
- Interview Preparation Notes
- Fresher and Experience reference Resume