

DevOps with AWS



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DevOps is the union of people, process and products to enable the continuous delivery of value to end users. It aims to create a culture and environment where building, testing, and releasing software can happen rapidly, frequently, and more reliably, so you can innovate like a startup and scale for the enterprise.

1) Introduction to DevOps

- What is DEVOPS?
- History of DEVOPS?
- DEVOPS definition
- DEVOPS Culture
- DEVOPS Main Objectives
- DEVOPS and Software Development Life Cycle
- Waterfall Model
- Agail Model
- CICD Process

2) CLOUD COMPUTING

- What is Cloud?
- Evolution of Cloud Computing
- IAAS (Infrastructure as a Service)
- SAAS (Software as a Service)
- PAAS (platform as a Service)
- Private, Public and Hybrid Cloud
- Public Clouds
- Amazon Web Services
- Microsoft Azure
- Google Cloud Service

3) WEB SERVER & APPLICATION SERVER

- Apache Web Server
- Nginx Server Configuration
- Web Server Installation & Configuration
- Apache Tomcat Server
- Tomcat Server Installation & Configuration
- Manual and Automated Application deployment

DevOps - AWS

- Ports configuration
- MySQL & Maria DB Server Installation
- Application Deployments

4)HA Proxy (High Availability Proxy)

- HA Proxy Installation
- HA Proxy Cofiguration(haproxy .cfg)
- Backend Server & Ports
- Load Balancing Algorithm
- Roundrobin
- Leastconn
- Multiple HA Proxy Configuration

5)VERSION CONTROL – GIT

- version Control System
- Centralized and Distributed System
- Differences between SVN & GIT
- GIT
- GIT Features
- 3-Tree Architecture
- GIT – Clone / Commit / Push
- GIT Hub Projects
- GIT Stash, Reset, Checkout
- GIT Clone, Fetch, Pull
- GIT Branch Management
- GIT Hard & Soft reset

6)BUILD TOOLS

- Java Compiler
- Difference between ANT & MAVEN
- Configure Build.xml

MAVEN

- Maven Installation
- Maven Build requirements
- Maven POM Builds (pom.xml)
- Maven Build Life Cycle
- Maven Local Repository (.m2)
- Maven Global Repository
- Group ID, Artifact ID, Snapshot
- Maven Dependencies
- Maven Plugins

7)GIT Lab

- GIT Lab Installation
- GIT Lab Configuration
- Managing Projects in GIT Lab
- Creating Private Repository
- Repository Maintenance
- Set up key for Repository
- Deleting Repository

8)NEXUS

- Sonatype nexus download
- Nexus Configuration
- Configure settings.xml & Releases and Snapshots
- Repository Maintenance
- Nexus user management

9)CONTINUOUS INTEGRATION- JENKINS

- Introduction to Jenkins
- Continuous Integration with Jenkins
- Configure Jenkins
- Jenkins Management
- Scheduling build Jobs
- POLL SCM
- Build Periodically
- Maven Build Script
- Support for the GIT version control System
- Different Types of Jenkins Jobs
- Jenkins Build Pipe Line
 - Parent and child Builds
 - Sequential Builds
- Jenkins master and Slave node Configuration
- Jenkins Workspace management
- Securing Jenkins
 - Authentication
 - Authorization
 - Confidentiality
 - Creating users
- Jenkins Plugins
 - Installing Jenkins plugins
 - SCM plugin
 - Build and test

10)NAGIOS

- Introduction to Nagios Core
- Installation of Nagios Server
- Configuration of Nagios Server & Agent
- NRPE (Nagios Remote Plugin Executer)
- Configuration of Nagios.cfg and Contacts.cfg
- Monitoring hosts
- Monitoring Services
- Monitoring Server Infrastructure

11)TERRAFORM

- Terraform Basic
- Introduction to Terraform
- Syntax and Interpolation
- Terraform CLI - Console.
- Building AWS Infrastructure - Getting Started
- Building AWS Infrastructure – EC2 Instance

12)ANSIBLE

- Introduction to Ansible
- Ansible Server Configuration
- ansible.cfg configuration
- Infrastructure Management
- SSH Connection in Ansible Master
- YAML Scripts
- YAML Data types
- Host Inventory
- Hosts and Groups
- Host Variables
- Group Variables
- Host and Group Specific Data
- Ad-hoc Commands
- Playbooks
- Variables
- Conditionals
- Loops
- Blocks
- Handlers
- Templates
- Modules
- Core Modules
- Extra Modules
- Ansible Roles
- Ansible Role Directory Structure

13) DOCKER

- How to get Docker Image?
- What is Docker Image
- Docker Installation
- Working with Docker Containers
- What is Container
- Docker Engine
- Creating Containers with an Image
- Working with Images
- Docker Command Line Interphase
- Docker Compose
- Docker Hub
- Docker Trusted Registry
- Docker swarm
- Docker attach
- Docker File & Commands

14) KUBERNETES

- Kubernetes intro and Architecture
- Kubernetes Setup
- Running Docker containers on Kubernetes
- Kubectl
- What is Pod, service, Controller and Deployment in Kubernetes
- Difference between Docker Swarm and Kubernetes Orchestration
- Service running on manage node and minions
- Deploying the application through PODs
- Building multiple pods with high availability

15) PACKER

- What is Packer?
- Packer Installation
- Baking a website image for EC2
- Provisioning with a configuration management tool
- Debugging
- Building hardened images

16) VAGRANT

- Introduction to Vagrant
- Setting Up Vagrant
- Virtual Box Installation
- Vagrant Machines
- Vagrant File
- Vagrant Boxes

- Environment Management
- Networking Basics
- Private Network
- Public Network
- Network Adopters
- Modules
- Core Modules
- Extra Modules
- Ansible Roles
- Ansible Role Directory Structure

17)CHEF

- Introduction to Chef
- Installation of Chef Master
- Installation of Chef DK and Nodes
- Configuration of Chef Master
- Configuration of Chef DK and Master
- Knife utility
- Chef Repository
- Workstation setup
- How to configure knife
- Workstation Installation
- Connection between knife and Master
- Organization Setup
- Create an Organization
- Add User & Node to an Organization
- Node Setup
- Create a Server & add to Organization
- Cookbooks creation
- Checks node details using knife
- Node Objects
- How to add Run list to Nodes
- Check node details
- Managing Multiple Nodes
- Roles and Environments
- Chef Data Bags
- Chef Market Place

Linux Admin Commands

- Redhat/Ubuntu Linux Installation
- Hierarchical File System
- Basic Commands
- Create Files and Directories
- File Management

- File Links
- Hard Link
- Soft Link
- User Administration
- Group Administration
- File Permissions (chmod)
- File Search
- Find
- which
- what is
- Basic and Advanced File Permissions
- File Ownership (chown, chgrp)
- Access Control List(ACLs)
- setfacl
- getfacl
- Sudo Permissions (suders)
- Job Scheduling (Crontab)
- Memory Management (df,free,du)
- Process Management
- Linux Package Installation
- rpm
- yum
- apt
- apt-get
- Install and Configure Web Server (Apache)
- Install and Configure App Server (Tomcat)
- Install and Configure DB (MySQL / MariaDB)
- File Compression and Extraction
- tar
- GunZip
- BunZip
- unzip
- Server Connections
- Password method
- SSH Keys (Secure Shell)
- SSL (Secure Socket Layer)
- Secure Copy (scp)
- Linux Filters
- grep
- sed (Stream Editor)
- awk (Field Processor)
- Linux Head, Tail, More commands

- Service Management
- Service
- Systemctl
- Linux Editors (Vi/VM)
- Linux User Communications
- write
- wall
- mail (send / receive mails)

18)SCRIPTING

- Shell Scripting
- DSL (Declarative Domain Specific Language)
- Python Scripting Overview
- Ruby Scripting
- Introduction
- Variables
- Flow Controls
- Loops
- Functions
- Lists
- Manipulating Strings
- Reading and Writing Files
- Positional Parameters

Project-1:

#JENKINS CI/CD

Project-2

ANSIBLE

Project-3

DOCKER

AMAZON WEB SERVICES

1.Cloud Computing

- What is cloud?
- Evolution of cloud computing
- IAAS (Infrastructure as a Services)
- SAAS (Software as a Service)
- PAAS (platform as a Service0
- Private, Public, and Hybrid Cloud
- Public Clouds
- Amazon Web services
- Microsoft azure
- Google Cloud Services

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2.AWS (Amazon Web Services)

- Subscription to AWS
- Introduction to the AWS Management Console
- Why AWS Cloud
- EC2 Essentials & Build EC2 Instances
- Security Groups
- Key Pairs (Public Key, Private Keys)

3.Elastic Compute Cloud (EC2) Instances

- Regions and Availability Zones
- Amazon Machine Images (AMI)
- Working with AMIs
- EC2 Reserved Instance Market Place
- EC2 Instance Creation
- Building an Instance
- Different types of Instances
- Security with Key pair
- Different Ips assign to EC2 Instance
- Elastic IP Address
- Login access to the Instance

4. NETWORK&SECURITY

- Security groups
- Elastic Ips
- Placement groups
- Key pairs
- Network interfaces

5.Identity and Access Management (IAM)

- Creation of Users Accounts
- Roles in IAM
- Groups in IAM
- Account Settings
- Creating Permissions for Users
- Deleting Permissions for Users
- Accounting Settings

6.Virtual Private Cloud (VPC)

- Creating a Custom VPC
- Security Groups
- Creating Identity Gate Way (IGW)
- Connecting Instances in the Gateway
- Subnets
- Route Tables
- VPN Components

7. Elastic Load Balancer (ELB)

- What is Elastic Load Balancing
- How Elastic Load Balancing Works
- Creating Load Balancer
- Load Balancing Protocols
- Attach & Detach Subnets
- Adding Instances to Load Balancer

8. Auto Scaling

- What is Auto Scaling
- Auto Scaling Components
- Advantages of Auto Scaling
- Auto Scaling Groups (ASG)
- Attach and Detach EC2 Instances in ASG
- Monitoring Auto Scaling Instances
- Health Checks

9. Simple Storage Services (S3)

- Creating and Deleting Buckets
- Adding Objects to Buckets
- Deleting Objects
- Uses of S3 storage
- Notifications
- Uses of S3 storage

10. Amazon Glacier

- Low-Cost Storage Glacier
- Storage for data backup and archival
- Pricing model for glacier Storage
- Working with Vaults and archives

11. Route 53

- Configuring Amazon Route 53
- Public Hosted Zones
- Private Hosted Zones
- Resource Record Sets
- Managing Health Checks
- Working with Public and Private Hosted Zone

12. Elastic Block Store (EBS)

- EBS Volume Types
- EBS Performances
- Instance Store Volumes
- Creating and Deleting Volumes
- Attach and Detach Volumes
- Mount and Un-mounting volumes

13. Relational Database Services (RDS)

- Data Base Instances
- Data Base Engine
- Creating Data Base
- RDS Limits
- Working with Storage Types

14. Elastic Beanstalk

- Deploy, manage, Scale an application
- Workflow or elastic bean stalk
- Create Environment
- Launch Environment
- Manage Environment
- Creating application Source Bundle
- Modifying the properties of the deployment

15. Amazon Cloud Watch

- Amazon Cloud Watch Architecture
- List of Services monitored by Cloud watch
- Collect and track Metrics
- Monitoring Memory and disk Metrics
- Monitoring logs, Graphs
- Set alarms

16. Cloud Formation

- Building AWS infrastructure as code
- Design a Template
- Create a Stack
- Create a Template from Your Existing resources
- Introduction to JSON

17. Cloud Front

- How Cloud Front delivers content
- Working with Distributions, Objects
- Using HTTPS Connections to access objects
- Saving private content through cloud front

18. Amazon Simple Email Services

- Simple Email Service overview
- Configuring Amazon email Service
- Amazon SES and Deliverability
- Amazon SES Email Sending Process
- Email Format and Limits Of SES

19. Amazon Simple Queue Services

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

20. Amazon Simple Notification Services

- Simple Notification Service Overview
- SNS architecture
- Publishers and Subscribers
- Creation Of a Topic
- Subscribing to Topic Via Email
- Setting notification for EC2 instance changes

