

AWS with DevOps + Azure



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DevOps with AWS and Linux

Module 01: Introduction to DevOps

- What is DevOps?
- Software Development Life Cycle (SDLC)
- SDLC Models
- DevOps definition
- DevOps Main Objectives

Module 02: HA-Proxy (High Availability Proxy)

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

Module 03: VERSION CONTROL - GIT

- Version Control System
- Centralized and Distributed Systems
- Differences between SVN & GIT
- GIT
 - GIT Hub Remote Repository
- Signup on GIT Hub
- GIT - Clone /Commit / Push
 - GIT Rebase & Merge
- GIT Stash, Reset, Checkout
- GIT Clone, Fetch, Pull
- GIT BranchStrategy
- GIT BranchManagement
- GIT Hard &Soft reset
- Ignoring Files from GIT
- Creating the GIT Hub repository using SSH, HTTP's from local GIT

Module 04: 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

Module 05: 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
 - Creating .jar, .war using Maven

Module 06: NEXUS

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

Module 07: CI/CD- JENKINS

- Introduction to Jenkins
- Continuous Integration with Jenkins
- Configure Jenkins
- Jenkins Management
- Scheduling buildJobs:
 - POLL SCM
 - Build Periodically
- Maven BuildScripts
- Support for the GIT version controlSystem
- Different types of JenkinsJobs
- Jenkins Build Pipe Line
- Parent and Child Builds
 - Sequential Builds
- Jenkins Master& Slave Node Configuration
- Jenkins Workspace Management
- Securing Jenkins
 - Authentication
 - Authorization (Matrix Based and Project Based)
 - Confidentiality
 - Creating Users
- Jenkins Plugins
 - Installing JenkinsPlugins
 - SCM plugin
 - Build and test
- Building delivery Pipe line

Module 08: NAGIOS

- Introduction to Nagios Core
- Installation of Nagios Server
- Configuration of Nagios Server& Agent

NRPE (NagiosRemote Plugin Executer)
Configuration of Nagios.cfg and Contacts.cfg
Monitoring Hosts
Monitoring Services
Monitoring ServerInfrastructure

Module 09: TERRAFORM

TerraformBasic
Introduction to Terraform
Syntax and Interpolation
Terraform CLI – Console (Load balancing, S3, Dynamo DB)
Building AWS Infrastructure - Getting Started
Building AWS Infrastructure —EC2 Instance

Module 10: ANSIBLE

Introductionto 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 SpecificData

Ad-hoc Commands
Playbooks
Importing Playbooks

- Variables
 - Conditionals

- Blocks
- Handlers
- Templates
- Modules
 - Core Modules
 - Extra Modules
- Ansible Roles
- Install and use Jenkins roles from ansible galaxy
- Ansible Role Directory Structure

Module 11: DOCKER

- How to get Docker Image?
- What is DockerImage?
- Docker Installation
- Working with Docker Containers
 - What is Container?
 - Docker Engine
 - Creating Containers with an Image
 - Working with Images
- Docker CommandLine Interface
- Docker Compose
- Use Docker Compose to create php, wordpress, mysql
- Docker Hub
- Docker TrustedRegistry
- Docker swarm
- Docker attach
- Docker File & Commands
- How to Publish Image on Docker Hub
- Introduction to Docker Networking
- Network Types in docker technology
- Docker Container Networking

Module 12: KUBERNETES

Kubernetesintro and Architecture

Kubernetes Setup

Running Docker containers on Kubernetes

Kubectl

What is Pod,Service, Controller and Deployment in Kubernetes

Difference betweenDocker Swarm and Kubernetes Orchestration

Service runningon manage node and minions

Deploying the application throughPODs

Building multiplepods with high availability

Configmaps

- Kubernetes – ConfigMap

- Kubernetes - Create Config Map From Files

- Kubernetes - Create ConfigMap From YAML File

- Kubernetes - Config Map From Directory

- Kubernetes - Injecting ConfigMap as Files

- Kubernetes - Injecting ConfigMap in Pods

Module 13: Linux Admin Commands

Hierarchical File System

Basic Commands

Create Files and Directories

File Permissions (chmod)

File Ownership (chown, chgrp)

User &Group creation

File Links

File Search

- find

- which

- what is

Access ControlList (ACLs)

- setfacl

- getfacl

- Sudo Permissions (suders)
- Job Scheduling (Crontab)
- Memory Management (df, free, du)
- Process Management (ps, top, kill,pkill)
- Linux PackageInstallation (yum, rpm, 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, Zip, UnZip)
- Server Connections
 - password method
 - SSH Keys (Secure Shell)
 - SSL (SecureSocket Layer)
- Secure Copy (scp)
- Linux Filters(grep, sed, awk)
 - Service &systemctl Commands
- Linux Editors(Vi/Vim)

Module 14: SCRIPTING

- Shell Scripting
 - Introduction
 - Variables
 - Flow Controls
 - Loops
 - Functions
 - Lists
 - Manipulating
 - Strings
 - Reading and Writing Files
 - Positional Parameters

Amazon Web Services (AWS)

Module 01: Cloud Computing

What is Cloud?
Evolution of Cloud Computing
Cloud Service Models (IaaS, PaaS, SaaS)
Cloud Deployment Model (Public, Private & Hybrid)
Public Cloud Providers (AWS, MS Azure, GCP)
Virtualization – An essential in cloud
Virtualization in Cloud model
Different types of virtualization
Hypervisor – Benefits

Module 02: AWS (Amazon Web Services)

Introduction to AWS
Global Infrastructure
Free tier overview & limitations
AWS Account creation
Create Billing Alarm for unnecessary billing
Create IAM User
Assign Multi Factor Authentication to user
Login into AWS Management Console
Describe the features of Amazon Compute, Storage, Network, Database Services

Module 03: Elastic Compute Cloud (EC2) Instances

- Instance Types
- Pricing options
- Working with AMIs
- EC2 Instance Creation
 - Windows & Linux instances
 - Login access to the Instance
- Security and Placement Groups
- Elastic IPs
- Key Pairs

Module 04: Elastic Block Store (EBS)

- EBS Volume Types
- Instance Store Volumes
- Optimizing Disk Performance
- Creating and Deleting Volumes
- Attach and Detach Volumes
- Creating Snapshot
- Creating Custom - AMI
- Mount and Un-mounting Volumes

Module 05: 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
- Creating programmatic access and management console access for users

Module 06: Virtual Private Cloud (VPC)

- VPC Advantages and understanding IP addressing CIDR
- Creating a Custom VPC
- Security Groups
- Creating IdentityGate Way (IGW)
- Connecting Instances in the Gateway
- Subnets
- Route Tables
- VPC Peering
- NAT Gateway

Module 07: Elastic Load Balancer (ELB)

What is ElasticLoad Balancing?
How ElasticLoad Balancing Works
Types of ELB
Target Groups
Creating Load Balancer

Module 08: Auto Scaling

What is Auto Scaling?
Auto ScalingComponents
Advantages of Auto Scaling
Auto ScalingGroups (ASG)
Launch Templates
Create Auto Scaling Group

Module 09: Lambda

Serverless Introduction
Lambda Synchronous Invocations
Lambda Permissions - IAM Roles and Resource Policies
Lambda Versions and Aliases

Module 10: Simple Storage Services (S3)

Classes & Life Cycle
Creating and Deleting Buckets
Uploading & Deleting Objects
S3 Object Versioning S3 Lifecycle Policies
S3 Access Logs
S3 Replication
Hosting Static Website using S3

Module 11: Cloud Front

- Describing cloud front
- Creating a cloud front distribution

Hosting a website of cloud front distribution
Implementing global restrictions
Configuring origins and behaviors

Module 12: Elastic File System(EFS)

Creating & Deleting EFS
Attaching & Detaching EFS to Instance

Module 13: Route 53

DNS Records overview
Describe Hosted zones and Domain name
Understanding how to create hosted zones
Routing Policies
Hosting sampleWebsite and configuring Policies.

Module 14: Relational DatabaseServices (RDS)

Data Base Instances
Data Base Engine
Launching a RDS Instances (MySQL, MSSQL &Aurora)
Configuring backups
Multi-AZ & Read Replicasfor RDS instances

Module 15: Dynamo DB

Creating a dynamo dB
Adding data manually
Learn about strong and eventual consistency
Calculating Read-write consistency
Configuring alarms

Module 16: Elastic Beanstalk

- Deploy, manage, scale an application
- Workflow of Elastic Beanstalk
- Create Application
- Launch Environment
- Manage Environment
- Creating application source bundle
- Modifying the properties of the deployment

Module 17: AWS Monitoring & Notification services

- Creating Cloud Watch Dashboard for EC2 Metrics
- Amazon Cloud Watch –Create Topics & Set Alarms
- CloudTrail
- Simple Notification Services
- Simple QueueService
- Simple EmailService



Additional Curriculum

Module 01: Cloud Computing & Microsoft Azure Fundamentals

- Introduction to Azure
- Different segments SaaS, PaaS, and IaaS
- Azure Regions and Data Centers
- Understanding of Microsoft Azure portal
- Introduction to all Azure services
- Windows Azure Subscription
- Setting Up a Trial Subscription

Lab:

- Installation of Azure cmdlets on windows PowerShell

Module 02: Azure Virtual Machines

- Operating System Images Supported
- Virtual Machine instances
- Azure VM types and Pricing
- Types of Provisioning
- Disks & Images
- Virtual Machine management, automation and scripting
- Cloud Service and Resource Model Deployment
- Setting up VM in Availability set using Load Balanced Endpoint
- VM Availability using Availability Sets

Lab:

- Creation of VMs with portal, ARM Templates and PowerShell
- Deploying two VMs in Availability Set and load balancing it.

Module 03: Introduction to Azure Virtual Network and Services

- Types of Azure Virtual Network VNET to VNET, point-to-site and site-to-site, Express Route
- Creating Virtual Networks in Azure
- Azure Subnet and IP ranges
- Endpoints
- Load Balancing Endpoints
- Understanding Network ACL and Network Security Group Setting up Private and Public IP
- Introduction to Azure Traffic Manager
- Available options in Azure Traffic Manager
- Understanding of Deployment Traffic Manager

Lab:

- Create a VET-to-VNET virtual networks
- Create a point-to-site virtual network.
- Create a site-to-site virtual network.
- Load Balancing using Azure Traffic Manager.

Module 04: Microsoft Azure Storage

- Overview of Microsoft Azure Storage
- Storage Account
- Storage Account Replication Techniques
- Protocols and Consistency Model
- Type of Azure Storage Account
- Storage Services Blob, Table, queue, File
- Azure CDN Services, Managed and Unmanaged Disk

Lab:

- Provisioning Azure Storage services
- Create an Azure Storage Account
- Deploying Blob Storage
- Deploying Table Storage
- Deploying Queue Storage
- Deploying File Storage

Module 05: Manage Azure Active Directory (AD)

- Azure Active Directory Overview
- Self-Service Password Reset
- Azure AD Identity Protection
- Integrating SaaS Applications with Azure AD
- Azure Domains and Tenants
- Azure Users and Groups
- Azure Roles
- Managing Devices

Lab:

- Implement Azure Active Directory.
- Configure Self-Service Password Reset
- Implement Azure AD Identity Protection
- Configure integrated SaaS applications
- Configure domains and tenants, users and groups
- Manage roles and devices
- Migration of OnPrem AD Users to Azure AD
- Configure MFA

Module 06: Manage App Service Plans

- App Service Overview
- App Service monitoring overview
- Web Role and Worker Role

Lab:

- App Service Plan
- Deploy Web App
- App Service Diagnostics

Module 07: Azure SQL Database

- Understanding Database as a service
- Difference between SQL server and Azure SQL
- Advantage and Benefits of SQL database Scaling SQL database
- Backup and Performance Options Security in Azure
- SQL Pricing Model
- Azure SQL Data Warehouse

Lab:

- Migrate a database from on premise to SQL Azure

Module 08: Azure Backup and Site Recovery

- Azure Vaults
- Configuring backups
- Data Protection Manager
- Azure Site Recovery and Disaster Recovery
- On Premise Migration using Recovery Services

Lab:

- Configure a Recovery Service Vault and backup files from on premise to cloud
- Site Recovery of a VM
- Back up of a VM

Module 09: Azure ARM Template

- Introduction to Azure ARM Templates and its content

Lab:

- Deploying ARM Template with PowerShell

Module 10: Configure Server less Computing

- Server less Computing, Functions and Logic Apps

Lab:

- Logic Apps
- Creating a Function App

Module 11: Manage App Services

- App Settings
- Deployment Slots

Lab:

- App Settings

Module 12: Manage App Services

- Introduction to Azure Data Factory
- Core Concepts – Data sets, Pipelines and activities, Scheduling and execution
- Run Samples – Customer Profiling
- Moving Data, Transformation and Analysis
- Monitoring and managing the Pipelines
- Common Use Cases and Samples

Lab:

- Orchestrating the On-Prem data from SQL DB to Azure DB by creating a data pipeline using Blob storage.

Module 13: Azure Container Service

- Introduction to Azure Container Service
- Overview of Containers
- Introduction to Azure Container Registry
- Azure Kubernetes Services
- Introduction

Lab:

- Deploy an Azure container registry
- Build a container image using Azure Container Registry Tasks
- Deploy the container to an Azure container instance
- Replicate the container image to multiple Azure datacenters
- Run Docker containers with Azure Container Instance
- Run Azure Container Instances
- Deploying AKS in Azure

Module 14: Azure Cosmos DB

- Introduction
- What is a request unit?
- What is Partition Strategy and Key?
- Query types

Lab:

- Create an Azure Cosmos DB account in the Azure portal
- Create a database and collection in Azure Cosmos DB
- Run queries in the Azure portal