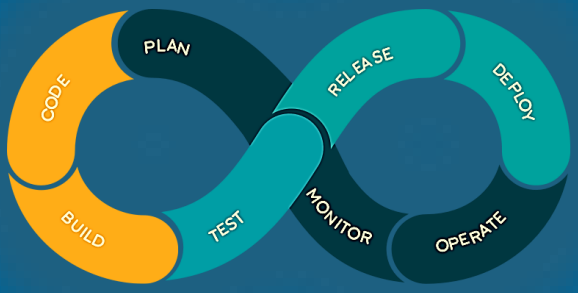


DevOps Training Course

Syllabus

LINUX: BASICS & ADMIN

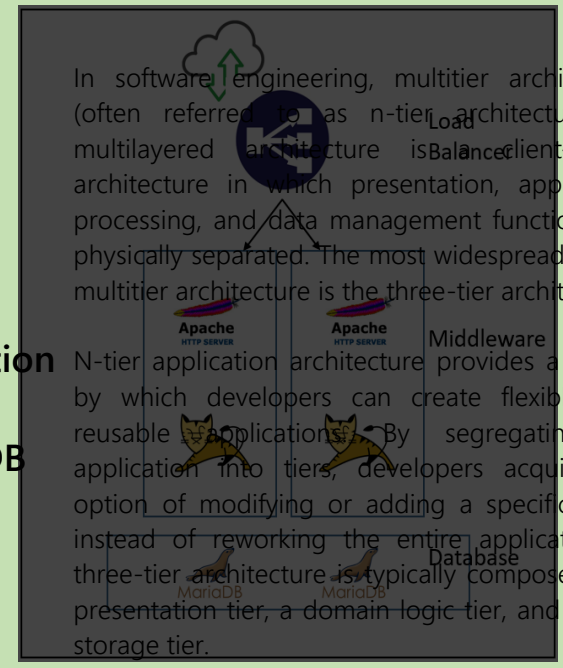
- Linux OS Introduction
- Importance of Linux in DevOps
- Fetching OS and Hardware information
- Linux Basic Command Utilities
- File and Directory Management.
- Linux File Editors (VIM)
- Utilities to download software into Linux from Internet
- User Administration
- File permission management
- Package Management
- Service Management

LINUX: NETWORKING

- Introduction to network.
- Introduction to network in Cloud.
- Firewall
- Load Balancer
- Port
- Protocol
- IP Address
- DNS
- DHCP
- Static IP

WEB APPLICATION ARCHITECTURE

- Enterprise 3-tier Application layout
- Haproxy Load balancer.
- Apache Web Server
- Apache Tomcat Server
- MariaDB Server
- MOD_JK Proxy
- Integration of Web Server with Application Server.
- Integration of Application Server with DB Server.
- Best practices of architecture.
- Horizontal scaling vs Vertical scaling.



In software engineering, multitier architecture (often referred to as n-tier architecture) or multilayered architecture is a client–server architecture in which presentation, application processing, and data management functions are physically separated. The most widespread use of multitier architecture is the three-tier architecture.

N-tier application architecture provides a model by which developers can create flexible and reusable applications. By segregating an application into tiers, developers acquire the option of modifying or adding a specific layer, instead of reworking the entire application. A three-tier architecture is typically composed of a presentation tier, a domain logic tier, and a data storage tier.

CONFIGURATION MANAGEMENT - ANSIBLE

- Introduction
- Ansible and Infrastructure Management
- Ansible Inventory
  - Ungrouped Hosts
  - Grouped Hosts
  - Groups of Groups
- Ansible Server Installation
- Ansible Server Configuration file
  - Update Username
  - Update Keys
  - Update SSH Parameters
  - Update Roles
  - Update Inventory
  - Update MISC parameters
- How Ansible picks the configuration
- Setting up SSH KEYS to and checking connection to remote nodes.
- Ansible Facts.
  - Default facts from nodes
  - Create custom facts on nodes.
  - How to print facts
- Ansible Playbooks
  - 'hosts' parameter
  - 'become' parameter
  - 'gather_facts' parameter
  - 'tasks' parameter
  - 'vars' parameter
  - 'vars_files' parameter
  - 'vars_prompt' parameter
  - 'handlers' parameter
  - 'roles'
- Conditions
  - When
- Loops
  - with_items
- How to store output of one task and use it in another task.
- Variables From
  - vars
  - vars_files
  - vars_prompt
  - vars from inventory hosts
  - vars from inventory groups
  - roles
- Roles
  - Create Role
  - Define Role
  - Write roles
  - Role Dependencies
  - Variables from Roles
  - Variable Precedence.
- MISC
  - Ansible Vault
  - Ansible Pull
  - Ansible Galaxy

List of Modules to be discussed:

- setup, ping, yum, yum_repository, service, copy, get_url, shell, command, set_fact, authorized_key, user, debug, file, find, fetch, hostname, include, include_vars, mail, package, stat, unarchive, gce, ec2, wait_for, wait_for_connection

VERSION CONTROL – GIT

- Version Control System
- Centralized & Distributed Version Control System
- Advantages of Git
- GIT
  - Anatomy of GIT
  - GIT Features
  - 3-Tree Architecture
  - GITHUB Projects
  - GITHUB Management
  - GIT Clone / Commit / Push / Merge
  - GITLAB Installation & Configuration
  - GITLAB Management
  - Introduction to GITLAB-CI

BUILD TOOLS – MAVEN

- Java Compiler
- Maven Life Cycle
- Maven Installation
- Maven build requirements
- Maven POM XML File
- Maven G A V explained
- Add a custom life cycle in Maven
- Integrate Artifact manager to Maven.
- Integrate Maven with Code Analysis tools like SonarQube.
- Integrate Maven with testing code analysis tools , with Selenium
- Integrate Maven with executing shell command for Ad-Hoc requests.

REPOSITORY TOOLS – SONATYPE NEXUS

- What is Aritifact manager
- Artifact manager tools
- Understanding Maven Release and Snapshot functionality.
- Sonatype Nexus Installation
- Nexus with Maven Integration
- Using default repositories
- Create Roles in Nexus
- Create Users to Nexus
- Assign Roles to Nexus Users

CONINOUS INTEGRATION - JENKINS

- Introduction to Jenkins
- Intro to Jenkins-CI
    - Continuous Integration with Jenkins Overview
    - Installation of Jenkins Master and Jenkins Slave.
    - Configure Jenkins
    - Jenkins management
    - Support for the Git version control systems
    - Different types of Jenkins Jobs
    - Setting up a Jenkins job
    - Scheduling build Jobs
    - Maven Build Scripts
    - Securing Jenkins
- Securing Jenkins
    - Authentication
    - Authorization
    - Confidentiality
    - Creating users
- Jenkins Plugin
    - Installing Jenkins Plugins
    - SCM plugin
    - Build and test
    - Analyzers
- Distributed builds with Jenkins
- Best Practices for Jenkins
- Jenkins Pipeline Projects.
- Groovy Scripting Basics.
- Jenkins Blue Ocean Projects.
- Integration of Jenkins with Ansible
- Integration of Jenkins with Chef
- Integration of Jenkins with AWS & Google Cloud

CONFIGURATION MANAGEMENT – CHEF

- Chef fundamentals
  - Chef Syntax and Examples
  - Working with Knife
  - Writing First Chef Recipe
  - Chef and Its Terminology
  - Attributes
  - Metadata
  - Recipes
  - Resources
  - Templates
  - Definitions
  - Recipes
  - Writing recipes
  - Cookbook Dependencies
  - Controlling Impotency
  - Notifications
  - Template Variables
  - Chef-Solo
  - Chef-Server
- Modeling your infrastructure
  - Roles
  - Implementing a role
  - Determining which recipes you need
  - Applying recipes to roles
  - Mapping your roles to nodes
  - Environments.
  - Organizing your configuration data
- Cookbooks
  - Developing Your First Cookbook
  - Writing a Recipe
  - Creating the Index File
  - Changing the Metadata
  - Uploading the Cookbook
  - Running the Cookbook
  - Add an Attribute
  - Add a Resource t the Default Recipe
  - Add the Template File
  - Uploading and Running the Cookbook
  - Using Environments

CONTAINERS - DOCKERS

- What are containers?
- Difference between VM's and Containers
- Hypervisor Vs Docker Engine
- Docker Introduction
- Docker Installation
- Docker Images
- Docker Commands and different options
- Creating own Docker images using commit.
- Creating own images using Dockerfile
- Automating Image creation with DockerHub and Jenkins.
- Limiting Docker Resources.
- Exposing Ports and mapping volume

- Intro to Kubernetes
- Kubernetes Architecture
- Kubernetes Master
- Kubernetes Node
- kubectl
- Pods
- Replication Controllers
- Deployment Groups
- Service & Load Balancers
- Health checks
- Name Spaces
- Volumes
- nodes

OVERVIEW TOOLS

- JIRA
- SonarQube
- Nagios
- ELK Monitoring
- Selenium
- Python Scripting
- Shell Scripting

AWS Course Content

INTRODUCTION TO CLOUD COMPUTING

- Introduction to cloud computing world
- History
- Cloud business models
- Public, Private and Hybrid cloud models
- Advantages of cloud computing

OVERVIEW

- AWS Regions and Availability zones.
- Tools to access services.
- Overview of the console.

AWS EC2(ELASTIC COMPUTE CLOUD)

- Introduction to EC2.
- Pricing models On-demand vs Reserved vs Spot instances.
- Using Amazon Machine Images (AMIs) to create the instances.
- Public vs Private Images.
- Sharing Images to other accounts.
- Logging into instances using key pairs.
- Converting pem files to ppk.
- Volumes and types.
- Using snapshots for backup.
- Increasing the size of the volumes.
- Backup and restore process of the EC2 instances.
- Adding network interfaces.
- Assigning static IPs using Elastic IPs.
- Control access to instances using Security Groups.

ELASTIC LOAD BALANCER

- Introduction to Elastic Load Balancing.
- Creating ELB from Console.
- Attaching instances to ELB.
- Configuring Ports, Protocols and health checks.

CLOUD WATCH

- Introduction to CloudWatch monitoring service.
- Monitoring CPU, Memory and network utilization of different resources.
- Creating notifications.

RELATIONAL DATABASE SERVICE

- Introduction to Managed database.
- Creating RDS instances using AWS console.
- Choosing an RDS engine and version.
- Public vs Private database instances.
- Multi-AZ setup.
- Backup using snapshots and point in restore.
- Parameter Group.
- Options Group.
- Control access to instances using Security Groups.

AUTO SCALING

- Overview.
- Creating launch configuration.
- Creating auto-scaling group.
- Auto-scaling policies.

AWS S3(SIMPLE STORAGE SERVICE)

- Introduction to Simple Storage Server (S3).
- Storage options (default vs reduced redundancy vs Glacier).
- Creating buckets using Console.
- Uploading and downloading data to S3.
- Building static websites using S3.
- Enable version control on S3.
- S3 access policies.

IDENTITY ACCESS MANAGEMENT (IAM)

- Introduction to IAM.
- Access controls using IAM.
- Creating users, groups and roles.
- Assigning policies.
- Inline vs Managed policies.

VIRTUAL PRIVATE CLOUD (VPC)

- Introduction.
- Choosing a network design and CIDR.
- Design a simple network.
- Creating Subnets and setup routing as per the design.
- Using IGW to enable internet access.
- Access controls using Network ACLs. Network ACLs vs Security Groups.
- Creating Private connections from data center to AWS.
- Enabling VPC peering between VPCs.

AWS CODECOMMIT

- Setting Up
- Getting Started
- Product and Service Integrations
- Working with Repositories
- Working with Commits
- Working with Branches
- Working with User Preferences
- Migrate to AWS CodeCommit
- Troubleshooting
- Authentication and Access Control

AWS CODEBUILD

- Getting Started
- Plan a Build
- Run AWS CodeBuild Directly
- Use AWS CodePipeline with AWS CodeBuild
- Use AWS CodeBuild with Jenkins
- Working with Build Projects and Builds

AWS CODEDEPLOY

- Deployments
- Application Specification Files
- Working with the AWS CodeDeploy Agent
- Working with Instances
- Working with Deployment Configurations
- Working with Applications
- Working with Deployment Groups

- Working with Application Revisions
- Working with Deployments
- Authentication and Access Control
- AppSpec File Reference

WHAT IS AWS CODEPIPELINE?

- Concepts
- Product and Service Integrations
- Working with Pipelines
- Working with Actions
- Working with Stage Transitions
- Monitoring Pipelines

USING CLI

- Installing AWSCLI .
- Installing CLI tools using rpm or pip.
- Configuring credentials.
- AWS CLI syntax.
- Creating and managing resource using CLI.