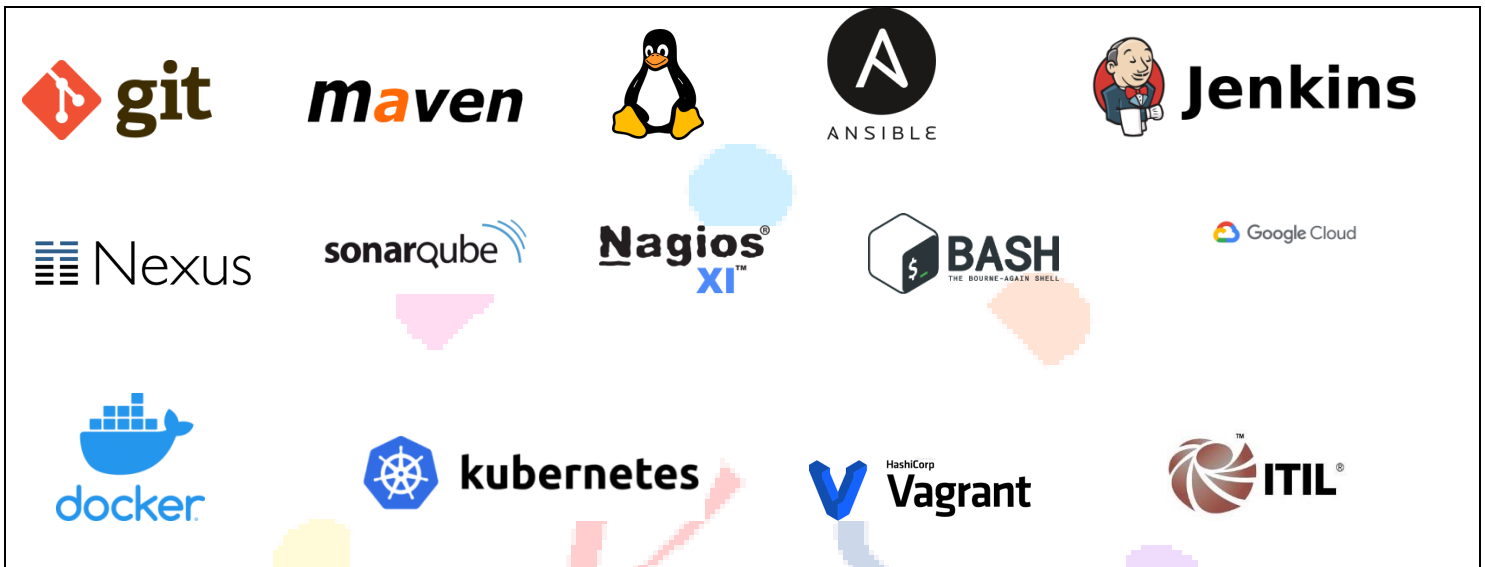


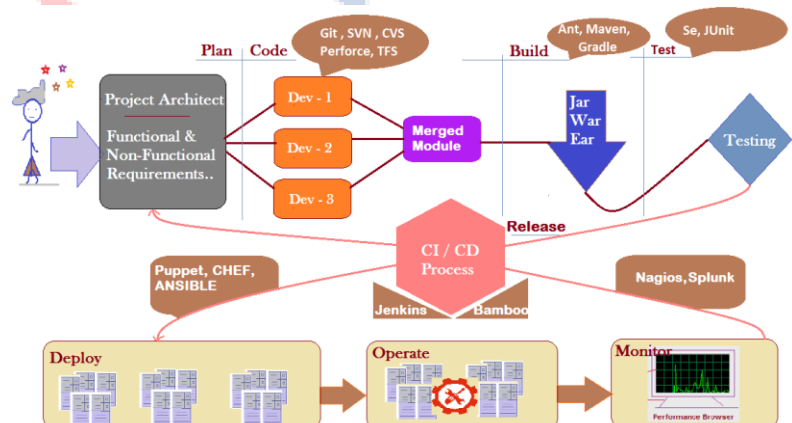


DEVOPS COURSE CONTENT



Course Summary

DevOps (Development and Operations) set a new trend in traditional Enterprise software development.



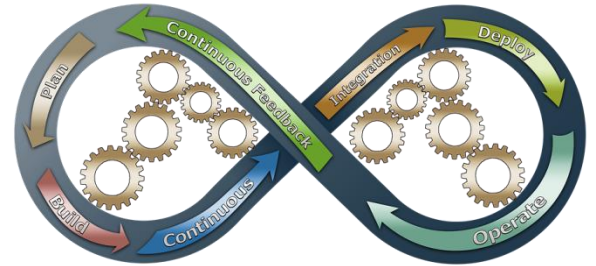
In this training we will discuss a real time project with different stages of Continuous Integration and Continuous Deployment of using various tools like Git, Maven, Jenkins, Ansible, Nexus, Nagios, Sonarqube, Docker and Kubernetes.

The aim of our course is giving better knowledge and real time experience of various Devops tools and which covers different aspects of IT Project development (CI & CD) process.

Course Content

DevOps – About to start (Overview)

- How IT Industry deals with new Project.
 - ✓ What is project?
 - ✓ How it receives new project?
 - ✓ Who will involve in new project?
- What Project owner expect?
 - ✓ Who receives project owner requirements?
 - ✓ How initial project work flow will start
- What is SDLC ?
 - ✓ Phases of SDLC
 - ✓ Role of DEV in SDLC
 - ✓ Role of OPS in SDLC
- Models in SDLC?
 - ✓ Waterfall model
 - ✓ Agile model
 - ✓ Waterfall model Vs Agile model
- What is DevOps?
 - ✓ Definition(Dev+Ops)
 - ✓ DevOps Era
 - ✓ DevOps classification with stakeholders requirements
 - ✓ Why DevOps becomes more popular
 - ✓ Who will be involved in DevOps



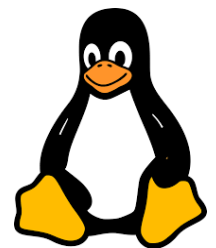
IT Infrastructure management

- Physical servers Overview
 - ✓ Server behavior
 - ✓ Physical data centre Architecture
 - ✓ Server Configurations
 - ✓ Network concepts
- Virtualization Overview
 - ✓ What is VM?
 - ✓ VM Configurations and management
 - ✓ VM Network Concepts
 - ✓ Physical Server Vs Virtualization
- Cloud Infra Overview
 - ✓ What is Cloud
 - ✓ Cloud demand
 - ✓ SAAS , PAAS, IAAS
 - ✓ Account creation and management
 - ✓ Physical Server Vs Virtualization Vs Cloud



Linux administration

- What is Operating System?
 - ✓ OS Behavior
 - ✓ Client OS Vs Server OS
 - ✓ Client Server Architecture
 - ✓ Internet and Intranet working



- Why Linux Operating System is more popular?
 - ✓ Linux Features
 - ✓ Security
 - ✓ Market demand
 - ✓ Windows Vs Linux
- Installation and configurations?
- Linux basic commands
- Ownership (User & Groups Management)
 - ✓ User account creation
 - ✓ Group creation
 - ✓ Make a user account in a member of group
 - ✓ Group management
 - ✓ User & Group deletion
 - ✓ Sudo user account management
 - ✓ Changing Ownership and Group
 - ✓ Changing Ownership with 'chown' command
- Permissions
 - ✓ File & Directory permissions
 - ✓ Absolute(Numeric) Mode
 - ✓ Symbolic Mode
 - ✓ Permissions management (User, Group & All)
 - ✓ Changing file/directory permissions with 'chmod' command
- SSH Private & Public key configuration.
- Automating tasks with Cron.
- VIM editor.
- Service Management.
- Package Management.
- Linux troubleshooting.

Version control system



- Version Control system?
 - ✓ Version Control overview
 - ✓ Version Control work flow
 - ✓ Version Control System tools
- Git Overview
 - ✓ VCS Terminology
 - ✓ Git Installation in Windows & Linux
 - ✓ Git repo management
 - ✓ Git Stages (Working DIR , Staging area/Index Area, Local Repo)
 - ✓ Repository creation
 - ✓ Git Configuration with user details.
 - ✓ Git ignore
 - ✓ SVN Vs Git
- Git Branch
 - ✓ Git branch overview
 - ✓ Git checkout
 - ✓ Git merge
 - ✓ Git branch use case
- Git Stash
 - ✓ Git stash overview
 - ✓ Git stash cmd
 - ✓ Git stash use case
- Git Diff
 - ✓ Git diff overview
 - ✓ Git diff cmd

✓ Git diff use case

- Git Reset
 - ✓ Git reset overview
 - ✓ Git reset cmd
 - ✓ Git reset use case
- Git revert
- Git rebase
- Git reword
- Git Squash
- Git Tag
- Git Private repo configuration
 - ✓ Private repo creation
 - ✓ User & Group management
 - ✓ Permissions
 - ✓ Repo sharing

Build tool

- Build tool overview
- Build & Release Management
- JDK Installation in Windows & Linux
- Maven Installation in Windows & Linux
- Maven Repository
 - ✓ Local Repository
 - ✓ Central Repository
 - ✓ Remote Repository

maven

- M2 Repo management
- Maven Project structure
- Project Creation using maven
- Maven Phases
- Maven Lifecycle
 - ✓ Goals
 - ✓ Phases
 - ✓ Build Lifecycle
- Maven Dependency management
- Project Object Model (POM.xml)
 - ✓ Groupid
 - ✓ Artifactid
 - ✓ Versionid
- SonarQube integration
- Package Management
 - ✓ JAR
 - ✓ WAR
 - ✓ EAR
- Package deployment in Application server
- Configuration of Settings.xml
- Creation of custom maven dependence

Application Server

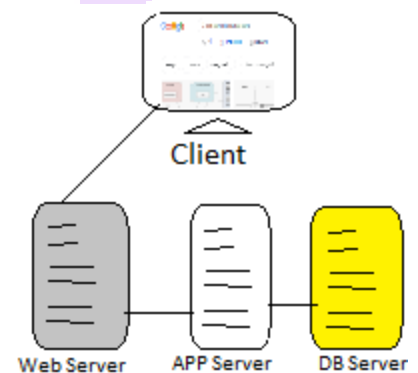
- Application Server Overview
- Tomcat Server installation in Windows & Linux
- Tomcat configuration & Variable declaration
- user management
- server.xml config
- Default port number change
- Logs management
- WebApps management
- Log tracking and troubleshooting
- App deployment
- Jenkins integration with tomcat for "War" deployment.



Apache Tomcat

3 Tier architecture

- 3-Tier Architecture Overview
- Web Server Configuration
- App Server Configuration
- DB Configuration
- Enterprise 3-tier Application layout
- Server provisioning
- Core Installation
 - ✓ Binary based installation
 - ✓ Basic compilation
 - ✓ Mod_JK creation
 - ✓ APP deployment
- Servers setup using cloud Infrastructure



- Project deployment
- DB Installation
- MYSQL Table creation
- Data Base Management
- Query Management
- Data insertion from Web APP
- 3-Tier Use Case with real time example

Shell Scripting



- What is Shell?
- Type of Shells?
 - ✓ K Shell
 - ✓ C Shell
 - ✓ Z Shell
 - ✓ Bash Shell
- Bash Scripting fundamentals
 - ✓ Variable declaration
 - ✓ Exit Status
 - ✓ Redirectors
 - Input redirectors
 - Output redirectors
 - ✓ Echo statement
 - ✓ Conditions
 - If
 - If , Else
 - ✓ Log file rotation
 - ✓ Operators

- Functions in Shell
- Automate Web server through Shell
- Managing App Server configuration
- Removing old logs using shell script
- Artifacts management
- Shell Color codes
- Regular Expressions
- Command Piping
- Stream line Editor
 - ✓ Basics of sed
 - ✓ Sed Commands
 - ✓ Cmd line customization
- Directory management
- AWK Fundamentals
- Real-time shell script use cases

Jenkins

- What is Jenkins?
- Jenkins history
- What is CI & CD?
- CI & CD Automation Process
- Jenkins installation
 - ✓ Installation on Windows Server
 - ✓ Linux Server
 - ✓ JAR based installation
 - ✓ Custom port installation
 - ✓ WAR based deployment



Jenkins

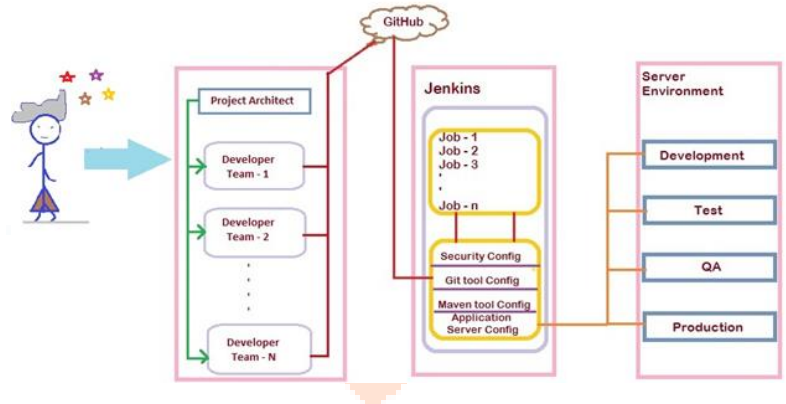
- Jenkins Job Creation?
 - ✓ Freestyle Project
 - ✓ Maven Project
 - ✓ Pipeline Project
 - ✓ Folder
 - ✓ External Job
 - ✓ Multibranch Pipeline Project
 - ✓ Copy Project

- Manage Jenkins
 - ✓ Configure System
 - ✓ Configure Global Security
 - ✓ Configure Credentials
 - ✓ Global Tools Configuration
 - ✓ Manage and Assign Roles
 - ✓ Reload Configuration from Disk
 - ✓ Manage Plugins
 - Plug-in up gradation
 - Role based plug-in installation
 - Backup plug-in installation
 - Green ball plug-in
 - TFS Plug-in Installation
 - War Deploy plug-in installation

 - ✓ System Information
 - ✓ System Log
 - ✓ Load Statistics
 - ✓ Jenkins CLI
 - ✓ Script Console
 - ✓ Manage Nodes
 - Linux Node Configuration
 - Windows Node Config

- Jobs management on specific node

- ✓ About Jenkins
- ✓ Manage old Data
- ✓ Manage Users
- ✓ In-process Script Approvals
- ✓ Prepare for Shutdown



- Credentials Management
- Pipeline View
- Integrating Jenkins With Ansible
- Dependency Job creation.
- Configuration of Jenkins email notifications.
- How to run Corn jobs used with tasks scheduling.
- War file deployment with job automation.
- Jobs automation.
- Jenkins SMTP Configuration
- Master and Slave nodes management
- Real time use case with Jenkins Project.

Configuration management (Ansible)



- What is Configuration Management ?
- How Ansible Works?
- Ansible installation and Configuration.
- Comparison between chef, puppet, ansible, salt stack.
- Ansible Architecture.
- Add nodes to Server.
- Ansible Documentation.

- YAML Scripting.
- Writing Playbooks and tasks.
- Configuring ssh on nodes.
- Ansible Components
 - ✓ Control machine
 - ✓ Remote machine
 - ✓ Inventory
 - ✓ Target machine
 - ✓ Task
 - ✓ Playbook
- Inventory files creation.
 - ✓ Specific group
 - ✓ Group of groups
 - ✓ All hosts
 - ✓ Ungrouped
- Organizing pem file
- ansible adhoc cmd
- Web server installation with adhoc cmd
- Playbook writing
- Playbook examples
 - ✓ Variables creation
 - ✓ Credentials management
 - ✓ Loops example
 - ✓ Advanced loops
 - ✓ Multi package management
- Ansible Modules
 - ✓ Debug module
 - ✓ Yum module
 - ✓ Service module

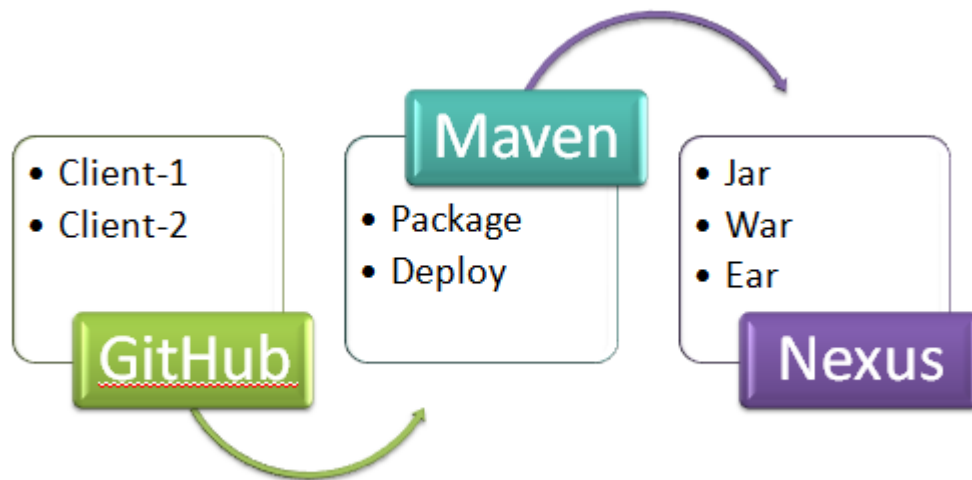
- ✓ Unarchive module
- ✓ Loop module
- ✓ Shell module
- ✓ Lineinfile module
- ✓ Blockinfile
- ✓ Set facts
- ✓ Stat
- ✓ Etc ..

- Conditions in Ansible
- Tags
- Installing Server Configurations through YAML Script.
- Real time use case of Playbooks.

KS

Nexus (Artifact management Tool)

- Nexus Overview
- Nexus Installation and Configuration
- Repository creation.
- Snapshot management
- Nexus repository configuration .



- Artifacts Management.
- Uploading the artifacts to Nexus.
- Downloading the artifacts in CD process.
- Managing of Versions.

SonarQube



- SonarQube Overview
- Installation & Configuration of SonarQube
- Initiate code-scan with SonarQube server
- SonarQube dashboard
- Sample project to check code scan.
- Maven integration with Sonarqube
- Real-time use cases on Sonarqube

ITIL (Information Technology Infrastructure Library)



- Overview
- Incident management
- Change management
- Problem management
- Priority
- Severity
- Criticality
- Ticketing tool classification

Docker



- Introduction to Docker.
- Docker Installation
- Difference between VM & Docker Container
- Docker Architecture
- Container configuration
- Repositories
- Docker Hub
- Docker Images
- Downloading docker images.
- Running commands in container
- Docker commands & Storage
- Accessing Containers
- To configure Web server using docker container.
- Docker Swarm architecture
- Docker Swarm working.

Kubernetes



- Introduction of Kubernetes
- Architecture Overview & Installation
- Overview of Pods
- Overview of Services, Labels
- Installation and configuration of Kubernetes.

Nagios



- Introduction to Nagios.
- Installation and Configuration of Nagios
- Introduction to Continuous Monitoring.
- Adding of Hosts.
- Verifying configuration.
- Scheduling Downtime.
- Configuration check.
- NRPE Configuration and service monitoring.
- How to check Notifications?
- Configuration of email notification.



