

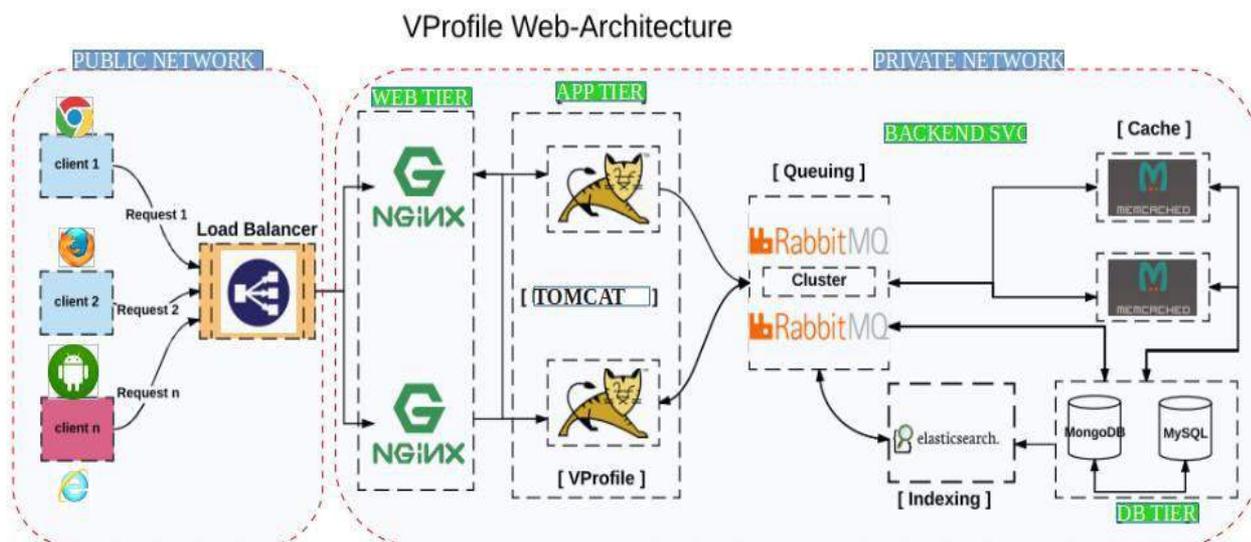
DevOps Training Content

Learn DevOps with a **PRODUCTION** grade project.

Don't just learn tools, Learn to implement them in Real Time.
 Don't just write "Hello world" programs. Write the automation code like a professional.
Do it like a Pro?

Learn the IT infrastructure from the scratch.
 Implement the infrastructure on Cloud and Virtual machines.
 Learn to integrate all the services together.
 Automate the entire infrastructure implementation.
 Learn Continuous Integration and Continuous Delivery as it's done in Real Time.

A glimpse of our **OWN** Web Application architecture | **VPROFILE**



VProfile is a web application written in Java by our Developers, it is a social networking website like Facebook. This entire application is designed as it's their in real time to train you on **automating** all these components.

In the first place, you will learn different components and services in this application like **Nginx, Tomcat, Apache, Rabbit MQ, Elastic search, Mem cache, MySQL, Mongo dB** etc.

Learn first to deploy them manually one by one on **Virtual Machines** and **AWS cloud**. Then learn all the DevOps tools like **Ansible, Jenkins, Puppet, Docker, and Kubernetes** to automate everything.

Along with these tools you will trained on tools which are used for **Building software's** from Developer's code. Our Developers have written the code for Vprofile application.

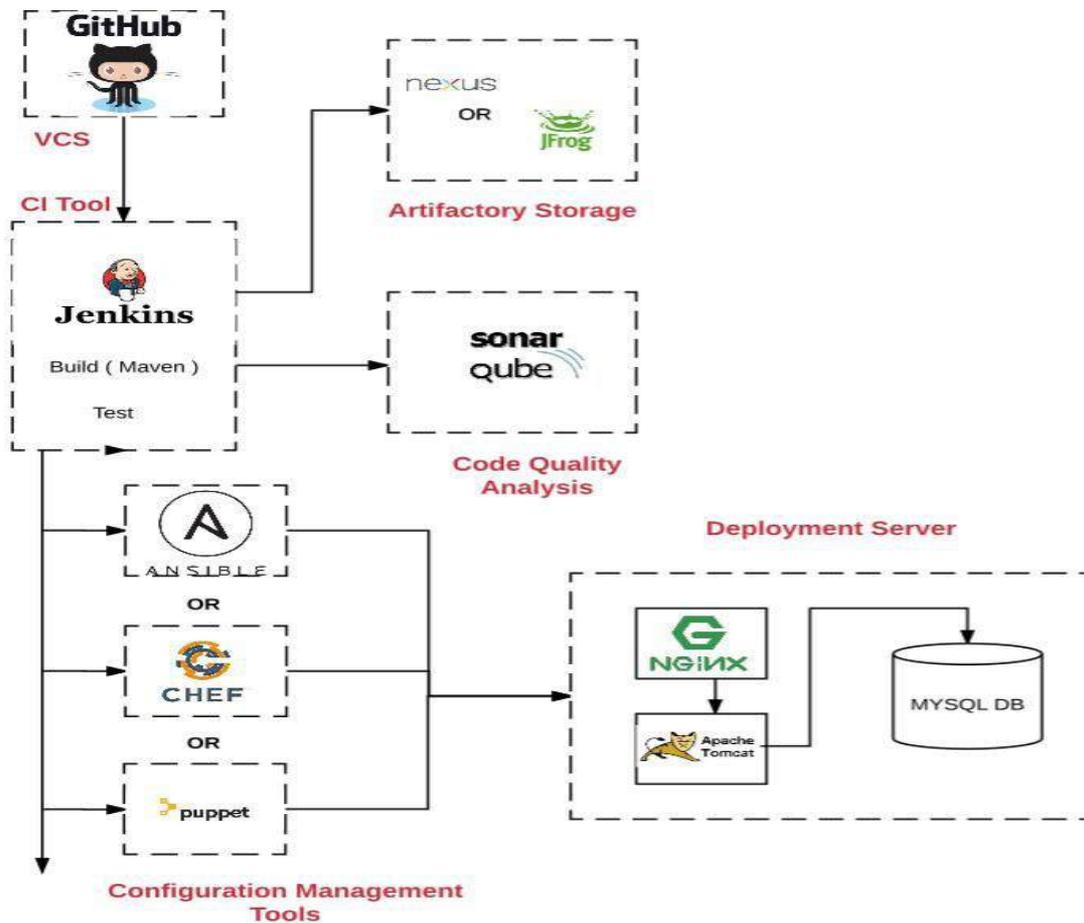
You will learn how to build, test and deploy this application, by using tools like **Git, Maven, Nexus, jfrog Artifactory, SonarQube** etc.

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Also you will learn to automate the entire Build process by combining all these developers' tools with **Jenkins**. We call it **Continuous Integration**.

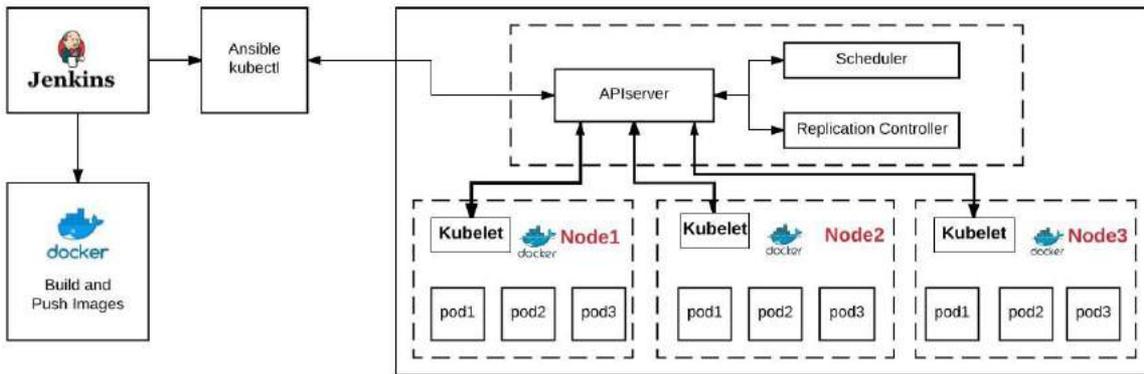
Learn how to secure your services by creating a **secure infrastructure** in AWS cloud. Learn **High Availability** and **Redundancy** along with the project implementation.

As we say **Do it like a PRO.**



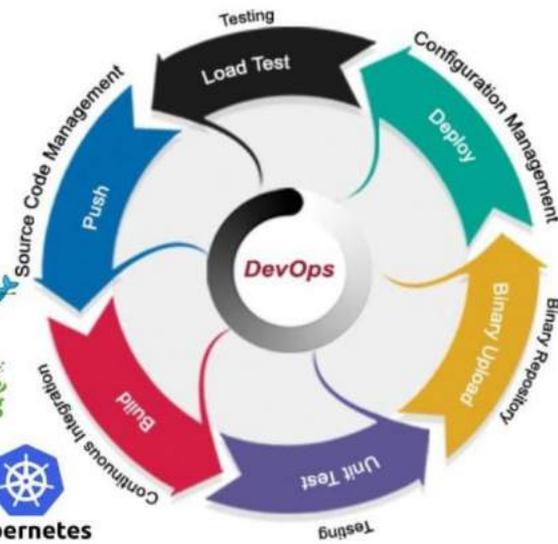
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Kubernetes Cluster



DEVOPS LIFE CYCLE

- ✓ Push Code
- ✓ Fetch Changes
- ✓ Run Unit Tests
- ✓ Build Artifacts
- ✓ Store Artifacts
- ✓ Provision environment
- ✓ Deploy Your Build
- ✓ Run Load & Functional Tests
- ✓ Dev -> QA -> Staging -> Production



DevOps - Spanning across entire delivery pipeline
Continuous Integration | Continuous Delivery

Information about the course content.

By keeping the latest trend of the DevOps market in the mind it's designed to make you a self-learner in DevOps world. We are using a real time web application project to train you on various DevOps tool.

Course is divided into six parts. Five parts are mandatory and will be done in the same flow. Sixth part will be taken after the completion of the course. It will be scheduled (mostly weekends) and notified to you but it's optional to attend and does not hamper your self-learning process.

Part 0: DevOps Introduction

- Understanding Development
- Development SDLC : WaterFall & Agile
- Understanding Operations
- Dev vs Ops
- DevOps to the rescue
- What is DevOps
- DevOps SDLC
- Continuous Delivery model
- DevOps tools for DevOps SDLC
- DevOps Roles & Responsibilities

Part 1: OS, Virtualization & Networking

Linux Quick start

- Linux Introduction, Principles & Linux distros
- Command line utilities & Basic commands
- Linux File system
- Text Editors (VIM)
- Filters & I/O Redirections
- Users & Group administration
- File permissions & Ownerships
- Sudo
- Software Management: Red hat & Ubuntu
- Useful tools: ssh, telnet, scp, rsync, disk utils, backups etc
- Service & Process management
- Systems and HW stats

Networking fundamentals Part 1

- Components of computer networks
- Classification: LAN, WAN, Peer to Peer network, Server based
- Switches
- Routers
- Network Architecture
- Protocols
- Port numbers
- DNS
- DHCP
- IP Addresses

Vprofile Web Application Architecture

- Infrastructure
- Network layout
- Services & Components
- Databases
- Data stores
- Architecture from a DevOps perspective.

Virtualization

- Introduction & Real time use cases
- Hypervisors
- Virtual box
- Vagrant
- Vagrant on windows
- Vagrant on Linux
- Vagrant Cloud
- Automating virtual machines
- Vagrant & virtualbox for Lab setup
- Create & manage your own Lab on any computer.

Implementing Vprofile on VM's

- Setup all vprofile services in Single vm
- Create multiple vm's through Vagrant
- Setup Vprofile multistack in multiple vm's
- Validate and test Multistack VProfile App

Part 2: Cloud Computing

Cloud computing

- Introduction to cloud computing.
- DevOps & Cloud
- Public, Private & Hybrid cloud
- IAAS, PAAS & SAAS
- Cloud computing & DevOps

AWS part 1

- Introduction to Public cloud with AWS
- Setup your own account and Manage it
- IAM: Manage users, groups, roles & policies
- Secure your AWS account
- Ec2 services: Instances, AMI, EIP, Security groups, key pairs
- EBS: Manage Volumes for ec2, backups & restores
- ELB: Load balance your own website
- S3: Use S3 to host websites & as a centralized storage
- RDS: Setup & Manage your own Highly available Database

Vprofile on AWS cloud.

- Create multiple Ec2 instances for setting up Nginx and Tomcat
- Setup and use Elasticache, Elasticsearch, SQS, RDS, S3 for Vprofile backend services.
- Setup AWS Elastic Load balancer in front of Nginx or Tomcat for High Availability.
- Monitor everything with AWS Cloud watch.

Part 3: Automation, Orchestration & Config Management

Version control system with Git

- What is VCS & why it is needed
- DevOps use cases
- Setup your own repo with git
- Manage your code base/source code with GIT & GITHUB

Continuous Integration with Jenkins

- Introduction to continuous integration.
- Build & Release and relation with DevOps
- Understanding development and developers
- Why continuous integration
- Jenkins introduction and setup
- Jenkins projects/jobs
- Jenkins plugins
- Jenkins administration:
 - Users
 - Nodes/slaves
 - Managing plugins
 - Managing software versions
- Build tool Maven
 - Introduction,
 - Phases
 - Java builds
- Build and Release job/project setup
- Nexus:
 - Intro & Setup
 - Software versioning & Hosted repository
 - Integration with Jenkins
- Continuous integration job/project setup
- Complete Jenkins project:
 - Packaging Artifacts
 - Static code Analysis
 - Tomcat setup Staging & productions
 - Artifacts deployments to webservers from Jenkins
 - Build Pipeline
- Jenkins not just CI tool anymore
- More DevOps use cases of Jenkins

Continuous Integration for Vprofile Application.

- Setup Jenkins, Maven and Git for building Vprofile source code.
- Sonarqube for Code Analysis.
- Version vprofile software's and upload it in Nexus repository.
- Deploy Vprofile software to tomcat server.
- Continuous Software Testing for Vprofile after deployment.
- Vulnerability testing for Profile with security tools.
- Alerting Developers for any build issues.
- Complete continuous Delivery Build Pipeline for Vprofile on Dev, QA, UAT and Production Environment.

Ansible

- Configuration Management & Automation
- What is Ansible & its features
- Ansible setup on local & cloud
- Understanding Ansible architecture & Execution
- Inventory
- Ad hoc commands: Automating change Management with Ad Hoc commands
- Playbook Introduction
- Ansible configuration with ansible.cfg
- Ansible documentation
- Modules, modules & lots of modules
- Writing playbook for webserver & DB server deployments
 - Tasks
 - Variables
 - Templates
 - Loops
 - Handlers
 - Conditions
 - Register
 - Debugging
- Ansible Roles
 - Identify server roles
 - Roles structure
 - Creating, Managing and executing roles
- Ansible Galaxy
 - Exploring Roles from Galaxy
 - Download Galaxy roles and integrate with your code
- Ansible Advanced Execution
 - Improving execution time
 - Limiting and selecting tasks
 - Troubleshooting and Testing

Puppet

- Config Management with Puppet
- Difference between Puppet & Ansible
- Puppet server & agent setup
- Writing puppet manifests
- Managing multi OS(Red Hat & Ubuntu) with puppet
- Setup LAMP Stack with Puppet
 - Resources
 - Variables
 - Selectors
 - Classes
 - Variables
 - Conditions
 - Modules
- Puppet Forge modules:
 - Apache
 - VCS
 - Firewall
 - Mysql
- Templates
- Hierarchical

Vprofile continuous Delivery project

- What is continuous delivery & why it's needed
- continuous delivery vs continuous deployments
- Overview of the project
- Infrastructure setup for the project
- Integrating, AWS, Git, Jenkins, Nexus, Ansible, Webservers, Backends & DBservers
- Project execution step by step.
- Build triggers
- Build Pipeline
- Deploy latest/old/any version of artifacts on Dev, QA, and UAT & Production Environment.

Part 4

Dockers & Containers

- What are containers
- Difference between VM's & Containers
- Hypervisor Vs Docker Engine
- Docker Introduction
- Docker installation
- Images & containers basics
- Images
 - Docker Images Deep Dive
 - Docker Hub
 - Pull & Push images
 - Building your own Image with Docker file
 - Docker & Jenkins integration
 - Hosting & Managing Images

- Containers
 - Deep Dive
 - Running, Stopping, Deleting, Inspecting & Managing containers
 - Docker networking
 - Web server examples
 - Local Development workflow
 - Docker Compose
- Automated Workflow/ continuous delivery of Docker
- Docker Orchestration with Kubernetes
 - Microservice Architecture
 - Why Containers for microservices
 - Kubernetes Intro & Architecture
 - Kubernetes setup
 - Running docker containers on kubernetes
 - Kubectl
 - Pod
 - Service
 - Replication controller & Set
 - Deployment
- What's Next in Container world

Containerizing Vprofile Applications

- Learn to containerize Vprofile all the services with Docker file and Build.
- Continuous Integration of docker images from Jenkins.
- Docker compose to run multistack vprofile app on Docker Engine.
- Kubernetes Definitions for Vprofile all the containers and services.

Part 5: Security & High Availability

Networking fundamentals Part 2

- IP Addresses & Subnet Masks
- IP Address Ranges
- Subnetting
- Private Vs Public networks
- High Availability
- Firewalls & NACL

AWS Part 2

- VPC: Setup Highly Available & Secure network on AWS
- Cloud Watch: Monitor your AWS setup
- Auto scaling with ELB
- Beanstalk: Setup and automated deployments

Next Level of DevOps => DevSecOps

- Information Security Overview
- Security Threats and Attack vectors
- Hacking concepts
- Hacking phases
- Attack Types
- Penetration Testing

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- DevOps & Pen Test
- Pen Test tools
- Kali Linux OS
- Vulnerability Assessment tools
- Metasploit
- Nmap
- Nessus

Part 6: More DevOps tools (Optional)

- Chef
 - Chef Overview and comparison with Ansible & Puppet
 - Understanding chef concepts.
 - Writing chef recipes
 - Creating cookbooks
 - Hosted chef server
 - Knife
 - Bootstrapping/ adding nodes
 - Roles
 - Bookshelf
 - Setting up your own chef server
 - Managing chef from Chef UI
 - Data bags
 - Chef supermarket
- Monit
- Nagios
- Troubleshooting issues in DevOps implementations
- AWS automation with Ansible
- AWS cli, S3fs & S3cmd
- Terraform
- DevOps job profiling, Interview questions.
- How to keep up with DevOps latest tools

FAQ's

Q1. What is DevOps?

Ans: DevOps isn't a product but rather a culture and process. There are certain technologies and skills someone working in a DevOps environment should have.

Q2. How DevOps helps organization?

Ans: The recently released 2017 State of DevOps Report uncovers some impressive statistics. High performing organizations that effectively utilize DevOps principles achieve:

- 46x more frequent software deployments than their competitors.
- 96x faster recovery from failures.
- 440x faster lead time for changes.
- Higher levels of customer satisfaction and operational efficiency.

Sources: <https://www.forbes.com/sites/chrisencianlosi/2017/06/19/the-state-of-devops-in-2017-transformational-leadership-is-key/#4c3c7de563dc>

<https://puppet.com/resources/whitepaper/2016-state-of-devops-report>

Q3. How many IT companies are using DevOps Model?

Ans: DevOps adoption has jumped from 66% in 2016 to **74% in 2016**. With such a rate in 2 years it will go more than 90 %.

Source: <https://devops.com/state-devops-adoption-trends-2017/>

Q4. Why should I learn DevOps?

Ans: With such a high adoption rate of DevOps across IT industry, it has opened lot of Job Windows that are not yet fulfilled. Companies are desperately looking for DevOps Engineers who can help them setting up DevOps Environment.

Q5. Do DevOps Engineers/Consultant/Architect get paid well?

Ans: DevOps are one of the highly paid job as per Business Insider, Glassdoor & Pay Scale survey.

Q6. How will this course help me learn DevOps?

Ans: Our focus is on training you on Real Time use cases and not just one by one introduction to tools. For this very reason we have created Vprofile application. You will learn all the latest and greatest DevOps tool in the market and most importantly integrate them together to setup Orchestration of continuous Delivery. Yes we said orchestration and not simple automation scripts.

Q7. What is Vprofile Application?

Ans: Vprofile is a java based Web Application written by our expert Developers. It's a social networking website like Facebook.

In Real time you will have multiple services/servers working together to create a web service like Facebook or Twitter or Amazon or Flipkart. To deliver features to the website, developers will code new features and Operations team will deploy them into production servers. By using DevOps principals and Tools we can deliver features more rapidly to production systems.

We have taken the same approach and will train you in the similar manner.

Q8. Do I need to have any background or prerequisite to join this course?

Ans: We are training you from the very scratch, we believe in building strong base. So we start the course by Linux systems and basic networking. Then we train you on virtualization and Cloud computing. Once you have the infrastructure knowledge we will setup our application on it manually. So you dont need any background but you have to practice well.

Q9. Is it possible to cover all the topics in given time frame?

Ans: Yes it is very much possible and we are talking from all our past experiences. The course is well structured and very well documented. Apart from the time you spend in the class you have to put your own efforts in going through the exercises. SO that will add some more time in learning.

Q10. Will I be able to practice everything by myself?

Ans. Well we know no matter how much you concentrate in the class you still will have chances of making mistakes while practicing by yourself. For that very reason we have written a Book **Decoding DevOps** which you will get when you join the course. It's a step by step guide of everything you need for practicing. Along with that you will get few more Documents, Codes, Files and commands for practicing on regular basis.

Q11. What if I am still getting errors while practicing?

Ans: Yes we know no matter how clear the documents you have, still you may make mistakes and we have gone through such situation earlier. For that very reason we created a Facebook group "**Heuristic DevOps by Imran**" only for the students. Here you can post any questions with all detail and that will be answered ASAP.

Q12. Is this Facebook group open to all?

Ans: No, it's a closed group and request will be accepted only after you get registered with us. As we dont want any random posts from anybody else or any kind of spamming/advertisement etc. It's only for our Students and you will be a lifetime member of it.

Q13. What if I get some doubt or errors after the course?

Ans: As mentioned earlier you will be the lifetime member of the Facebook group, you can post any questions or doubts anytime you want. You are also encouraged to post DevOps related topics and answer questions of other students. In the group we have lot of DevOps engineers who are already working and will share their knowledge with you.

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Q14. I am still not convinced, give the most valued reason to join this course. Ans:

Put an eye on the bullet points below and you will get your answers.

- Decoding DevOps book (Complete guide for DevOps Implementation)
- Vprofile real time project
- Networking with other DevOps engineers in Facebook group

Q15. My questions are not answered here?

Ans: Contact Visualpath through phone or email.

VISUALPATH