



- CYU – Check Your Understanding
- LOTW – Learning On The Walls
- PPR – Participant Progress Report
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# DEVOPS

Duration: 5 Days

## INTRODUCTION TO DEVOPS

- ❖ What is DevOps?
- ❖ History of DevOps
- ❖ Dev and Ops
- ❖ DevOps definitions
- ❖ DevOps and Software Development Life Cycle
- ❖ DevOps main objectives
- ❖ Infrastructure As A Code
  - IaaS Overview
  - PaaS Overview
- ❖ DevOps on the Cloud
- ❖ Prerequisites for DevOps
- ❖ Tools (Jenkins, Chef, Docker, Vagrant and so on.)
- ❖ Continuous Testing and Integration
- ❖ Continuous Release and Deployment
- ❖ Continuous Application Monitoring

## CLOUD COMPUTING and VIRTUALIZATION

- ❖ History and evolution of cloud
- ❖ Cloud computing concepts
- ❖ Grid Computing vs. Cloud Computing
- ❖ Characteristics and Benefits of Cloud
- ❖ Cloud service models (NIST)
- ❖ IaaS, PaaS and SaaS
- ❖ Cloud service model implementations
- ❖ Cloud Deployment Models (NIST)
- ❖ Virtualization
- ❖ Virtual Machines
- ❖ Virtual bootable OS Images
- ❖ Cloud Storage
- ❖ SOA and Cloud
- ❖ Virtual Private Cloud (VPC)
- ❖ Risk in Cloud and DevOps security concerns
- ❖ Introduction to AWS and AZURE

## DEVOPS ADOPTION

- ❖ TOOLS
  - Things to Look For and Avoid
  - IT Assets Ownership
  - Viewing Applications As Products, not Projects
  - DevOps in the Enterprise



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- IT Governance
- Governance and Risk Mitigation
- DevOps Adoption Steps
- Select DevOps Techniques and Practices
- Service Quality Metrics
- The Choice of Cloud Platform
- IaaS for DevOps
- PaaS for DevOps
- Containerization Tools
- System Configuration Automation and Management
- Continuous Integration (CI) Systems
- Build and Dependency Management Systems
- Select DevOps Tools
- Collaborative Lifecycle Management Solutions from IBM
- Rational Team Concert (RTC)
- Rational Quality Manager (RQM)
- Rational DOORS Next Generation (DNG)

#### DEVOPS TOOLS: CHEF

- Overview of Chef
  - Workstation Setup
  - Organization Setup
  - Common Chef Terminology (Server, Workstation, Client, Repository etc.)
  - Servers and Nodes
  - Chef Configuration Concepts
  - How to configure knife
  - Execute some commands to test connection between knife and workstation
  - Create organization
- ❖ Test Node Setup
  - ❖ Databags
  - ❖ Node Objects and Search
  - ❖ Environments
  - ❖ Advanced Chef
    - Add yourself and node to organization
    - Create a server and add to organization
    - Check node details using knife
    - How to create Databags
    - Add Databags to organization
    - How to Add Run list to Node
    - Check node Details
    - How to create Environments
    - Add servers to environments
    - Create roles
    - Add Roles to organization
    - What is foodcritic and TestKitchen
    - Improve and expand on the existing recipes
    - One-click system launching

#### DEVOPS TOOLS: PUPPET

- ❖ Introduction to Puppetp
- ❖ Installation and Configuration of Master server and agents



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- ❖ Managing Manifests
- ❖ Creating and Managing modules
- ❖ Version control with Puppet

#### DEVOPS TOOLS: VAGRANT

- ❖ Introduction
- ❖ Installation and Configuration
- ❖ Provisioning with Vagrant
  - What is Vagrant
  - Uses of Vagrant in an environment
  - How to install Vagrant in Windows and Linux
  - Configure Vagrant
  - How to use Vagrant to create small virtual
  - Add required Images to Vagrant
  - Using Vagrant
  - Using Vagrant in Chef for Testing

#### DEVOPS: SOURCE CODE MANAGEMENT

- ❖ GIT REPOSITORY

#### CONTINUOUS INTEGRATION

##### INTRODUCTION TO JENKINS-CI

- Continuous Integration with Jenkins Overview
  - Installation
  - Configure Jenkins as stand-alone application
  - Configure Jenkins on an Application Server
  - 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
  - Jenkins Plugin
- ❖ Authentication
  - ❖ Authorization
  - ❖ Confidentiality
  - ❖ Creating users
  - ❖ Installing Jenkins Plugins
  - ❖ SCM plugin
  - ❖ Build and test
  - ❖ Analyzers
    - Distributed builds with Jenkins
    - Best Practices for Jenkins
    - SonarQube integration
    - Cobertura Coverage tool



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#### DEVOPS: MONITORING

- ❖ NAGIOS
- ❖ ZENOSS

- How to monitor the Servers in Nagios
- Trigger Alerts in Nagios
- How to apply blackouts and remove blackouts
- How to monitor the Servers in Zenoss
- Trigger Alerts in Zenoss
- How to apply blackouts and remove blackouts
- How to check events; CPU,Memory and RAM Graphs for servers

#### GENERAL ENVIRONMENT SETUP STEPS IN AWS and NTTA

- ❖ Creating Servers and Networks in Cloud
- ❖ Setting up rules and Application
- ❖ Difficult Scenarios in environments.
- ❖ Scaling
  - Environment testing
  - Monitoring logs

#### MISCELLANEOUS

- ❖ Other Tools used in DevOps,Docker