Sathya Technologies

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NEW

DevOps with AWS & LINUX

DevOps is the union of people, process and products to enable the continuous delivery of value to end users. It aims to create a culture and environment where building, testing, and releasing software can happen rapidly, frequently, and more reliably, so you can innovate like a startup and scale for the enterprise.

1. Introduction to DevOps
- What is Devops ?
- History of Devops
- Devops definition
- DevOps Culture
- DevOps Main Objectives
- DevOps and Software Development Life Cycle
  - **Waterfall Model**
  - **Agail Model**
  - **CICD Process**
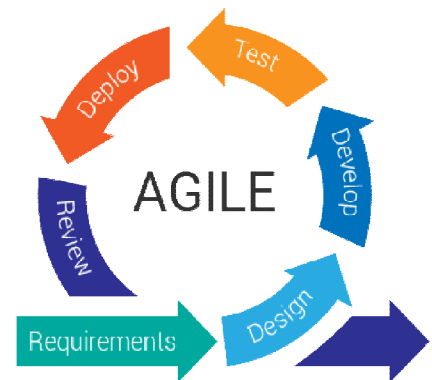
2. CLOUD COMPUTING
- What is Cloud ?
- Evolution of Cloud Computing
- **IAAS** (Infrastructure as a Service)
- **SAAS** (Software as a Service)
- **PAAS** (Platform as a Service)
- **Private**, **Public** and **Hybrid** Cloud
- Public Clouds
  - **Amazon Web Services**
 - **Microsoft Azure**
  - **Google Cloud Services**

3. WEB SERVER & APPLICATION SERVER
- Apache Web Server
- Nginx Server Configuration
- Web Server Installation & Configuration
- Apache Tomcat Server
- Tomcat Server Installation & Configuration
- Manual and Automated Application deployment
- Ports configuration
- MySQL & Maria DB Server Installation
- Application Deployments

4. 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
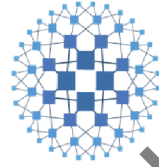
5. VERSION CONTROL - GIT
  - ➢ Version Control System
  - ➢ Centralized and Distributed Systems
  - ➢ Differences between **SVN** & **GIT**
  - ➢ **GIT**
    - • GIT Features
    - • 3-Tree Architecture
    - • GIT - Clone /Commit / Push
    - • GIT Hub Projects
    - • GIT Hub Management
    - • GIT Rebase & Merge
    - • GIT Stash, Reset , Checkout
    - • GIT Clone, Fetch , Pull
    - • GIT Branch Strategy
    - • GIT Branch Management
    - • GIT Hard & Soft reset

6. 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

7. 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

8. DOCKER

- How to get Docker Image ?
- What is Docker Image
- Docker Installation
- **Working with Docker Containers**
  - What is Container
  - Docker Engine
  - Crating Containers with an Image
  - Working with Images
- Docker Command Line Interphase
- **Docker Compose**
- Docker Hub
- Docker Trusted Registry
- **Docker swarm**
- Docker attach
- Docker File & Commands
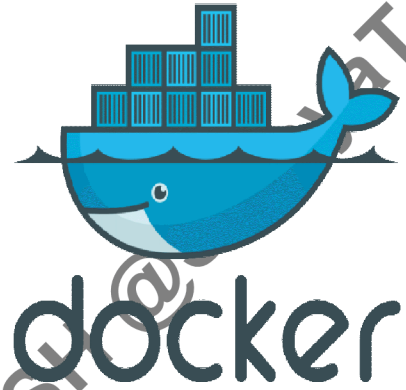
9. KUBERNETES

- Kubernetes intro and Architecture
- **Kubernetes Setup**
- Running Docker containers on Kubernetes
- **Kubectl**
- What is Pod, Service, Controller and Deployment in Kubernetes
- **Difference between Docker Swarm and Kubernetes Orchestration**
- Service running on manage node and minions
- **Deploying the application through PODs**
- Building multiple pods with high availability

10. PACKER

- What is Packer?
- **Packer Installation**
- Baking a website image for EC2
- **Provisioning with a configuration management tool**
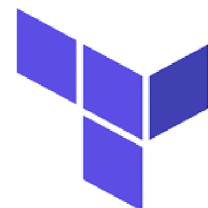- Debugging
- **Building hardened images**

11. TERRAFORM

- Terraform Basic
- **Introduction to Terraform**
- Syntax and Interpolation.
- **Terraform CLI - Console**.
- Building AWS Infrastructure - Getting Started
- **Building AWS Infrastructure —EC2 Instance**

12. VAGRANT
- ➢ Introduction to Vagrant
- ➢ **Setting Up Vagrant**
  - • Virtual Box Installation
  - • Vagrant Installation
  - • Vagrant Machines
  - • Vagrant File
  - • Vagrant Boxes
  - • Environment Management
- ➢ **Networking Basics**
  - • Private Network
  - • Public Network
  - • Network Adopters

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

14. CONTINUOUS INTEGRATION- JENKINS
- ➢ Introduction to Jenkins
- ➢ Continuous Integration with Jenkins
- ➢ Configure Jenkins
- ➢ Jenkins Management
- ➢ **Scheduling build Jobs**
  - • **POLL SCM**
  - • **Build Periodically**
- ➢ Maven Build Scripts
- ➢ Support for the GIT version control System
- ➢ Different types of Jenkins Jobs
- ➢ **Jenkins Build Pipe Line**
  - • Parent and Child Builds
  - • Sequential Builds
- ➢ **Jenkins Master & Slave Node Configuration**
- ➢ Jenkins Workspace Management
- ➢ **Securing Jenkins**
  - • Authentication
  - • Authorization
  - • Confidentiality
  - • Creating Users
- ➢ **Jenkins Plugins**
  - • Installing Jenkins Plugins
  - • SCM plugin
  - • Build and test

15. NAGIOS
- ➢ Introduction to **Nagios Core**
- ➢ Installation of Nagios Server
- ➢ Configuration of Nagios Server & Agent
- ➢ **NRPE** (Nagios Remote Plugin Executer)
- ➢ Configuration of **Nagios.cfg** and **Contacts.cfg**
- ➢ Monitoring Hosts
- ➢ Monitoring Services
- ➢ Monitoring Server Infrastructure

16. ANSIBLE

- ➢ Introduction to 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 Specific Data
- ➢ **Ad-hoc Commands**
- ➢ **Playbooks**
  - Variables
    - vars & vars_prompt
  - Conditionals
  - Loops
  - Blocks
  - Handlers
  - **Templates**
- ➢ **Modules**
  - Core Modules
  - Extra Modules
- ➢ **Ansible Roles**
- ➢ Ansible Role Directory Structure

17. CHEF

- ➢ Introduction to Chef
- ➢ Installation of Chef Master
- ➢ Installation of Chef DK and Nodes
- ➢ Configuration of Chef Master
- ➢ Configuration of Chef DK and Master
- ➢ Knife utility
- ➢ Chef Repository
- ➢ **Workstation setup**
  - How to configure knife
  - Workstation Installation
  - Connection between knife and Master
- ➢ **Organization Setup**
  - Create an Organization
  - Add User & Node to an Organization
- ➢ **Node Setup**
  - Create a Server & add to Organization
  - Cookbooks creation
  - Check node details using knife
- ➢ **Node Objects**
  - How to add Run list to Nodes
  - Check node details
  - Managing Multiple Nodes
- ➢ **Roles and Environments**
- ➢ **Chef Data Bags**
- ➢ **Chef Market Place**

18. AWS (Amazon Web Services)
- ➤ Subscription to AWS
- ➤ Introduction to the AWS Management Console
- ➤ Why AWS Cloud
- ➤ **EC2** Essentials & Build EC2 Instances
- ➤ Security Groups
  Key Pairs (Public Key, Private Keys)

19. Elastic Compute Cloud(EC2) Instances
- ➤ Regions and Availability Zones
- ➤ Amazon Machine Images(AMI)
- ➤ Working with AMIs
- ➤ EC2 Reserved Instance Market Place
- ➤ **EC2 Instance Creation**
  - • Building an Instance
  - • Different types of Instances
  - • Security with Key pair
  - • Different IPs assign to EC2 Instance
  - • Elastic IP Address
  - • Login access to the Instance
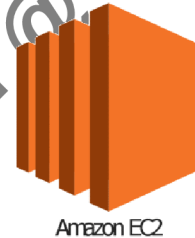
20. Identity and Access Management (IAM)
- ➤ Creation of Users Accounts
- ➤ Roles in IAM
- ➤ Groups in IAM
- ➤ Account Settings
- ➤ Creating Permissions for Users
- ➤ Deleting Permissions for Users
- ➤ Accounting Settings

21. Virtual Private Cloud (VPC)
- ➤ Creating a Custom VPC
- ➤ Security Groups
- ➤ Creating Identity Gate Way (IGW)
- ➤ Connecting Instances in the Gateway
- ➤ Subnets
- ➤ Route Tables
- ➤ VPN Components

22. Elastic Load Balancer (ELB)
- ➤ What is Elastic Load Balancing
- ➤ How Elastic Load Balancing Works
- ➤ Creating Load Balancer
- ➤ Load Balancing Protocols
- ➤ Attach & Detach Subnets
- ➤ Adding Instances to Load Balancer

23. Auto Scaling
- ➤ What is Auto Scaling
- ➤ Auto Scaling Components
- ➤ Advantages of Auto Scaling
- ➤ Auto Scaling Groups (ASG)
- ➤ Attach and Detach EC2 Instances in ASG
- ➤ Monitoring Auto Scaling Instances
- ➤ Health Checks
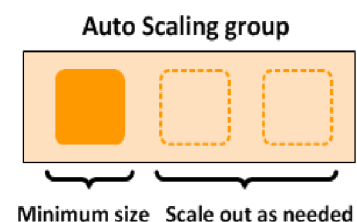
24. Simple Storage Services (S3)
- Creating and Deleting Buckets
- Adding Objects to Buckets
- Deleting Objects
- Uses of S3 storage
- Notifications
- Uses of S3 storage
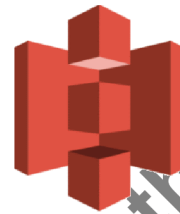
25. Route 53
- Configuring Amazon Route 53
- Public Hosted Zones
- Private Hosted Zones
- Resource Record Sets
- Managing Health Checks
- Working with Public and Private Hosted Zones

26. Elastic Block Store(EBS)
- EBS Volume Types
- EBS Performances
- Instance Store Volumes
- Creating and Deleting Volumes
- Attach and Detach Volumes
- Mount and Un-mounting Volumes

27. Relational Database Services (RDS)
- Data Base Instances
- Data Base Engine
- Creating Data Base
- RDS Limits
- Working with Storage Types

28. Linux Admin Commands
- **Redhat/Ubuntu Linux Installation**
- Hierarchical File System
- Basic Commands
- Create Files and Directories
- File Management
- **File Links**
  - Hard Link
  - Soft Link
- **User Administration**
- Group Administration
- File Permissions (chmod)
- **File Search**
  - find
  - which
  - what is
- Basic and Advanced File Permissions
- File Ownership (chown, chgrp)
- **Access Control List(ACLs)**
  - setfacl
  - getfacl

- Sudo Permissions (suders)
- **Job Scheduling (Crontab)**

- ➢ Memory Management (df,free,du)
- ➢ Process Management (ps ,top ,kill ,pkill)
- ➢ **Linux Package Installation**
  - rpm
  - yum
  - 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
  - GunZip
  - BunZip
  - unzip
- ➢ **Server Connections**
  - password method
  - SSH Keys (Secure Shell)
  - SSL (Secure Socket Layer)
- ➢ Secure Copy (scp)
- ➢ **Linux Filters**
  - grep
  - sed (Stream Editor)
  - awk (Field Processor)

- ➢ Linux Head, Tail, More commands
- ➢ **Service Management**
  - service
  - systemctl
- ➢ Linux Editors (Vi/Vim)
- ➢ **Linux User Communications**
  - write
  - wall
  - mail (send/receive mails)

29. SCRIPTING
- ➢ **Shell Scripting**
- ➢ **DSL (Declarative Domain Specific Language)**
- ➢ **Python Scripting Overview**
- ➢ **Ruby Scripting**
  - Introduction
  - Variables
  - Flow Controls
  - Loops
  - Functions
  - Lists
  - Manipulating Strings
  - Reading and Writing Files
  - Positional Parameters

30. REAL TIME PROJECT

For Online Classes visit : www.sathyatech.com