## Devops Hands on session

60 days --- installation,execution

Cloud and devops : 75% graphics + 25% scripting

**Devops : Collection of Tools**

Cloud and Devops

## --Onprimises Environment : server is maintained in office

* Servers (System)
* 24X7 Running,Costly
* Server Rooms
* powerback up-- 24 hrs
* AC Setup , Temp COntroller devices-- 23C
* H/w,N/w,Admins
* Licences
* spare parts

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## Cloud Environment :

* rentbased server
* no server room
* no powerbackup
* no AC Setup
* cloud Engineers
* Bring your own Licence
* no need to bother about spare parts

---Datacenters ----- Availability zone

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**Cloud Vendors :**

* AWS -- Amazon Web Services -- 38% marketshare --- SLA :99.99%
* Azure -- Microsoft --- 18%
* GCP -- Google -- 6%
* IBM Cloud--4%

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Devops Training is done on cloud platform: AWS,Azure

AWS Free Tier Account :

-- 750 hrs ,12 months

-- Credit Card / Debit Card -- Master/VISA

-- 2 rupees , $1

-- 24 hrs

-- billing -- 0 to 100

---free service + paid services

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Cloud Setup Environment ----- Developers ------ Devops process the code,Testing

DataCenters --- Availability Zones

100s of servers 1000s servers

AWS --- 102-Az, 32-Regions

AWS -- North Virginia (6) -- us-east-1

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Devops : Developer + Operational

-->Any Degree

-->Developer

-->Tester

-->Production support

-->Non-IT people

## Skill Sets:

--Linux Knowledge + Shellscript

--Tool Knowledge

--Commands

--Script Knowledge --json,yaml,Groovy,python

60 days + Assignments,Tasks + RealTime Projects

Resume Setup

Freshers : 4.5 L

Experience: 3.5 yrs --- 10-12L -- 15L

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Devops :

Environment Setup --- AWS Cloud ---- Onprimises

## Open Source Tools used as a devops engineer:

### 1) Software Development Life Cycle (SDLC) --

1.Waterfall model

2.Agaile methods

3.Devops

### 2) Source code Management : Git

Graphical + Commands

### 3) Build Tool : Maven,MSBuild

Commands

### 4) Containerisation : Docker Tool

Graphical + Commands + Script -- text,yaml

### 5) Config Management Tool : Ansible (Modules),puppet,cheff

commands (ADHOC) + script(playbooks)-- (yaml)

### 6) Orchestration Tool : Kubernetes :K8S

Graphics + Commands + Script -- yaml

-- baremetal Installation

-- POds,RC,RS,Services,Ingress,Autoscaling,Loadbalancers

-- DashBoard,custom Application Deployment

-- POC

-- Cloud-- EKS,AKS,GKS

### 7)CI TOOL : Jenkins :Git+Docker+Maven+K8S+ Ansible

### CICD pipeline

scripted pipelines --- Groovy declarative scripting

Graphics + Commands + Script

### **8)QA Tool: SonarQube**

### 9)CM Tool : Nagios

### 10) Terraform : IAAS :IAM: Script .tf files

[Add ons]

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**1)Environment setup**

AWS Cloud --- VPC , EC2 services

VPC setup : Basic Networking knowledge

1)IP Address

2)VPC -- Virtual private Cloud

3)Subnets

4)IGW : Internet Gateway

5)NAT IGW : Network Address Translation

6)Route Table

7)Security Group

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1)IP Address : it is an identity of a resource

A Resource : OS,VM,Instance,EC2

IPv4 : 32 bit range : x.x.x.x : 0.0.0.0 -- 255.255.255.255

IPv6 : 128 bit range : x:x:x::x : trillions of trillions ips

A resource can have by default 2 ips

publicIP : 1 : publicIP changes for every restart

privateIP: 1, 1+ : never changes untill you terminate instance

main ip : privateIP

elasticIP : to get constant publicIP : manually we have to create

class-A : N.H.H.H : parity bit 0 : 16777216 ips

0.0.0.0 --- 127.255.255.255

class-B : N.N.H.H : parity bit 10 : 65536 ips

128.0.0.0 --- 191.255.255.255

class-C: N.N.N.H : parity bit 110 : 256 ips

192.0.0.0 --- 223.255.255.255

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VPC : Virtual private cloud : isolated large network

VPC is identified by its CIDR (Classless InterDomain Routing) block

x.x.x.x/x

/x : /16 to /28 : ips will reduce here

--Max 5 VPCs are created in AWS Cloud for Free Tier users

subnets : Slice of the large network

--derived from VPC

subnet is identified by its CIDR (Classless InterDomain Routing) block

x.x.x.x/x

/x : /16 to /28 : ips will reduce here

-AWS Networking each subnets reserves 5 ips

-For AWS networking

-For VPC Router

-For DNS Server

-For Future Usage

-For Network broadcast address

Internet Gateway : Intenet service provider : free

--IGW is Associated with VPC in 1:1

NAT IGW :Intenet service provider private subnets

--Network Address Translation : chargable

Route Table :

-decides the subnet is public or private

-default route table is main route table

Security Group :

--inbound : incomming

--outbound :outgoing

SSH -- Secureshell --22

HTTP --80

HTTPS-- 443

RDP --3389

mysql --3306

oracle -- 1521

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How to create custom VPC

oregion : us-west-2

AZ : 4

1)us-west-2a

2)us-west-2b

3)us-west-2c

4)us-west-2d

VPC : 10.50.0.0/16 : 65536 ips

Iprange caliculater: 24X7 website

subnet-1:10.50.0.0/24 : 10.50.0.1 - 10.50.0.254 :256 ips

subnet-2:10.50.1.0/24

subnet-3:10.50.2.0/24

subnet-4:10.50.3.0/24

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EC2 Server ---

1)Environment setup

2)Linux commands

How to Login Linux Server : 1)putty 2)GitBash 3)MobaXterm

1)ubuntu

2)Redhat Linux

3)Amazon linux

4)CentOS

1)ubuntu 20.04 version

2)user Name : ubuntu

## 

## Basic ubuntu Linux commands

sudo su

cd

whoami

pwd

cd

ls

mkdir app1 app2 app3

touch file1 file2

nano file1

Enter some Text here

ctr+s

ctr+x

clear

ls -ltr

copying

removing

webserver installation -- apache2

--apache2 -- 80

--nginx -- 80

--httpd -- 80

winscp software : copies file or data from host machine(windows) to cloud machine (Linux)

--How To Host a website

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Why Devops ?

--SDLC : Software Developement Life Cycle

SDLC Models --

--- Waterfall Model

--- Agile Model

-- Working with a new project

-- Working with done project

Why Devops : Pipeline

developer developed the code ----> git --- Devops --- Build the code (Maven)

Artifact ----> Server

Code ---------> docker ----> an image ----> deployed into the server

downtime

Architecture

Devops Engineer --- Automate

Developers

Testers

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SDLC :

Traditional Model :

-- 1.Project Planning

2.Analysis

3.Designing:UIUX,web designer,DB Design,prototypes

4.Code

5.Testing Team

6.Integration

7.Deployment

8.delivery

9.Maintanence

----->

production support

company ----PPC clients

orders ----> Production support ----> tickets

order process --- holding this orders ---planning OTM --planned

waterfall model :

-- client is not satisfy.

-- deadlines ---

Agaile Model :

-- Assemble All

-- sprint planning meeting : mail notification,duration

BA ,Solution Architect,minutes of meeting

-- sprint Meeting: Name , duration ,Team , elect scrum Master

2 weeks to max 3 months

section-1

section-2

deliveries

developers are on sprint2

operational Team on sprint1

--sprint is leaded by scrum Master

-- capacity : 6

duration : 12

--standup calls : duration : -- 15 min to 30 min

--updates:

--employee dependecy

-- meetings :

-- Grooming :

-- Retro meeting :

-- next sprint

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Develment Team ------Devops Team------ operational Team

1)Resume includes

1)developement --

2)support -- P1 ,P2 ,P3

3)project

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SDLC : waterfall Model,Agile Model