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Problem Statement



Design and develop tasks required to build CI/CD pipeline using learned technologies to deploy *BookMySlot application* to cloud platform as a set of micro services on containerized platform such as docker and Kubernetes. Provision Infrastructure using terraform on aws, and configure same using Ansible.

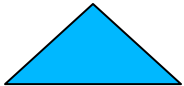
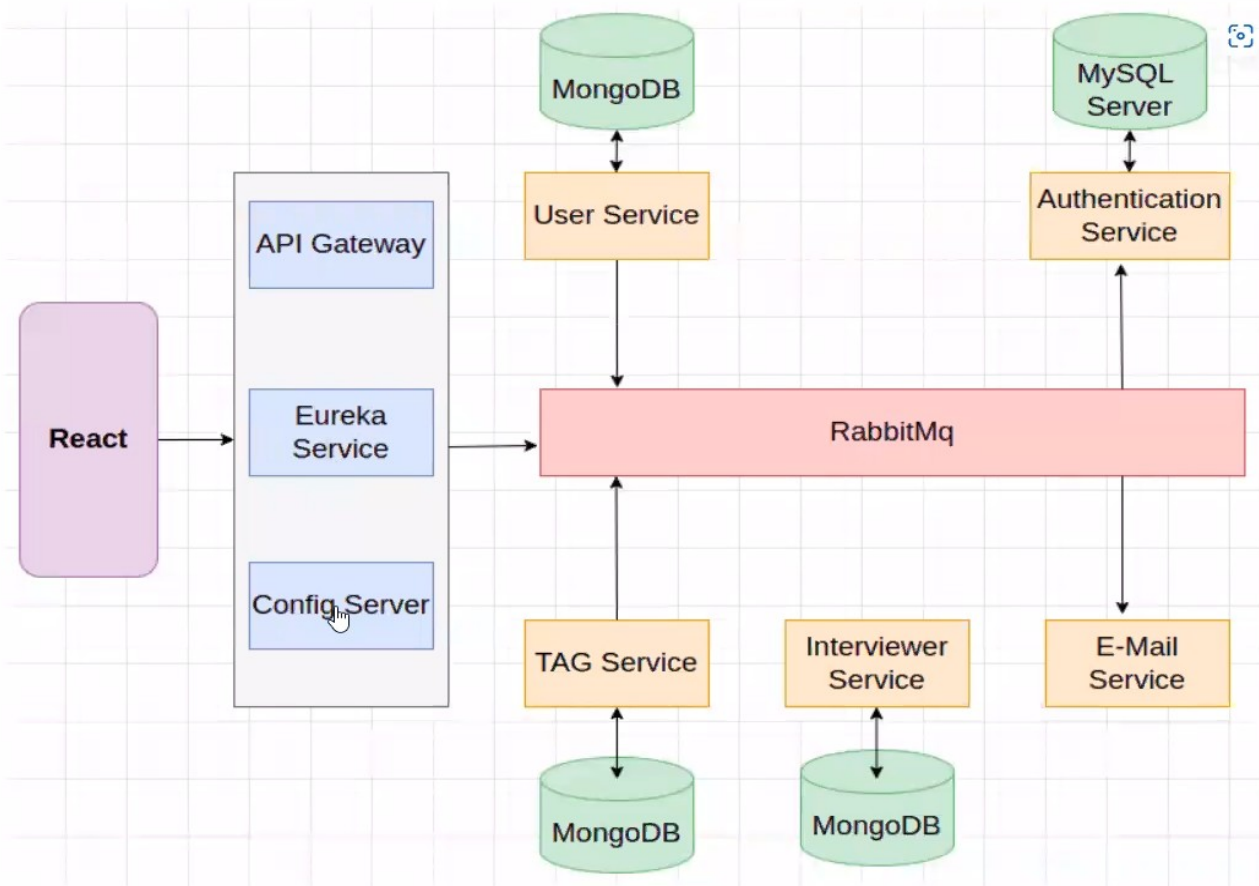


OBJECTIVE

Our objective is to provide best online service for booking the slots for the interview so that Interviewer can book slot as per their schedule.



Project Overview



Technologies and Tools Used



aws



HashiCorp
Terraform



ANSIBLE



GitHub



Jenkins



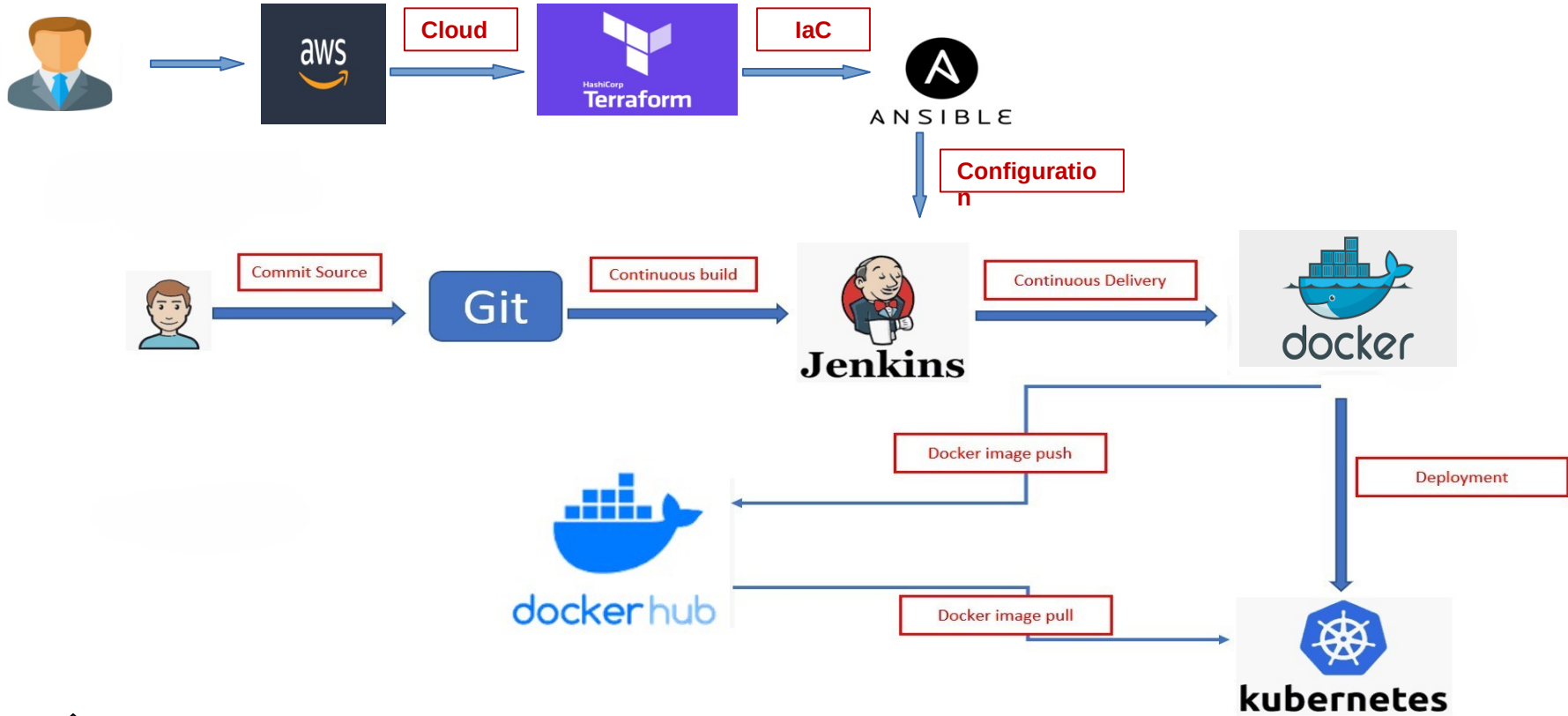
docker



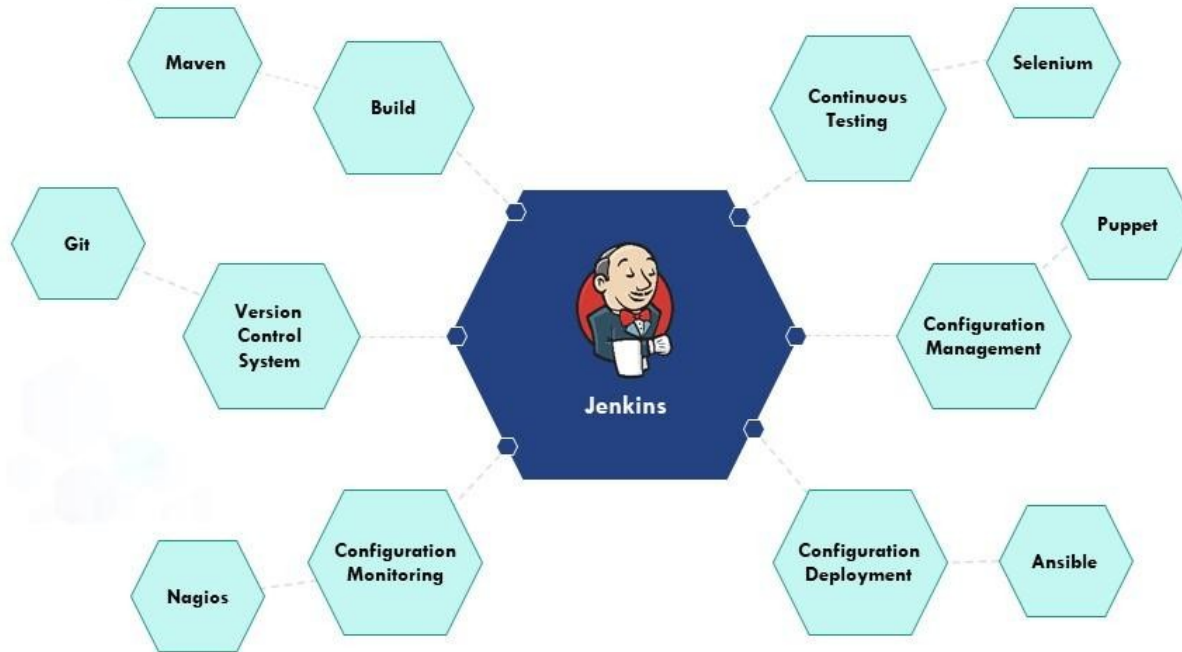
kubernetes



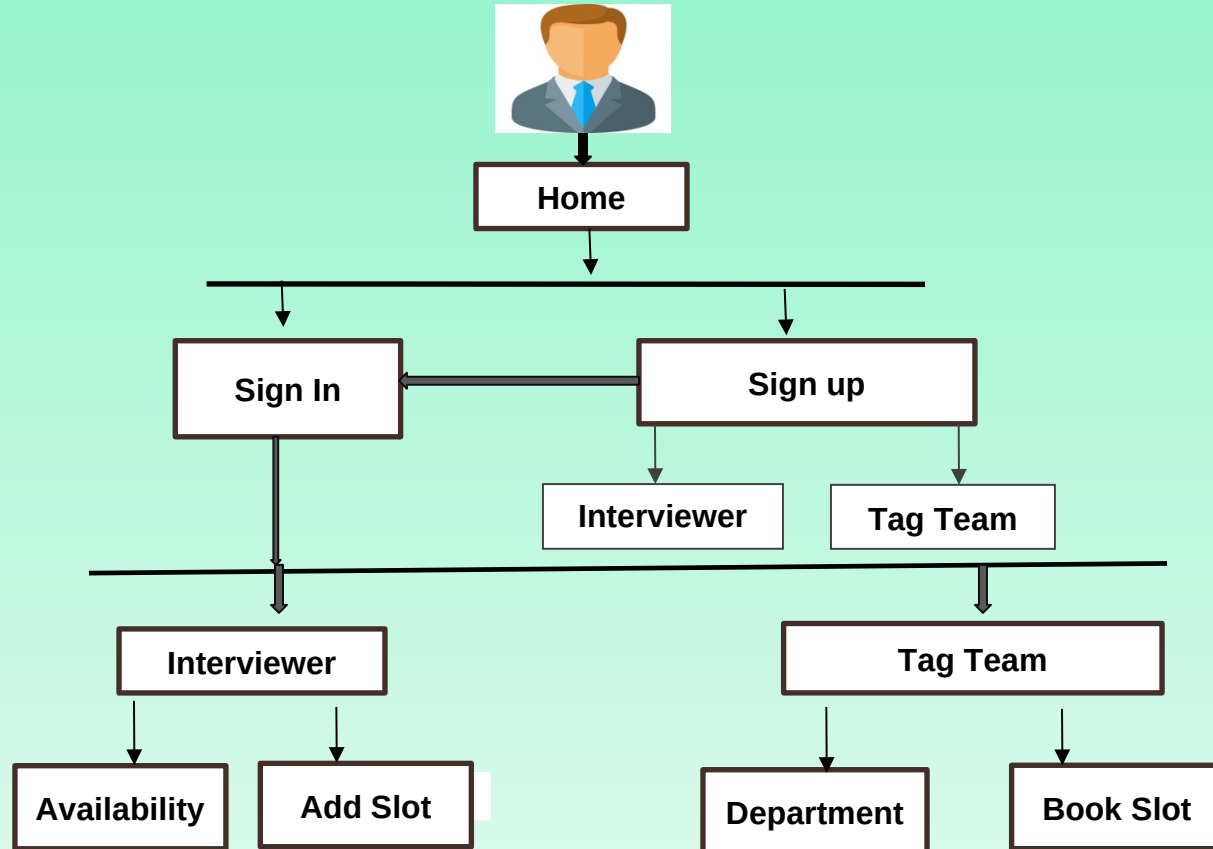
Project Architecture



Continuous Integration in Jenkins



Project flow



TERRAFORM

➤ Terraform has all necessary tooling for configuring servers and provisioning infrastructure.

➤ Terraform is an immutable infrastructure tool.

➤ It is a flexible tool.



```
resource "aws_instance" "ec222" {  
    ami            = var.ami  
    instance_type  = var.instance  
    subnet_id      = data.aws_subnet.selected.id  
    security_groups = [data.aws_security_group.sg.id]  
    key_name       = var.key_name  
    count          = var.count_no  
    tags           = {  
        Name = "jenkin_master"  
    }  
    root_block_device {  
        volume_size   = "30"  
        volume_type    = "gp2"  
        encrypted      = true  
        delete_on_termination = true  
    }  
}
```

-- INSERT --

i-Obaf5556a5824f28b (Ansi-Terra_param)

PublicIPs: 43.205.117.174 PrivateIPs: 172.31.45.217

Ansible

- **Ansible is an open source IT Configuration Management tool.**
- **It aims to provide large productivity gains to a wide variety of automation challenges.**
- **Very simple to use.**
- **Flexible and Agent less.**



```
---
- hosts: jenkins_master
  become: yes
  #remote_user: ec2-user
  #become_user: root
  tasks:
    - name: Download Long Term Jenkins release
      get_url:
        url: https://pkg.jenkins.io/redhat-stable/jenkins.repo
        dest: /etc/yum.repos.d/jenkins.repo

    - name: Import jenkins key from url
      ansible.builtin.rpm_key:
        state: present
        key: https://pkg.jenkins.io/redhat-stable/jenkins.io.key

    - name: yum update
      yum:
        name: '*'
        state: latest

    - name: Install java
      yum:
        name: java
        state: latest

    - name: Install jenkins
      yum:
        name: jenkins
        state: latest

    - name: daemon-reload to pick up config changes
      ansible.builtin.systemd:
        daemon_reload: yes
```

i-0baf5556a5824f28b (Ansi-Terra_param)

PublicIPs: 43.205.117.174 PrivateIPs: 172.31.45.217

Docker-Compose

- Compose is a tool for defining and running multi-container Docker applications.
- With Compose, you use a YAML file to configure your application's deployment and services.



```
version: '3.9'
services:
  product-webapp:
    build: product-webapp/
    image: product-webapp
    restart: always
    container_name: product-webapp
    #network_mode: "host"
    #hostname: localhost
    ports:
      - "4200:4200"

  tag-service:
    container_name: tag-service
    build: tag-service/
    #hostname: localhost
    #network_mode: host
    ports:
      - 8070:8070
    environment:
      - servername_mongodb=mongodb
      - servername_eureka=eureka-server
    depends_on:
      - mongodb
      - eureka-server
    restart: always

  email-service:
    container_name: email-service
    build: email-service/
    #hostname: localhost
    #network_mode: host
"docker-compose.yml" [readonly] 173L, 3632
```

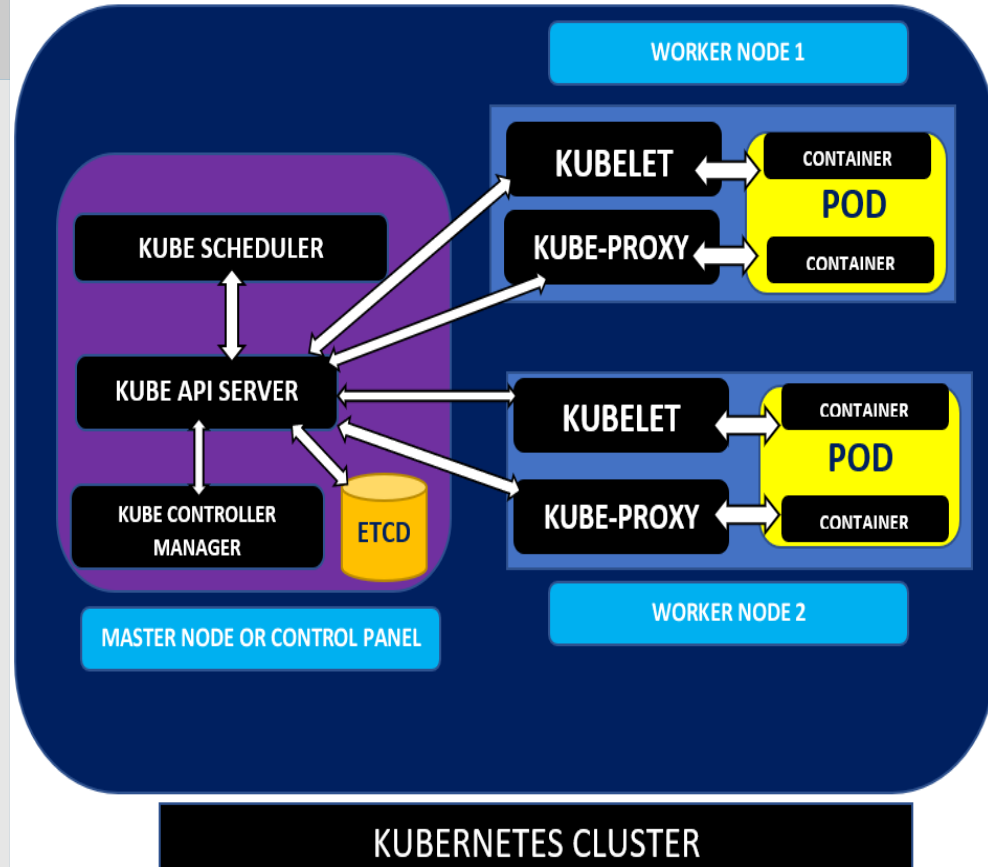
i-032ba8526d930d470 (jstg_param)

PublicIPs: 3.109.50.77 PrivateIPs: 172.31.47.212

Kubernetes Architecture

Advantages of Kubernetes:-

- **Kubernete Automates Containerized Environments.**
- **Scaling Up and Down.**
- **Strong Open Source Communities.**
- **Improve Developer Productivity.**



Errors faced

1) ApiGatewayApplicationTests.contextLoads » Failed to load Application.

Soln: Maven Plug-in added into pom.xml of Api_Gateway

2) Cross-Origin error while sign Up

Soln: this appln deployed with diff domain name we changed that domain with our domain(IP).

3) Containerd-shim-runC-v2 file was missing

Soln: installed the containerd package once again using (yum reinstall container docker)

4) permission denied to *var/run/docker.sock*

Soln: permission given to docker.sock using (chmod a=rwx cmd)



Conclusion

This Web Application is designed to help the applicant to book interview slot from the Book My Slot.



Thank You...

