Jenkins Deployment Demo

On AWS using CloudFormation

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Outline

Requirements

Solution

Architecture

Infrastructure Provisioning

CI/CD Pipeline

Feedback

Requirements

Requirements

Infrastructure to be provisioned via Cloudformation

Jenkins Server to be created and Configured from scratch.

Demo App should connect to a DB and serve the user information available in the user table.

Solution

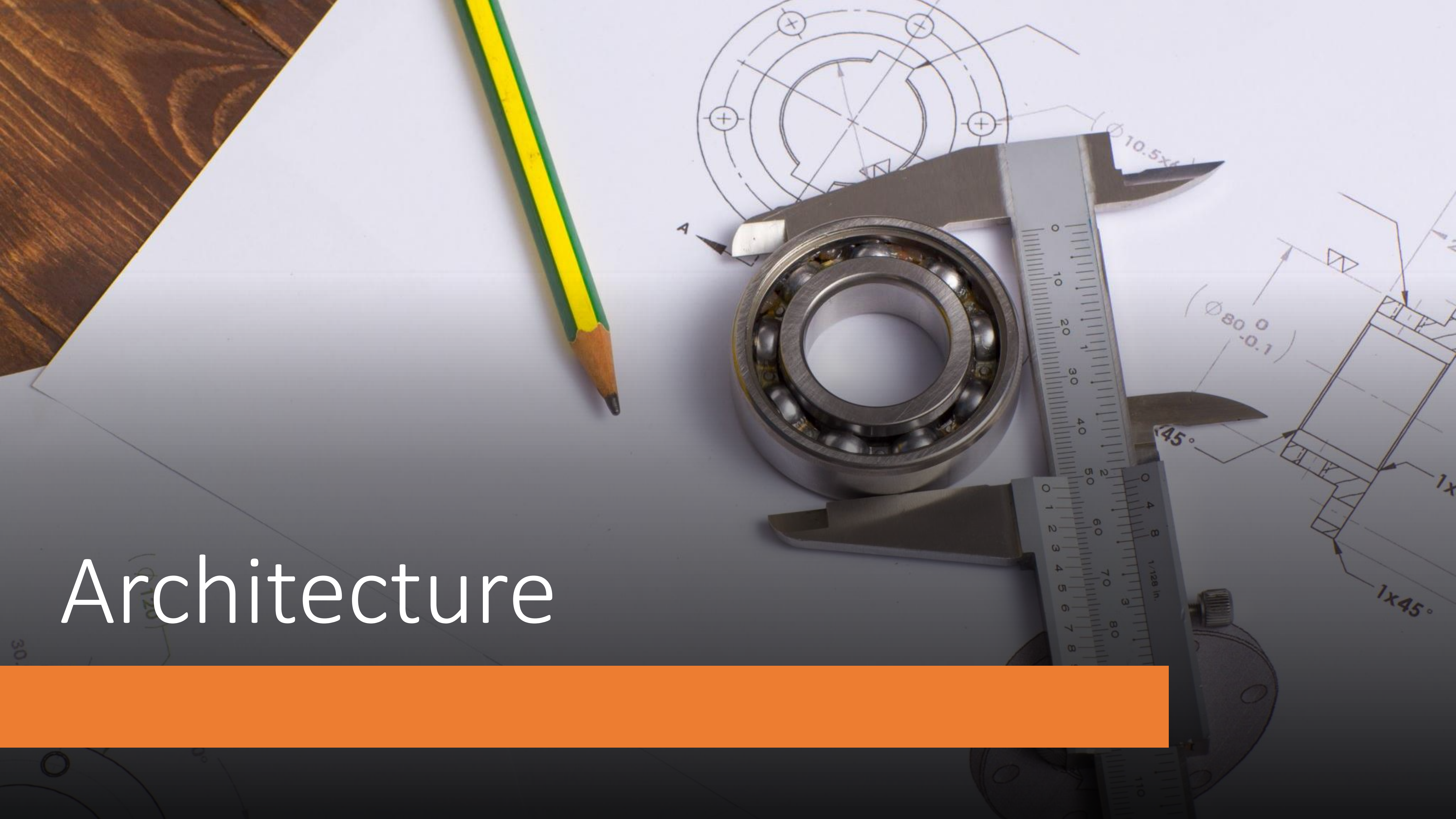
Solution

Infrastructure Provisioning

- Cloudformation
  - Provision all AWS services
    - VPC
    - Jenkins EC2
    - App EC2
    - ELB and resources
    - ECR
- Ansible
  - Deploy application to the EC2 instance

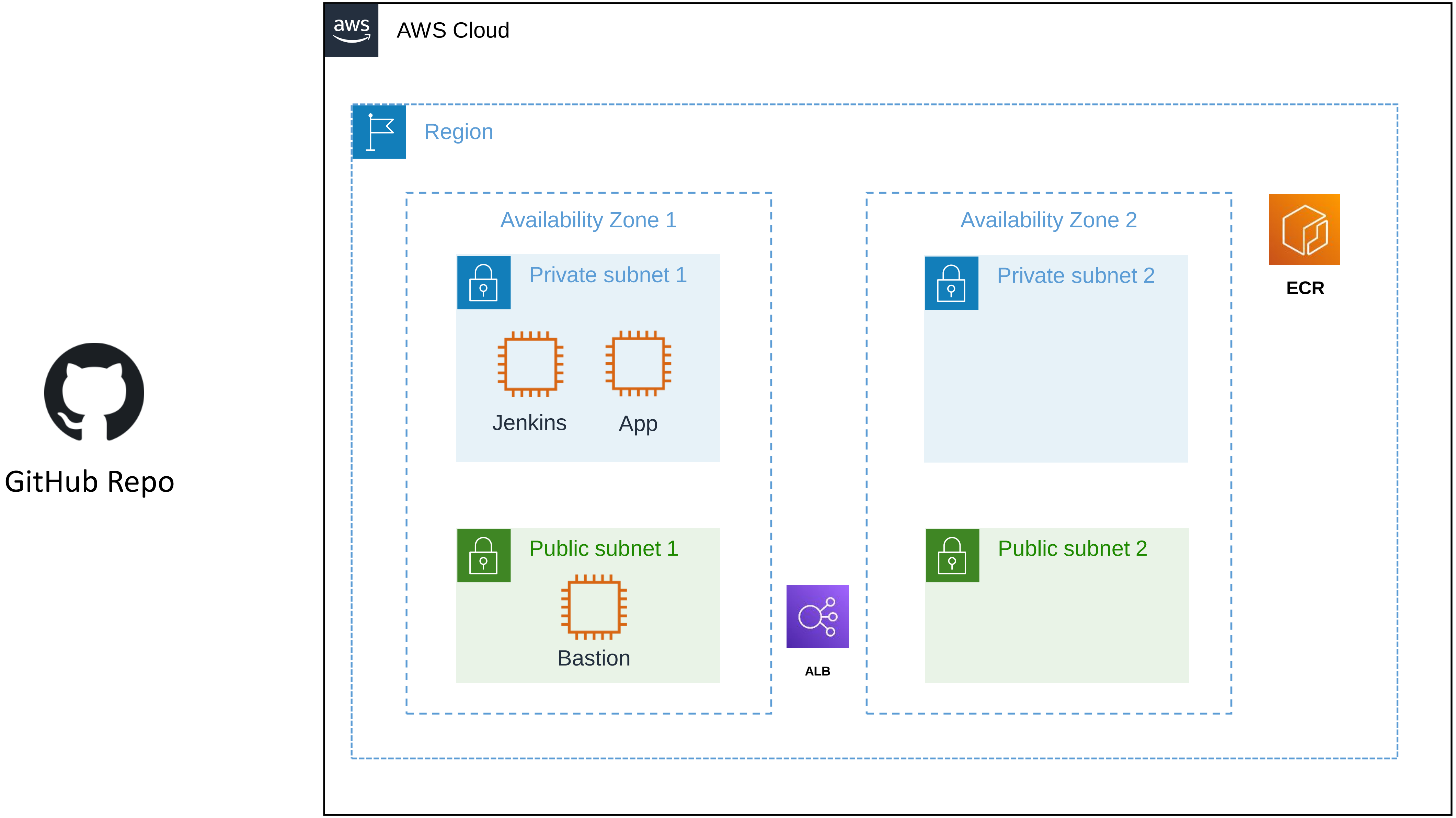
CI/CD Pipeline

- Jenkins Pipelines
  - Jenkinsfile based pipeline within the demo-app
  - Build the Docker Image and push to ECR
  - Deploy Application to target EC2 instance via Ansible Playbook



Architecture

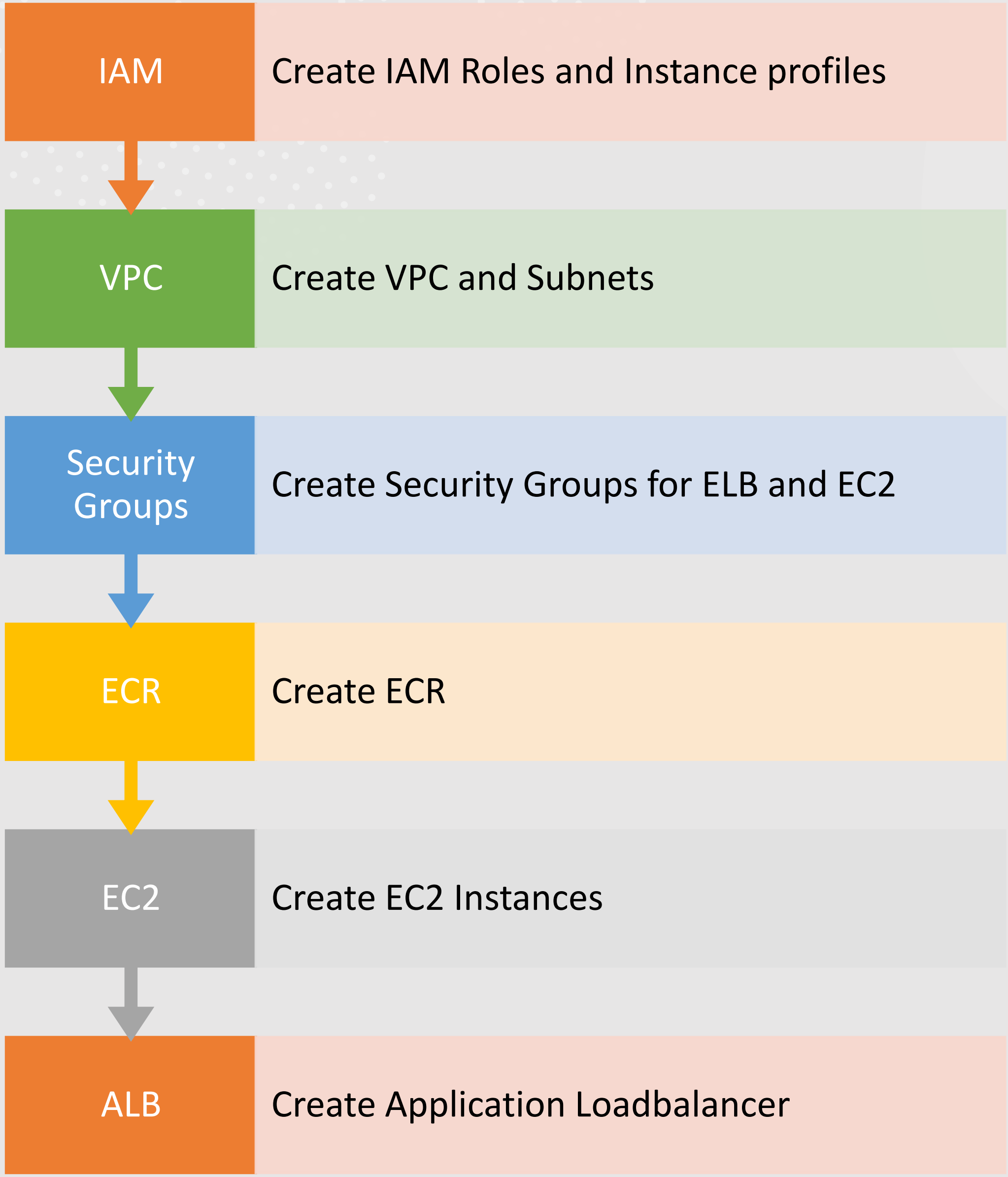
Deployment Architecture



Infrastructure Provisioning

CloudFormation Workflow

AWS CloudFormation



IAM — Create IAM Roles and Instance profiles

VPC — Create VPC and Subnets

Security Groups — Create Security Groups for ELB and EC2

ECR — Create ECR

EC2 — Create EC2 Instances

ALB — Create Application Loadbalancer

Create IAM Resources

Pre-Requisites

- IAM User is already created

Role for Jenkins Host

- Push and Fetch ECR container images

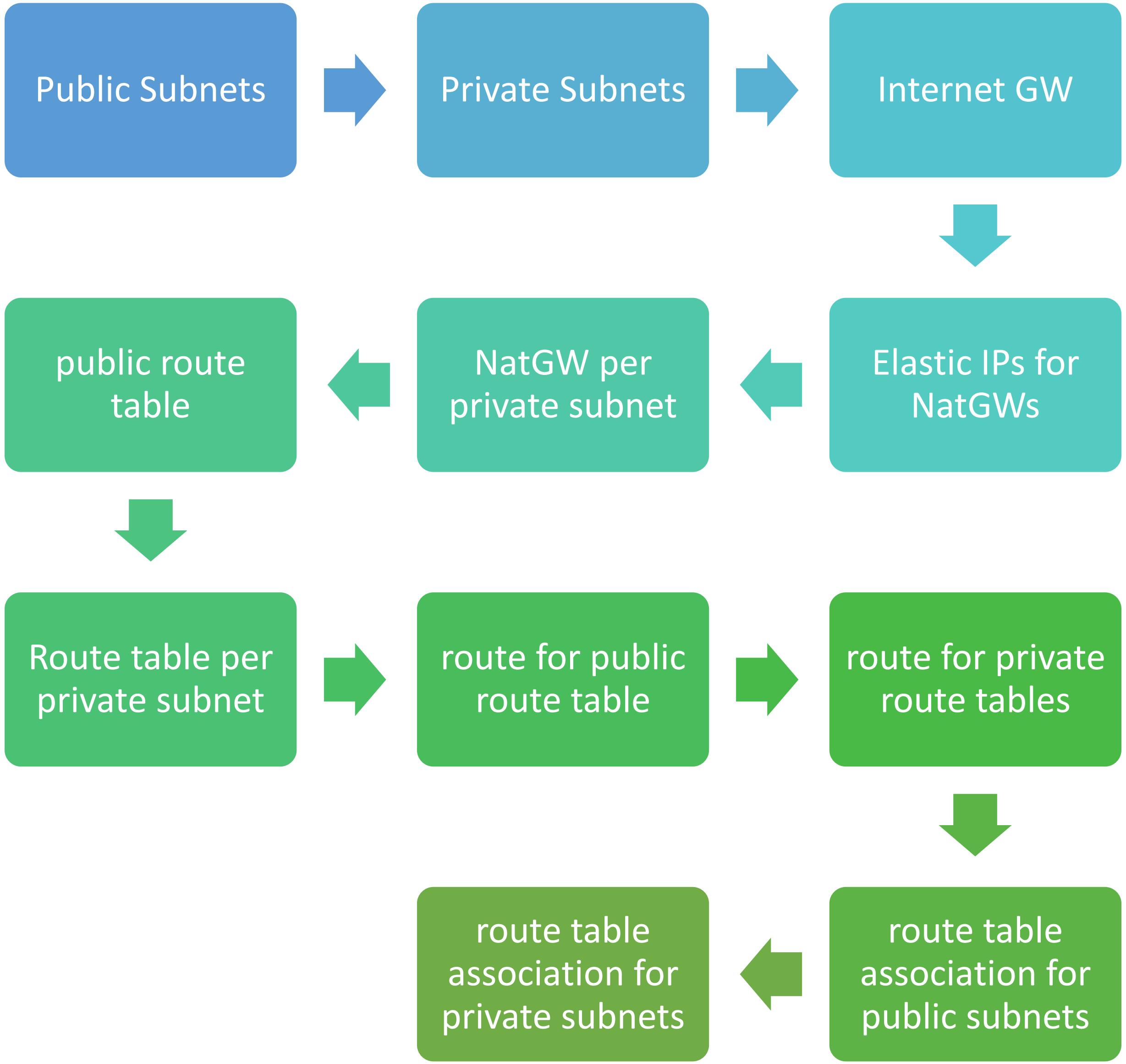
Role For App Host

- Fetch ECR container images

IAM Instance Profile for Jenkins Host

IAM Instance Profile for App Host

Create VPC resources



Public Subnets

Private Subnets

Internet GW

Elastic IPs for NatGWs

NatGW per private subnet

public route table

Route table per private subnet

route for public route table

route for private route tables

route table association for public subnets

route table association for private subnets

Create Security Groups

ALB

- Port 80 and 443 to 0.0.0.0/0

Bastion Host

- Port 22 to 0.0.0.0/0

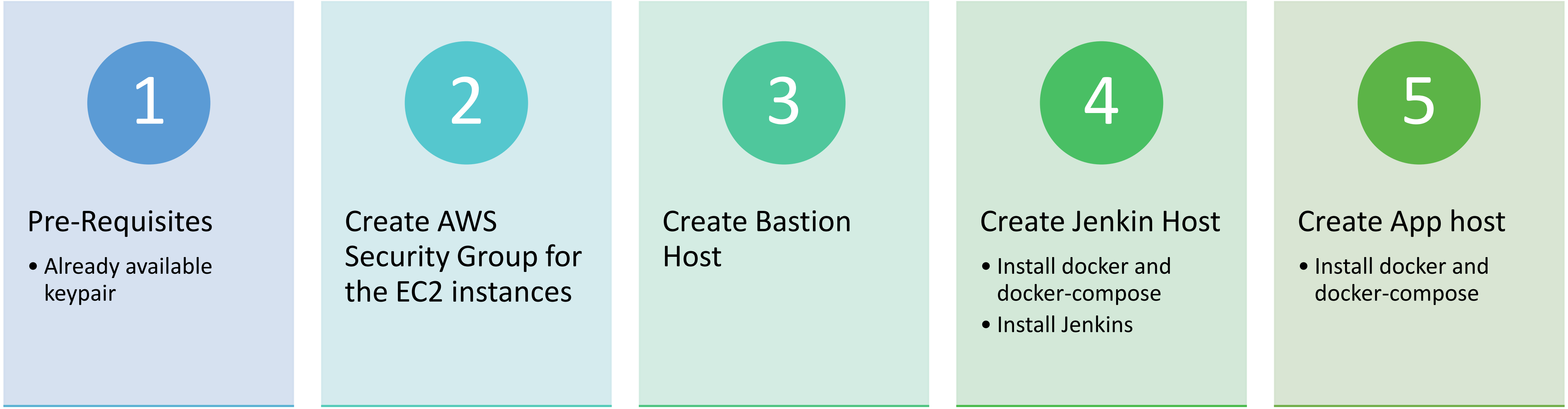
Jenkins Host

- Port 22 to Bastion Host SG
- Port 8080 to ALB SG

App Host

- Port 22 to Bastion Host SG
- Port 22 to Jenkins Host SG
- Port 8000 to ALB SB

EC2 Provisioning



1

Pre-Requisites

- Already available keypair

2

Create AWS Security Group for the EC2 instances

3

Create Bastion Host

4

Create Jenkin Host

- Install docker and docker-compose
- Install Jenkins

5

Create App host

- Install docker and docker-compose

ALB Provisioning

Pre-Requisites

- Already available Domain Name

Create AWS Security Group for the ALB

Create Application loadbalancer

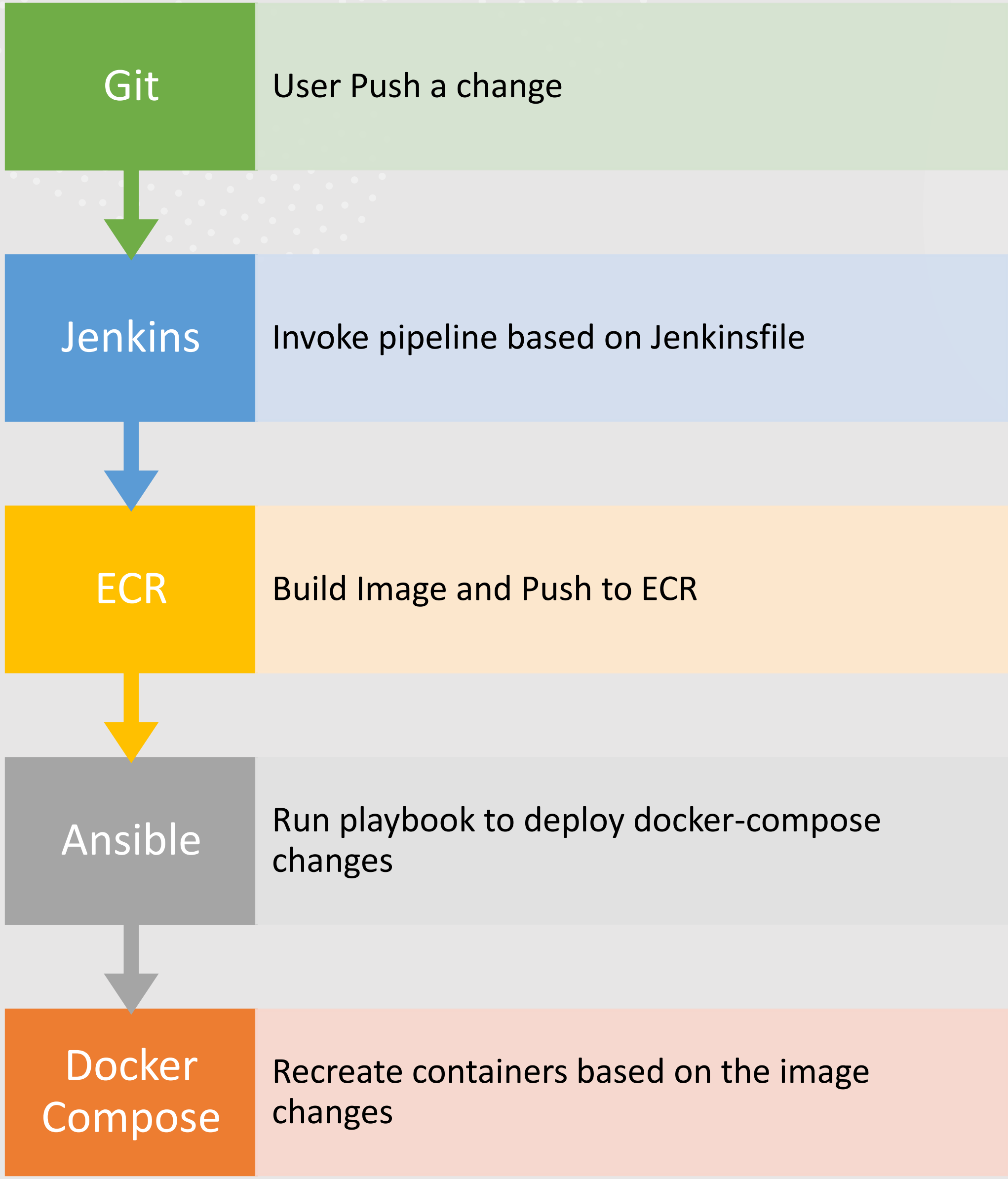
Create a target group for the application service

- Jenkins Access
- Application Access

Create ALB listner pointing to the target group

CI/CD Pipeline

CI/CD Pipeline Flow



Git	User Push a change
Jenkins	Invoke pipeline based on Jenkinsfile
ECR	Build Image and Push to ECR
Ansible	Run playbook to deploy docker-compose changes
Docker Compose	Recreate containers based on the image changes

Feedback

Thank You