

Clone the GitHub Repo: <https://github.com/Raghavarora09/task-pipeline.git>

Run: terraform init

And terraform apply

The following infrastructure will be set up

### 1. VPC (Virtual Private Cloud)

- **aws\_vpc.main:** Creates a VPC with a CIDR block of 10.0.0.0/16, enabling DNS support and hostnames.

### 2. Internet Gateway

- **aws\_internet\_gateway.main:** Creates an Internet Gateway and attaches it to the VPC to allow internet access for resources within the VPC.

### 3. Subnets

- **aws\_subnet.public\_1 and aws\_subnet.public\_2:** Creates two public subnets with different CIDR blocks in different availability zones, both configured to assign public IP addresses to instances launched within them.

### 4. Route Table

- **aws\_route\_table.public:** Creates a route table that directs all traffic (0.0.0.0/0) to the Internet Gateway.
- **aws\_route\_table\_association.public\_1 and aws\_route\_table\_association.public\_2:** Associates the public subnets with the route table, allowing them to route traffic through the Internet Gateway.

### 5. Security Groups

- **aws\_security\_group.jenkins:** Defines a security group for the Jenkins server, allowing inbound SSH (port 22) and Jenkins (port 8080) traffic from anywhere, and allowing all outbound traffic.
- **aws\_security\_group.web:** Defines a security group for web servers, allowing inbound HTTP (port 80) and SSH (port 22) traffic from anywhere, and allowing all outbound traffic.

### 6. IAM Roles and Instance Profiles

- **aws\_iam\_role.codedeploy\_ec2\_role:** Creates an IAM role for EC2 instances with permissions for AWS CodeDeploy.
- **aws\_iam\_role\_policy\_attachment.codedeploy\_ec2\_policy:** Attaches the necessary policy to the EC2 role for CodeDeploy.
- **aws\_iam\_instance\_profile.codedeploy\_ec2\_profile:** Creates an instance profile to attach the IAM role to EC2 instances.

### 7. Jenkins EC2 Instance

- **aws\_instance.jenkins:** Launches an EC2 instance for Jenkins with the specified AMI and instance type (t2.medium). The instance is placed in one of the public subnets and uses the Jenkins security group. A user\_data script installs Jenkins, AWS CLI, and other dependencies on the instance.

## 8. Launch Template for Web Servers

- **aws\_launch\_template.web:** Defines a launch template for creating web server instances. These instances are configured with an Ubuntu AMI, the web security group, and a user\_data script that installs Apache and the CodeDeploy agent.

## 9. Auto Scaling Group

- **aws\_autoscaling\_group.web:** Creates an Auto Scaling Group that manages the web servers. It maintains a desired capacity of 2 instances, with a maximum of 5. The instances are distributed across the two public subnets and are associated with the ALB's target group.

## 10. Application Load Balancer

- **aws\_lb.web:** Creates an Application Load Balancer (ALB) to distribute traffic across the web servers.
- **aws\_lb\_target\_group.web:** Defines a target group for the ALB, which listens on port 80 and performs health checks on the root path (/) of the web servers.
- **aws\_lb\_listener.web:** Configures the ALB to listen on port 80 and forward traffic to the target group.

## 11. CodeDeploy Resources

- **aws\_codedeploy\_app.web:** Defines a CodeDeploy application for deploying the web application.
- **aws\_codedeploy\_deployment\_group.web:** Creates a deployment group within the CodeDeploy application. It uses EC2 tags to identify the instances to deploy to and enables automatic rollback on deployment failure.

## 12. IAM Role for CodeDeploy

- **aws\_iam\_role.codedeploy:** Creates an IAM role that allows AWS CodeDeploy to interact with other AWS services.
- **aws\_iam\_role\_policy\_attachment.codedeploy\_service:** Attaches a managed policy to the CodeDeploy IAM role to grant it the necessary permissions.

Instances (3) Info

Last updated less than a minute ago

All

Instance state = running X

Clear filters

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type
<input type="checkbox"/>	web-server	<a href="#">i-0353c951fe3652240</a>	Running	t2.medium
<input type="checkbox"/>	jenkins-server	<a href="#">i-06acd59198da113b0</a>	Running	t2.medium
<input type="checkbox"/>	web-server	<a href="#">i-0d4f18522155c9095</a>	Running	t2.medium

Set up Jenkins using the administrator password and install suggested and the below necessary plugins

Install	Name	Released
<input checked="" type="checkbox"/>	AWS CodeDeploy 1.23 Artifact Uploaders <small>aws</small> This plugin provides a "post-build" step for AWS CodeDeploy.	4 yr 4 mo ago
<input checked="" type="checkbox"/>	Pipeline: AWS Steps 1.45 pipeline <small>aws</small> This plugin adds Jenkins pipeline steps to interact with the AWS API.	5 mo 10 days ago
<input checked="" type="checkbox"/>	AWS Credentials 231.v08a_59f17d742 aws Allows storing Amazon IAM credentials within the Jenkins Credentials API. Store Amazon IAM access keys (AWSAccessKeyId and AWSSecretKey) within the Jenkins Credentials API. Also support IAM Roles and IAM MFA Token.	5 mo 11 days ago

And click on restart Jenkins after installation.

Now set up the AWS credentials, the same ones in terraform.tfvars file

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

### New credentials

Kind

AWS Credentials

Scope ?

Global (Jenkins, nodes, items, all child items, etc)

ID ?

Description ?

Access Key ID ?

Secret Access Key

IAM Role Support

Copy the id of the created credentials and edit it in the Jenkinsfile on GitHub

Create a new pipeline style item in Jenkins

## New Item

Enter an item name

web-app

Select an item type



### Freestyle project

Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.



### Pipeline

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Select “GitHub hook trigger for GITScm polling” and in Pipeline select

Pipeline from SCM and give your repository link

Also goto GitHub > Settings > Webhook > New Webhook

<Jenkins\_url>/github-webhook/

Settings Recent Deliveries

We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, ~~x-www-form-urlencoded~~, etc). More information can be found in [our developer documentation](#).

Payload URL \*

Content type \*

Secret

SSL verification

☐ By default, we verify SSL certificates when delivering payloads.

☒ Enable SSL verification ☐ Disable (not recommended)

Which events would you like to trigger this webhook?

☒ Just the push event.

☐ Send me everything.

☐ Let me select individual events.

☒ Active

We will deliver event details when this hook is triggered.

Now the Pipeline is set up

For every commit on the GitHub a new build will be initiated

And the webpage will be deployed on the webserver instances using AWS CodeBuild

Deployment history

View details

Actions

Copy deployment

Retry deployment

<

1

>

Deployment Id	Status	Deploym...	Compute ...	Application	Deploym...	Revision L...	Initiating ...	Start time	End time
<div></div> d-9XNVHSQ17	<div></div> In progress	In-place	EC2/On-p...	web-app	web-depl...	github://...	User action	Sep 5, 20...	-

Revision details

Revision location

github://Raghavarora09/task-pipeline/9d1e4d8acc44343af5fc08545852ab2d2b1f84b0

Revision created

1 minute ago

Revision description

Application revision registered by Deployment ID: d-9XNVHSQ17

Event	Duration	Status	Error code	Start time	End time
ApplicationStop	less than one second	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)
DownloadBundle	less than one second	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)
BeforeInstall	5 seconds	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)
Install	less than one second	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)
AfterInstall	less than one second	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)
ApplicationStart	less than one second	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)
ValidateService	less than one second	<div></div> Succeeded	-	Sep 5, 2024 5:21 PM (UTC+5:30)	Sep 5, 2024 5:21 PM (UTC+5:30)

