DEVOPS & CLOUD PROJECTS

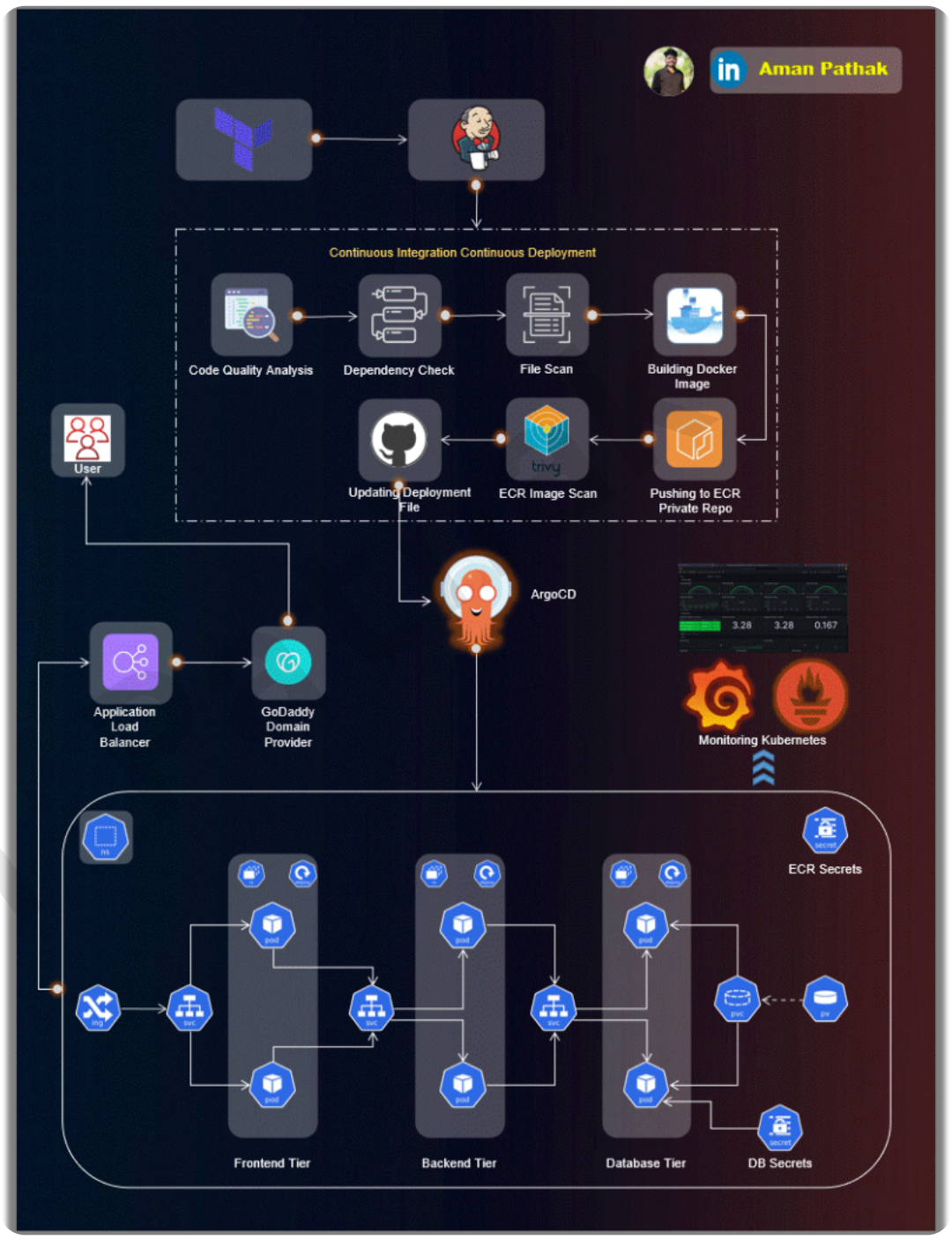
BEGINNER TO ADVANCED

-BY AMAN PATHAK

Featuring 28 Projects across DevSecOps, Kubernetes, AWS, IaC, and Monitoring

Advanced Three-Tier K8S Project on AWS (EKS, ArgoCD, Prometheus, Jenkins)

Deploy and manage a three-tier app using microservices on EKS. Features GitOps, CI/CD, observability stack, and scaling strategies — a blueprint for enterprise-grade K8s design.



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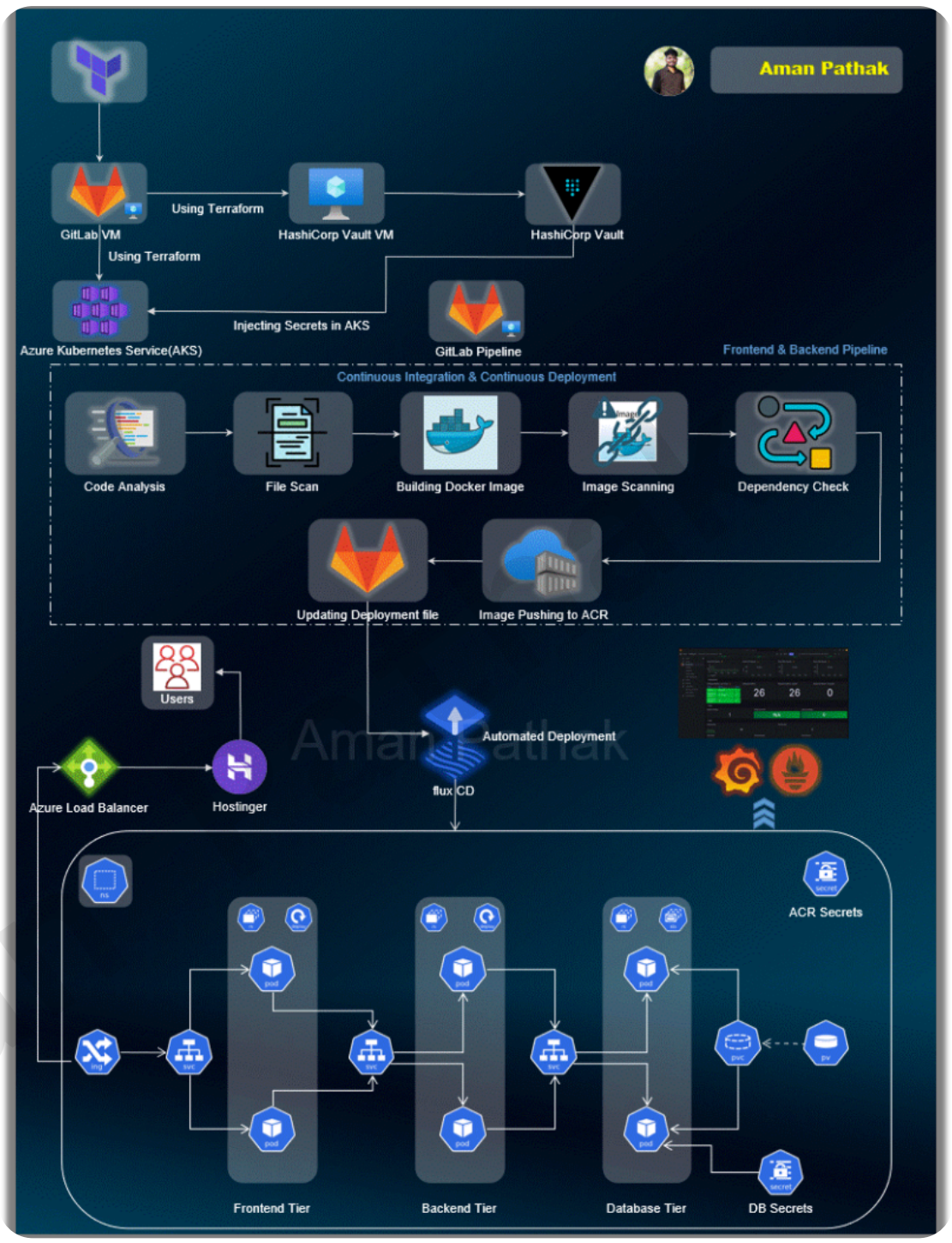
GITHUB REPO

KUBERNETES OBSERVABILITY MICROSERVICES EKS

Advanced Three-Tier K8s Project on Azure (AKS, FluxCD, GitLab, Vault)

Deploy a secure and scalable three-tier app on Azure Kubernetes Service (AKS) with GitLab CI, GitOps via FluxCD, and secret management using Vault. Cloud-agnostic and production-tested.



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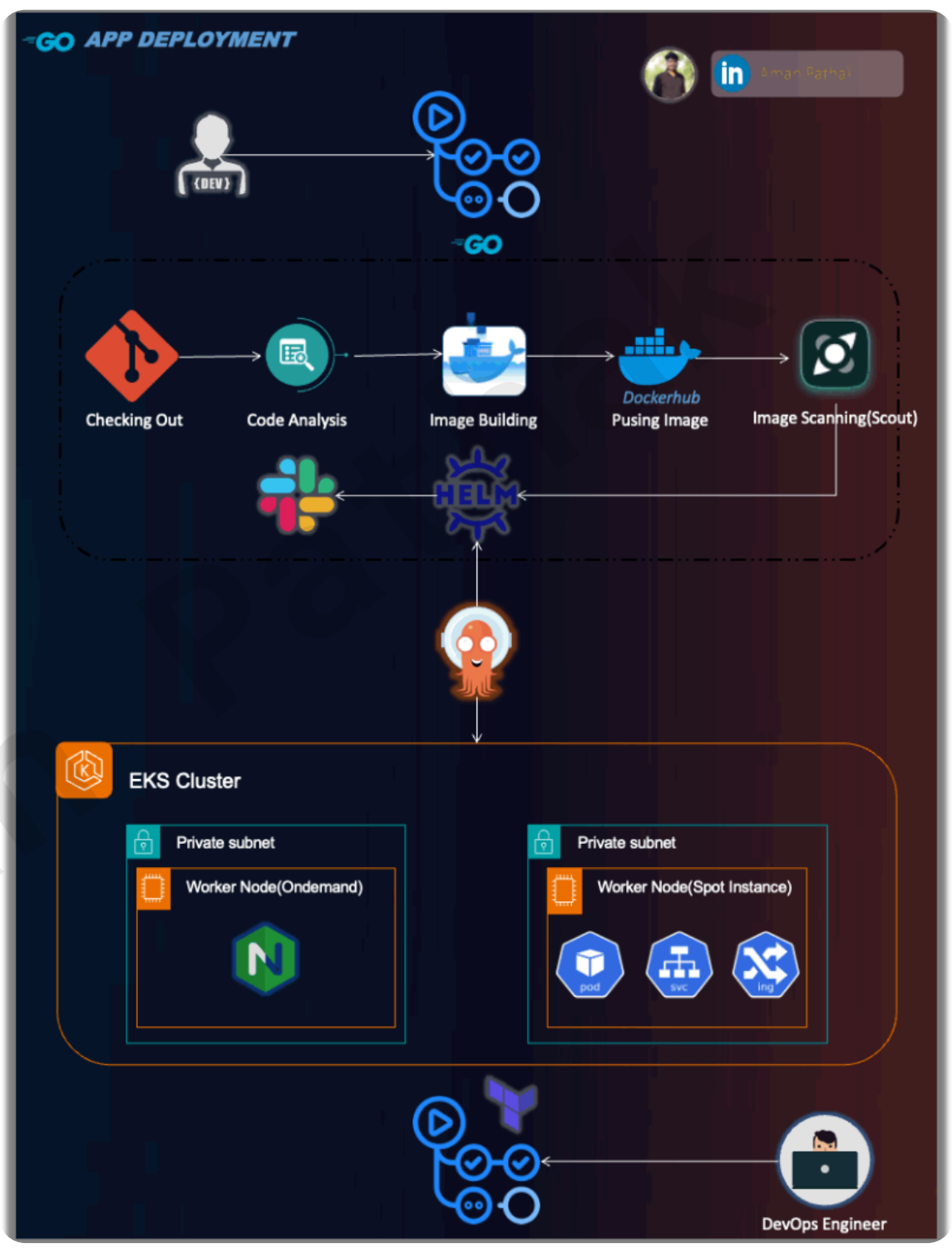
AKS FLUXCD GITLAB VAULT

Deploy a Go App on EKS with Terraform, GitHub Actions & Helm

Deploy a scalable Go-based web app to AWS EKS using IaC with Terraform, CI/CD with GitHub Actions, and Helm for manifest templating—clean, modular, and production-ready setup.



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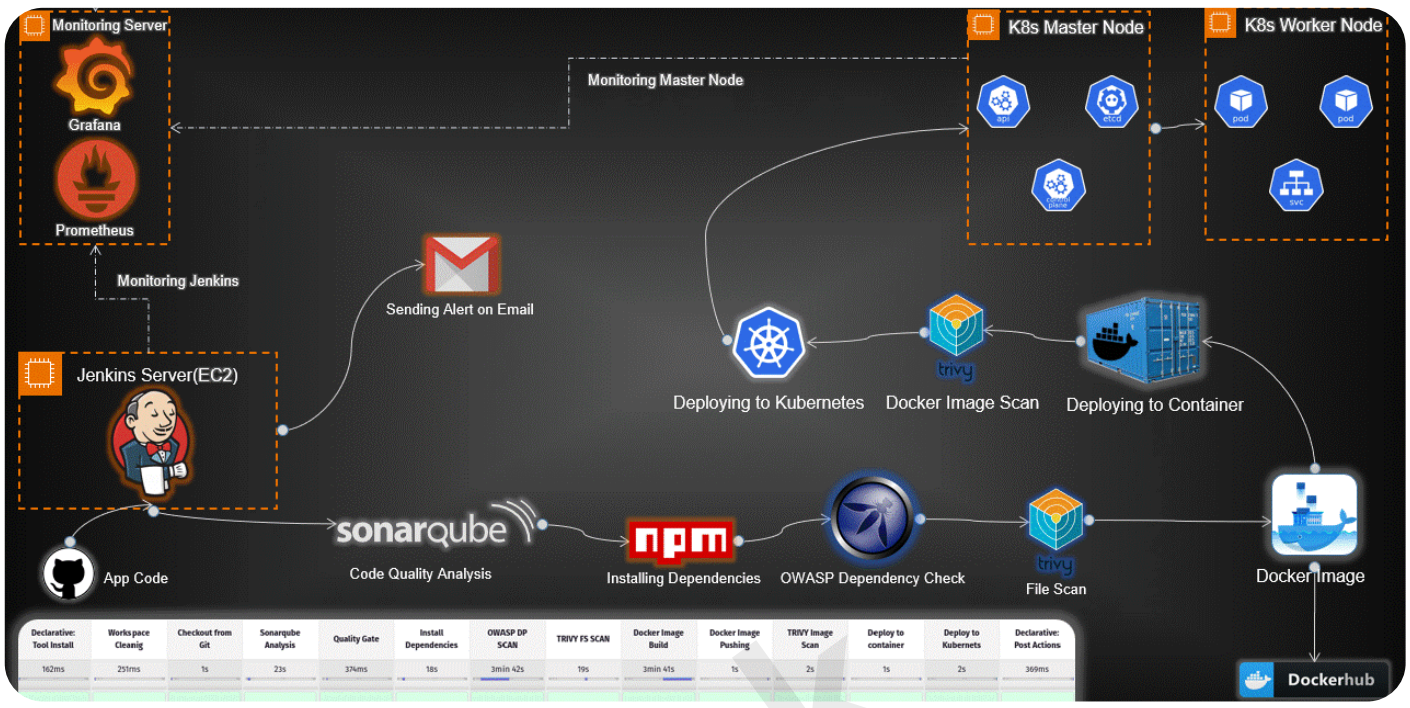
GITHUB REPO

GO HELM TERRAFORM GITHUBACTIONS

DevSecOps EKS Project: Jenkins, Terraform & ArgoCD- Deploy Netflix Clone

Build a secure DevOps pipeline with Jenkins, ArgoCD, and Terraform that includes image scanning, IAM roles, and GitOps on AWS EKS. A full security-focused delivery setup.



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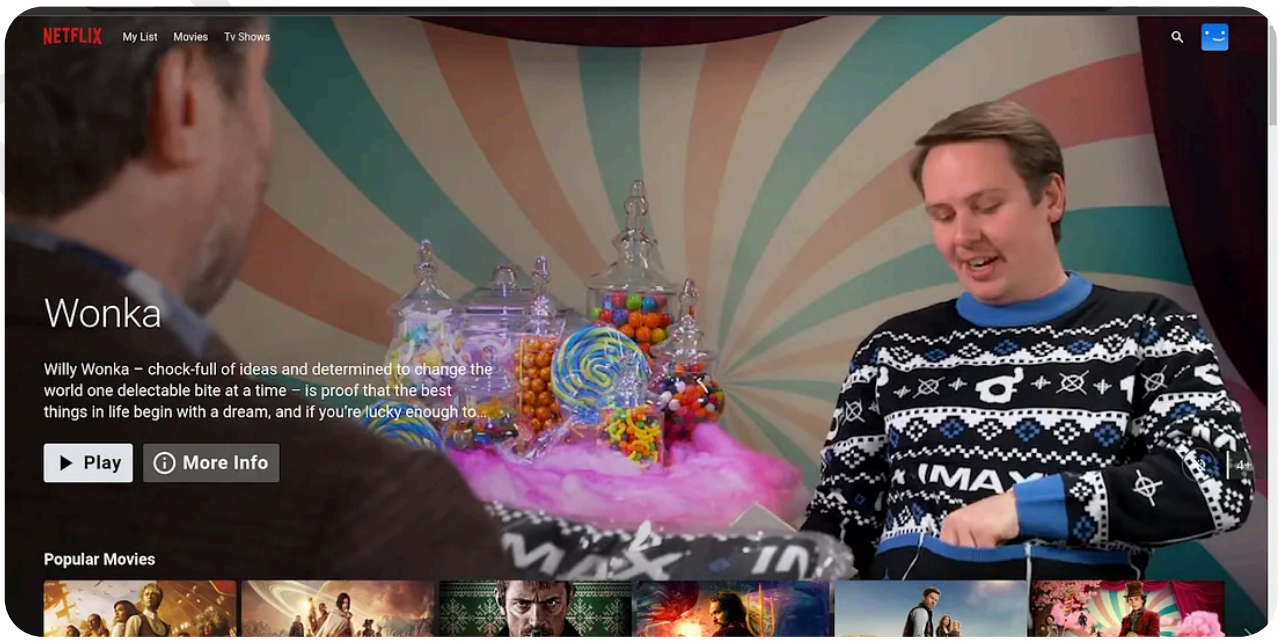
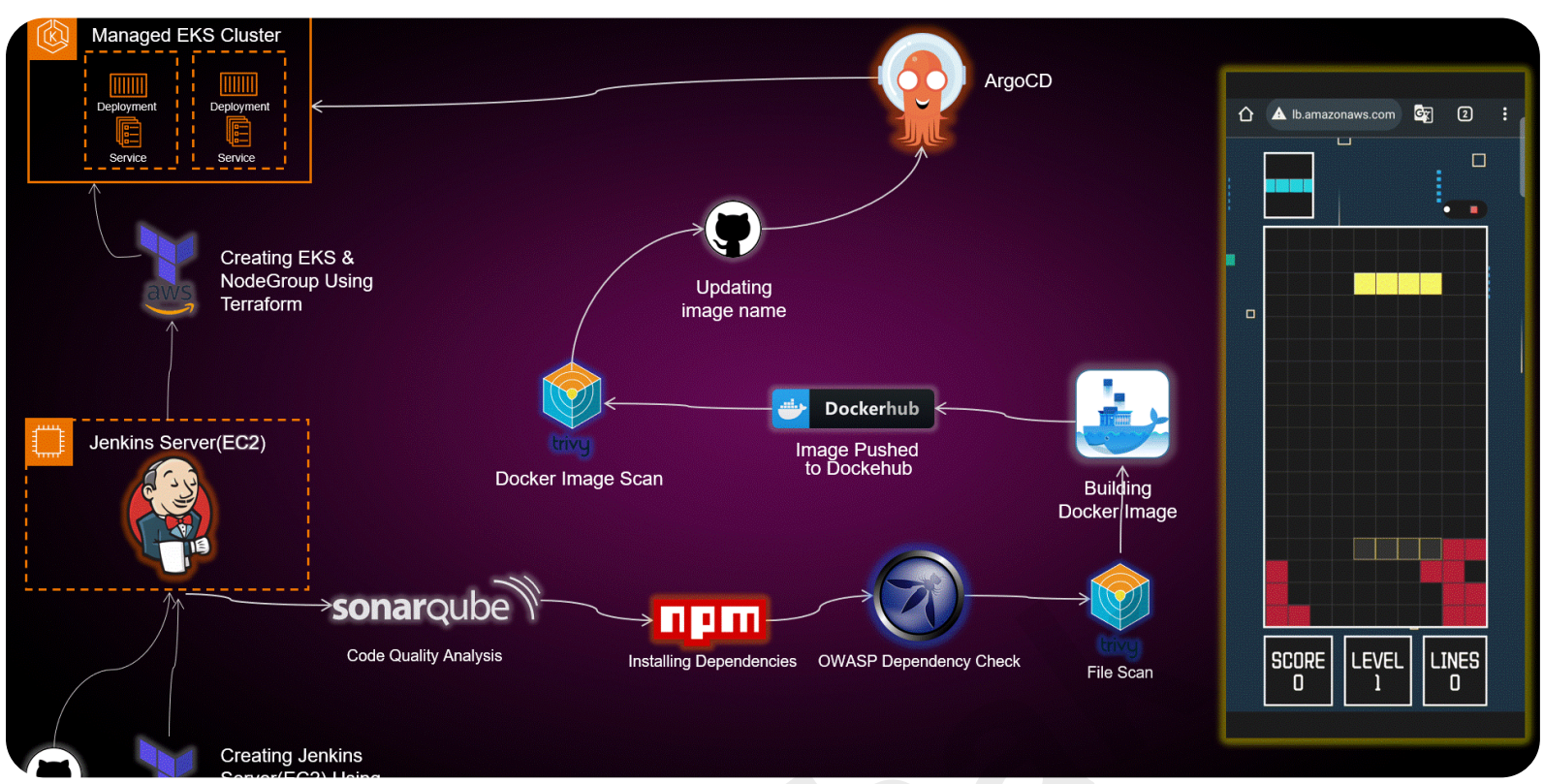
DEVSECOPS EKS GITOPS JENKINS



End-to-End DevSecOps Project (Jenkins, K8S, Trivy, Docker, AWS)- Deploy Game

A complete DevSecOps pipeline with container scanning, SAST checks, Jenkins pipeline automation, and secured deployments to Kubernetes on AWS using Trivy and IAM best practices.



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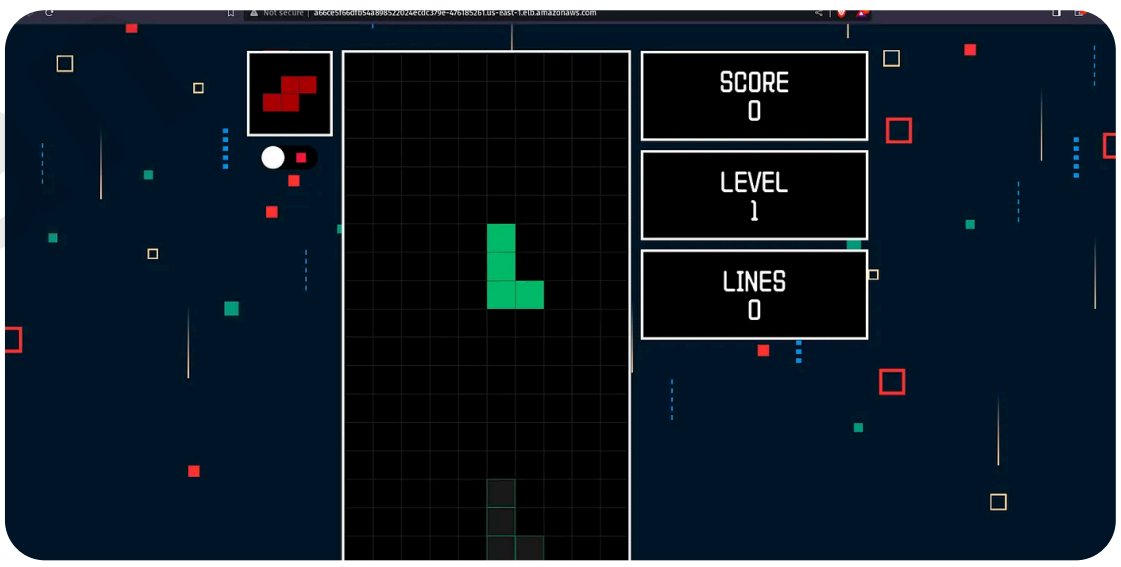
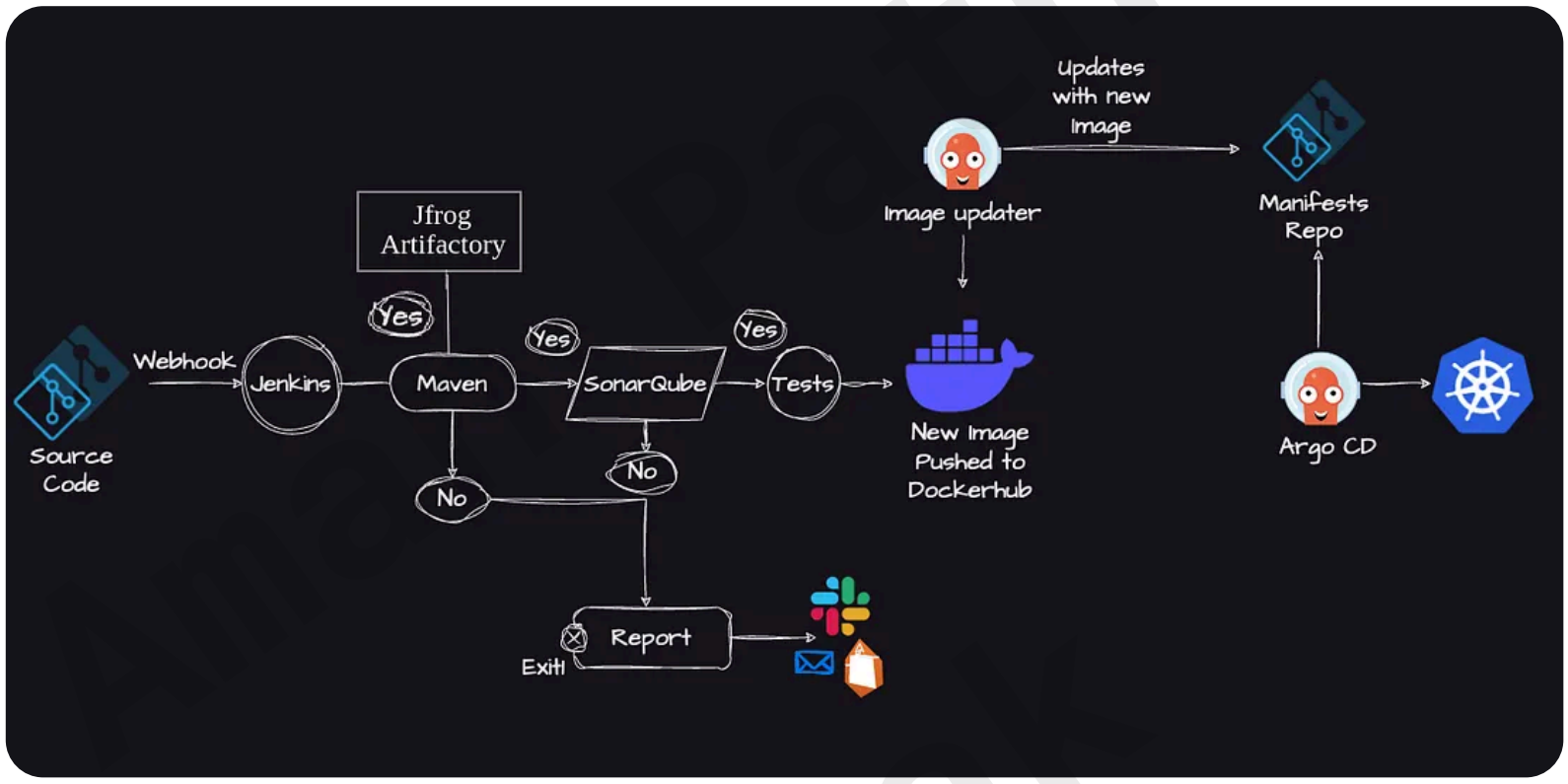
GITHUB REPO

DEVSECOPS DOCKER SECURITY CI/CD



Java CI/CD to K8S with Maven, Jenkins, Sonar, ArgoCD & JFrog

Implement an enterprise-grade CI/CD pipeline for Java apps using Maven, Jenkins, SonarQube, ArgoCD and JFrog Artifactory. Quality checks, binary storage, and auto-deploys to Kubernetes.



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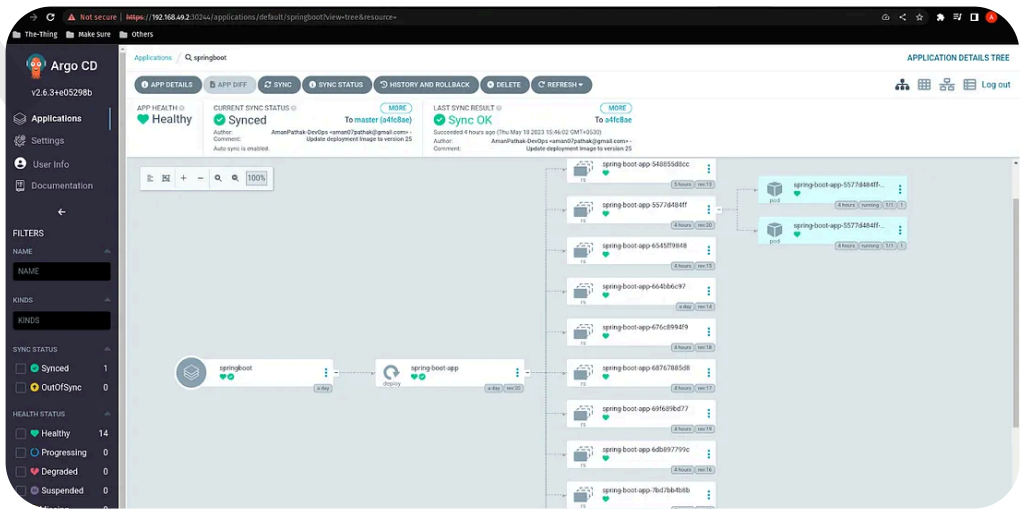
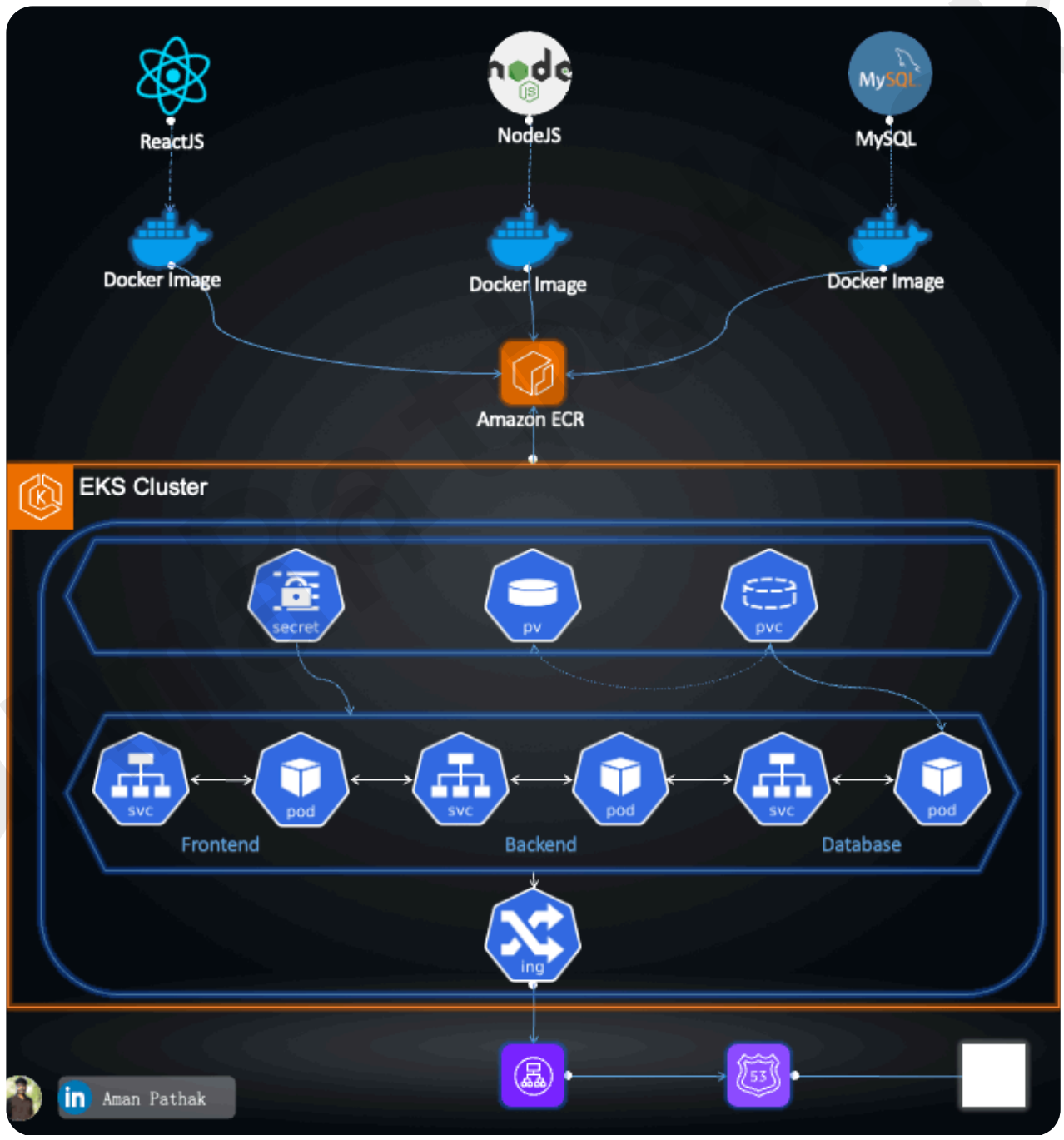
JAVA CI/CD SONARQUBE JFROG



How to Containerise and Deploy a Three-Tier App on AWS EKS

Learn to containerize and deploy a MERN stack three-tier application on EKS with best practices like horizontal scaling, Liveness probes, Ingress, and centralized logging.



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KUBERNETES EKS DOCKER MERN

Production-Ready EKS Clusters with Terraform and GitHub Actions

Automate the provisioning of scalable, secure EKS clusters with Terraform and GitHub Actions CI/CD pipeline. This setup ensures repeatable, consistent, and production-ready infrastructure delivery.

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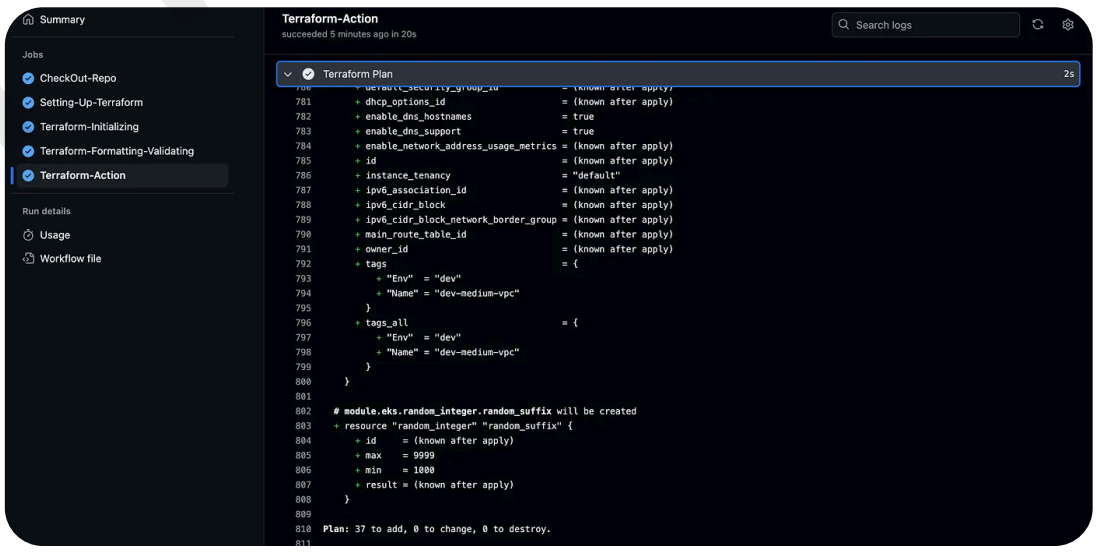
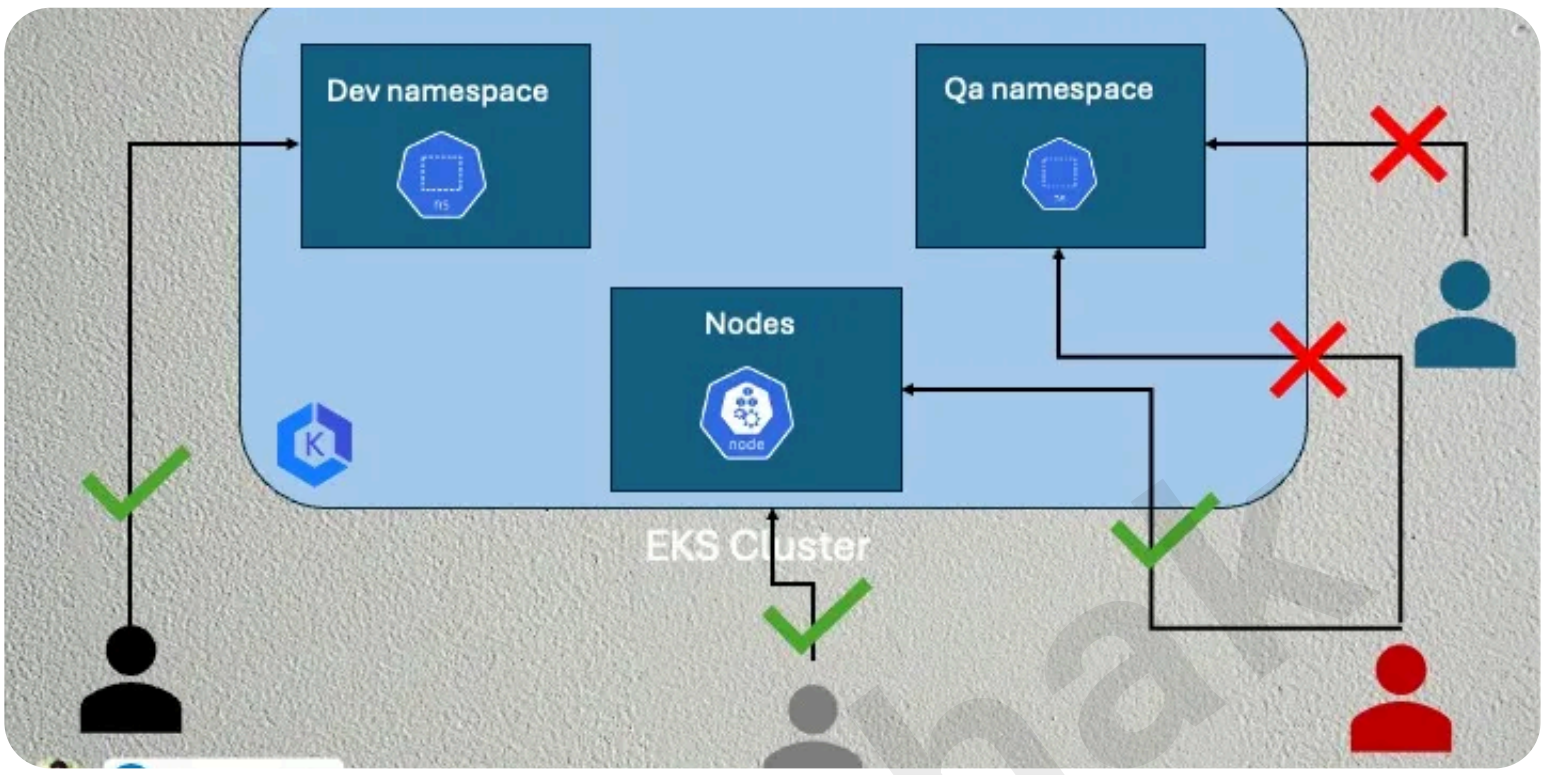
EKS TERRAFORM CI/CD GITHUBACTIONS



Configure RBAC on Production Ready EKS Cluster

Secure access to Kubernetes workloads with AWS IAM roles, service accounts, and Kubernetes RBAC. This setup ensures tight access control over your EKS cluster, following least privilege principles for DevOps and app teams in production-grade environments.



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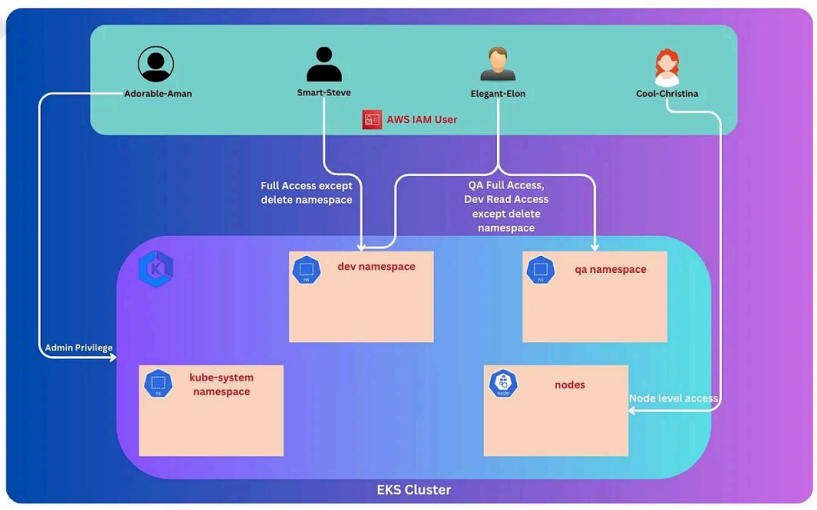
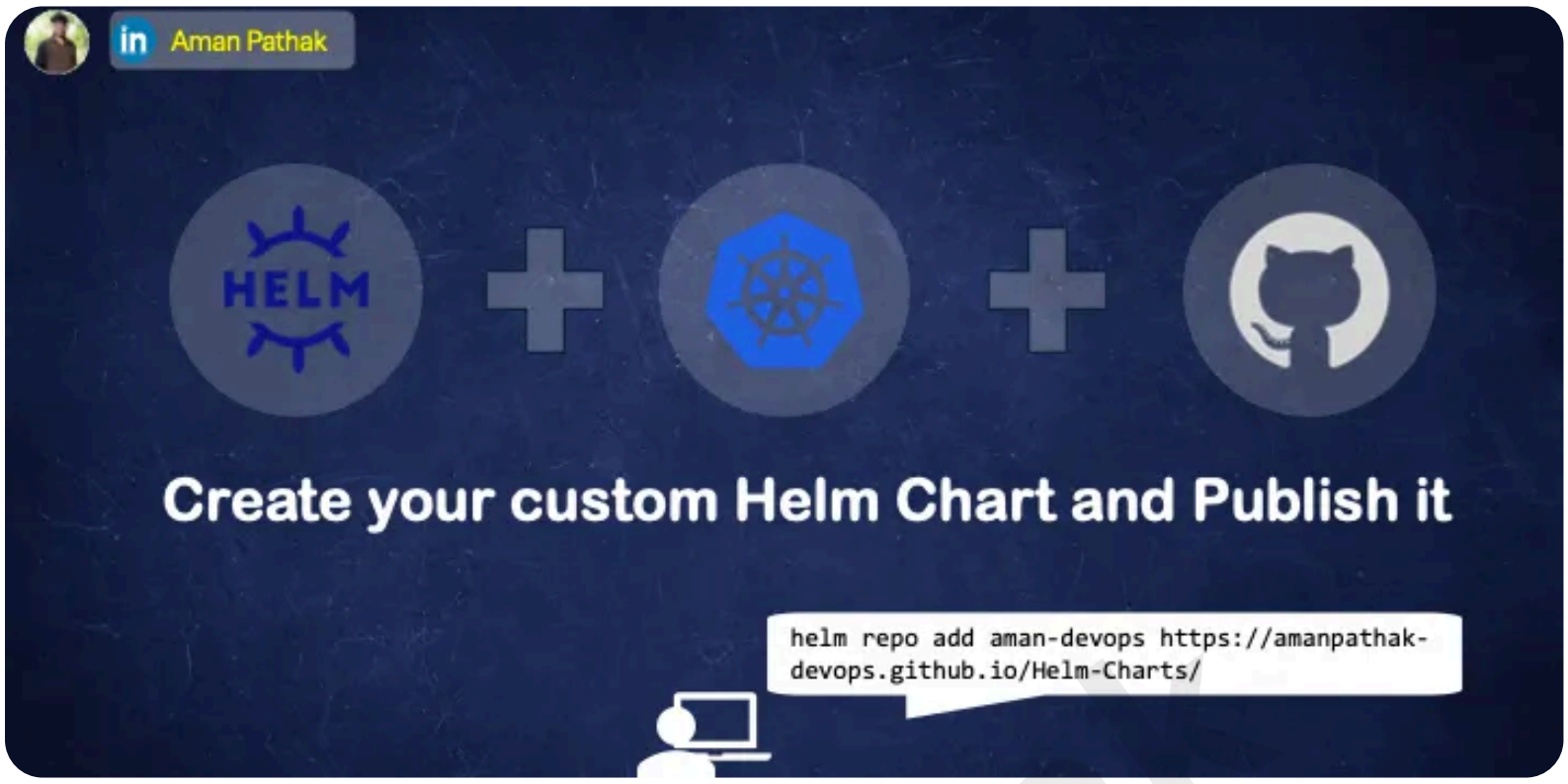
EKS RBAC SECURITY IAM



Custom Helm Chart Publishing

Build, package, and publish your own Helm charts for Kubernetes apps. Host them via Helm repo and automate chart versioning with CI tools. A must-do for DevOps engineers creating reusable deployments.



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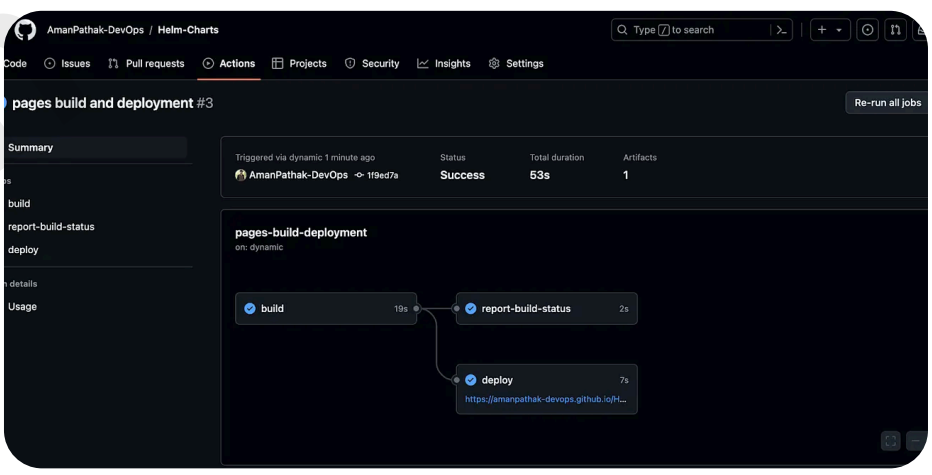
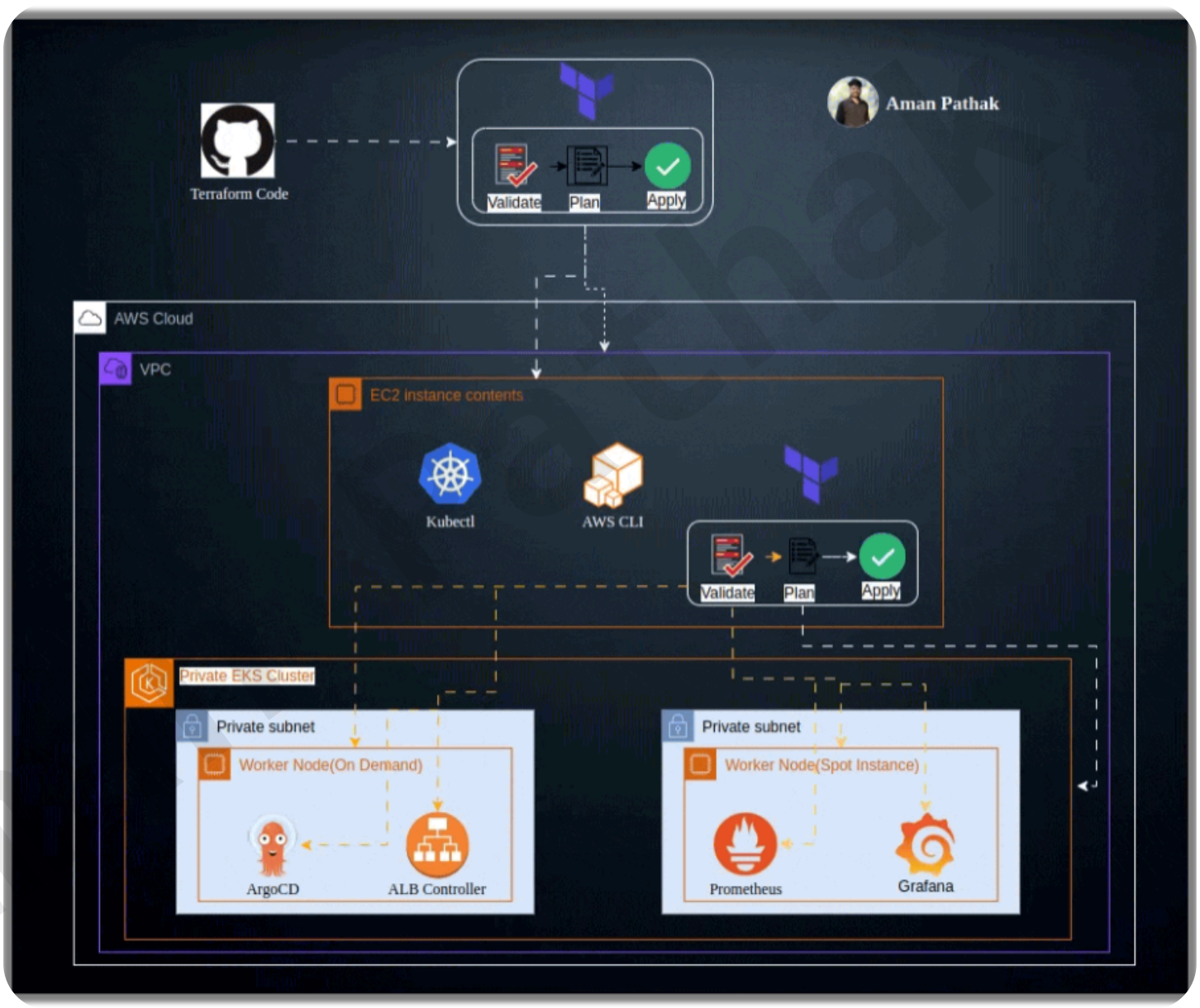
HELM CI/CD KUBERNETES AUTOMATION



Configure ArgoCD, Prometheus, Grafana & AWS Load Balancer Controller on EKS using Terraform

Set up ArgoCD for GitOps, monitor workloads with Prometheus and Grafana, and use AWS Load Balancer Controller for high availability. A complete observability + deployment stack on EKS.



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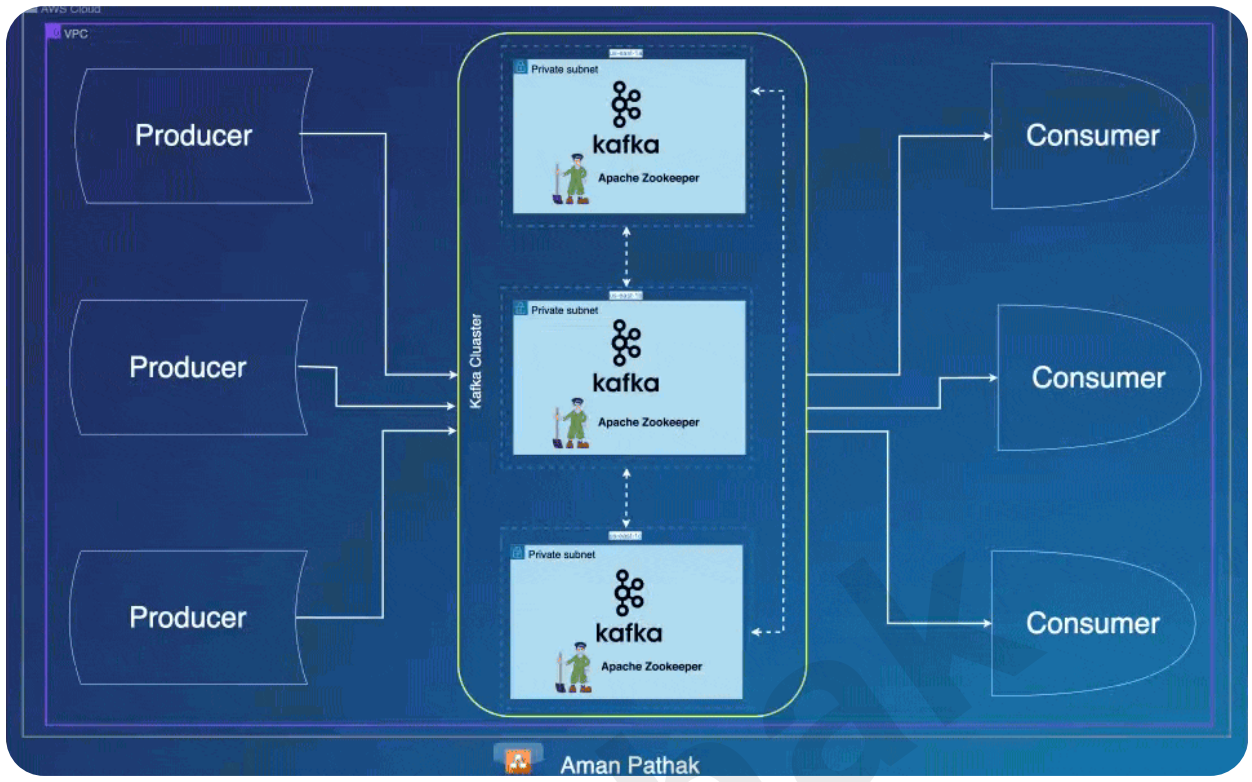
GITHUB REPO

GITOPS MONITORING EKS ARGOCD

Kafka Cluster on AWS EC2

Deploy a scalable, multi-node Kafka cluster using AWS EC2 and Zookeeper. Learn to configure topic partitions, replication, and network isolation. Ideal for data engineers working on production streaming architectures.



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KAFKA EC2 AWS STREAMING

```
fka Producer", "topic": "test-topic", "l
xceeded 90% on server node-42. Immediate
176.165:9092 --topic test-topic

.165:9092   --topic test-topic   --from-
pic", "location": "Data Center - EU", "i
mmediate action required to prevent syst
```

K8sGPT with Ollama on EKS

Integrate K8sGPT and Ollama for AI-powered diagnostics in Kubernetes. Automatically detect and explain cluster issues in real time on AWS EKS. A futuristic observability and troubleshooting solution for production environments.

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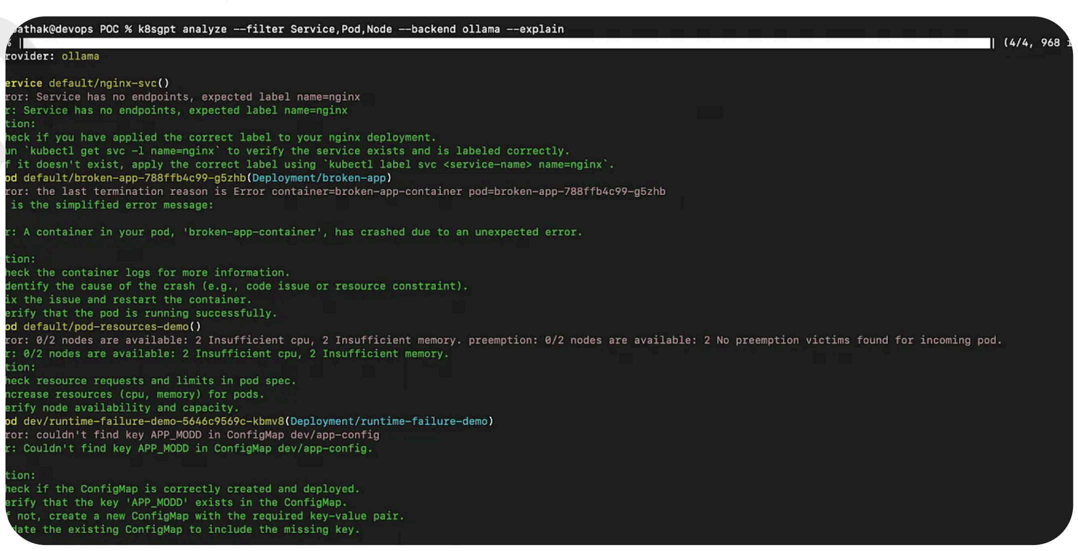
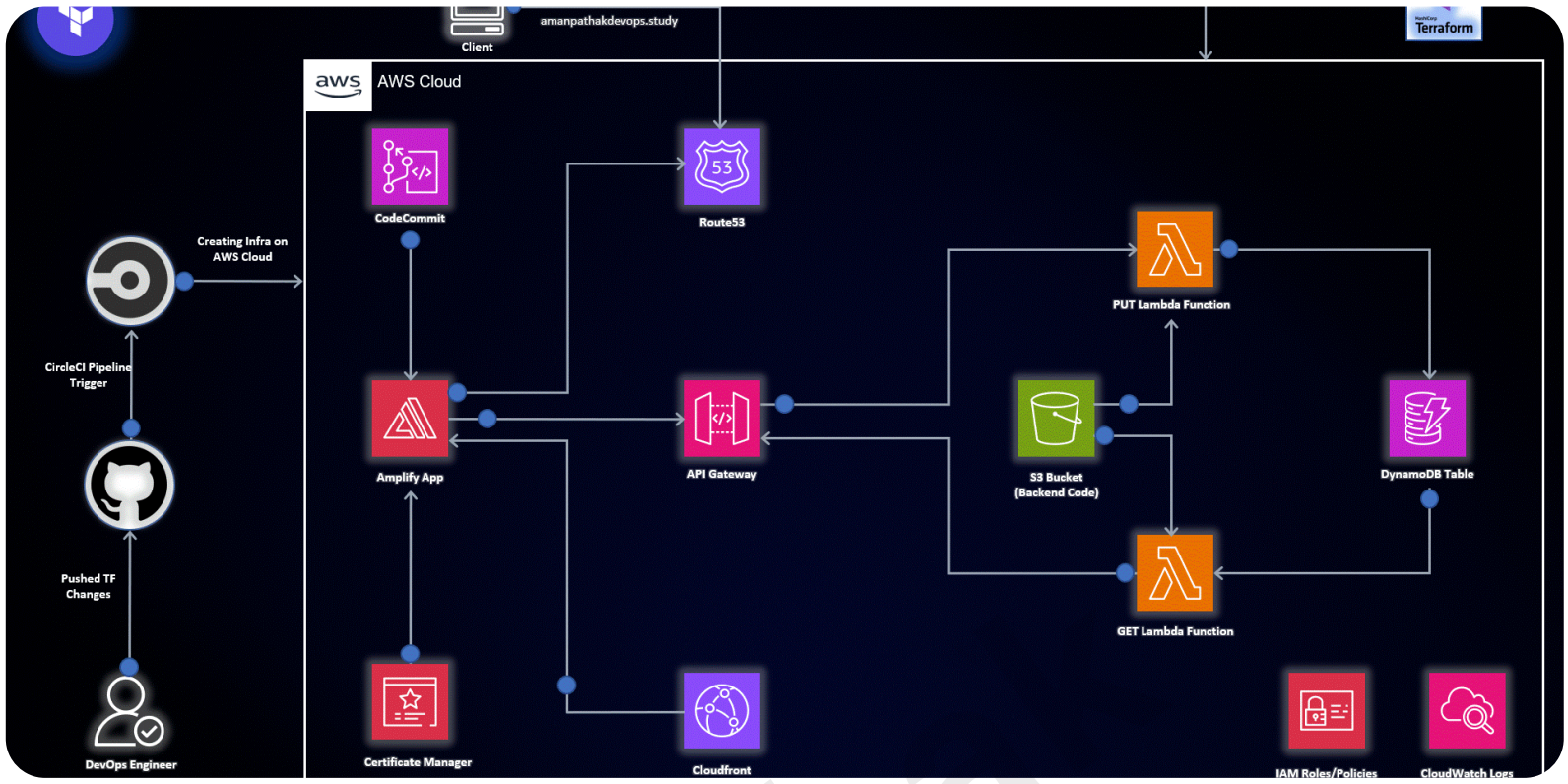
K8SGPT | EKS | OLLAMA | AWS



AWS Serverless App (Manual)

Manually deploy a full-stack serverless web app on AWS using services like API Gateway, S3, Lambda, DynamoDB, Amplify, and more. Connect domains with Route53 and add SSL via ACM. Perfect for mastering AWS service integrations end-to-end.



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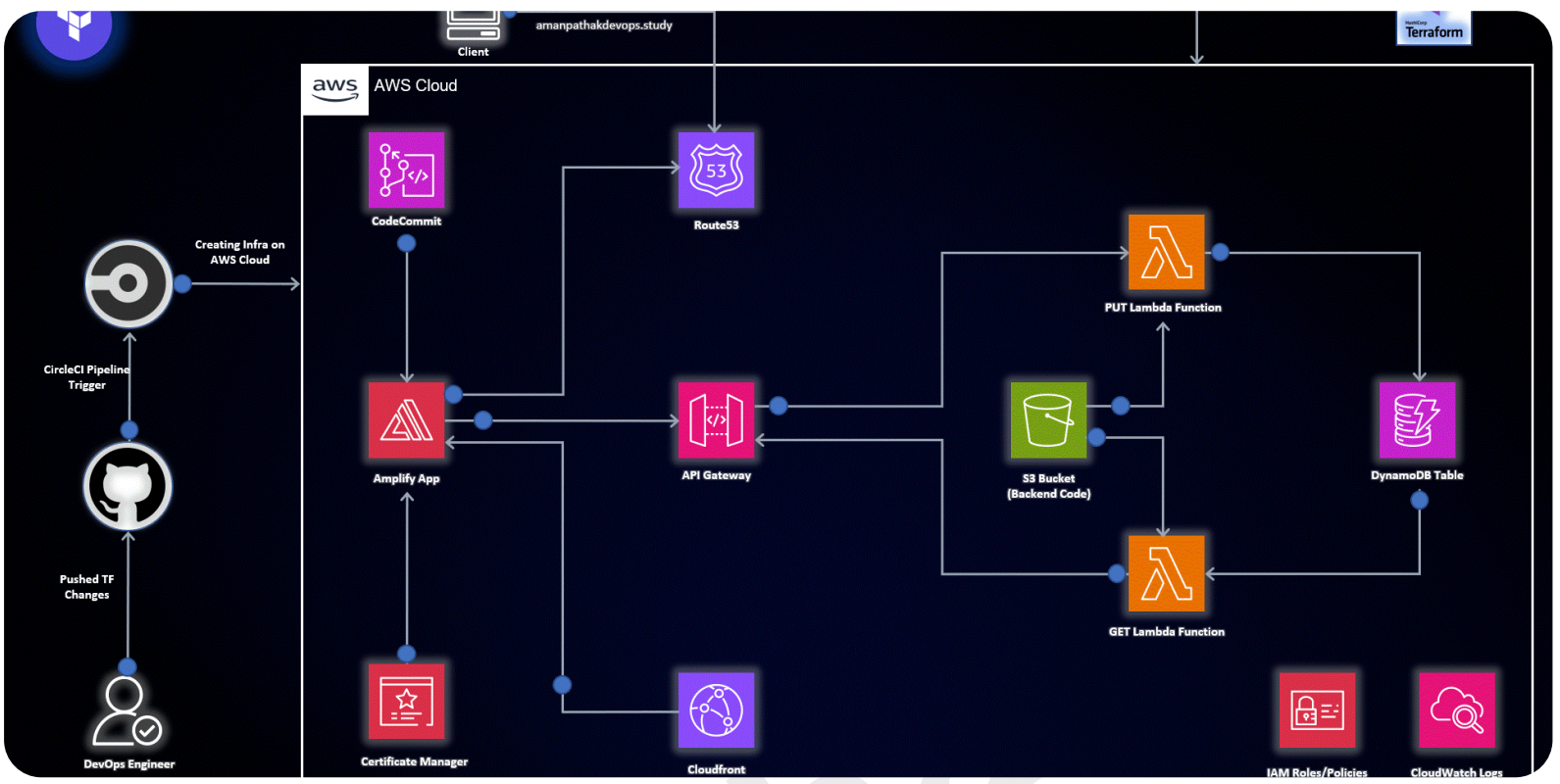
GITHUB REPO

SERVERLESS AWS NOTERRAFORM FULLSTACK

Terraform Serverless App Deployment

Provision and deploy a complete serverless architecture on AWS using Terraform. The stack includes API Gateway, Lambda, DynamoDB, Route53, S3, Amplify, and CircleCI — all orchestrated for automated CI/CD and infrastructure management.



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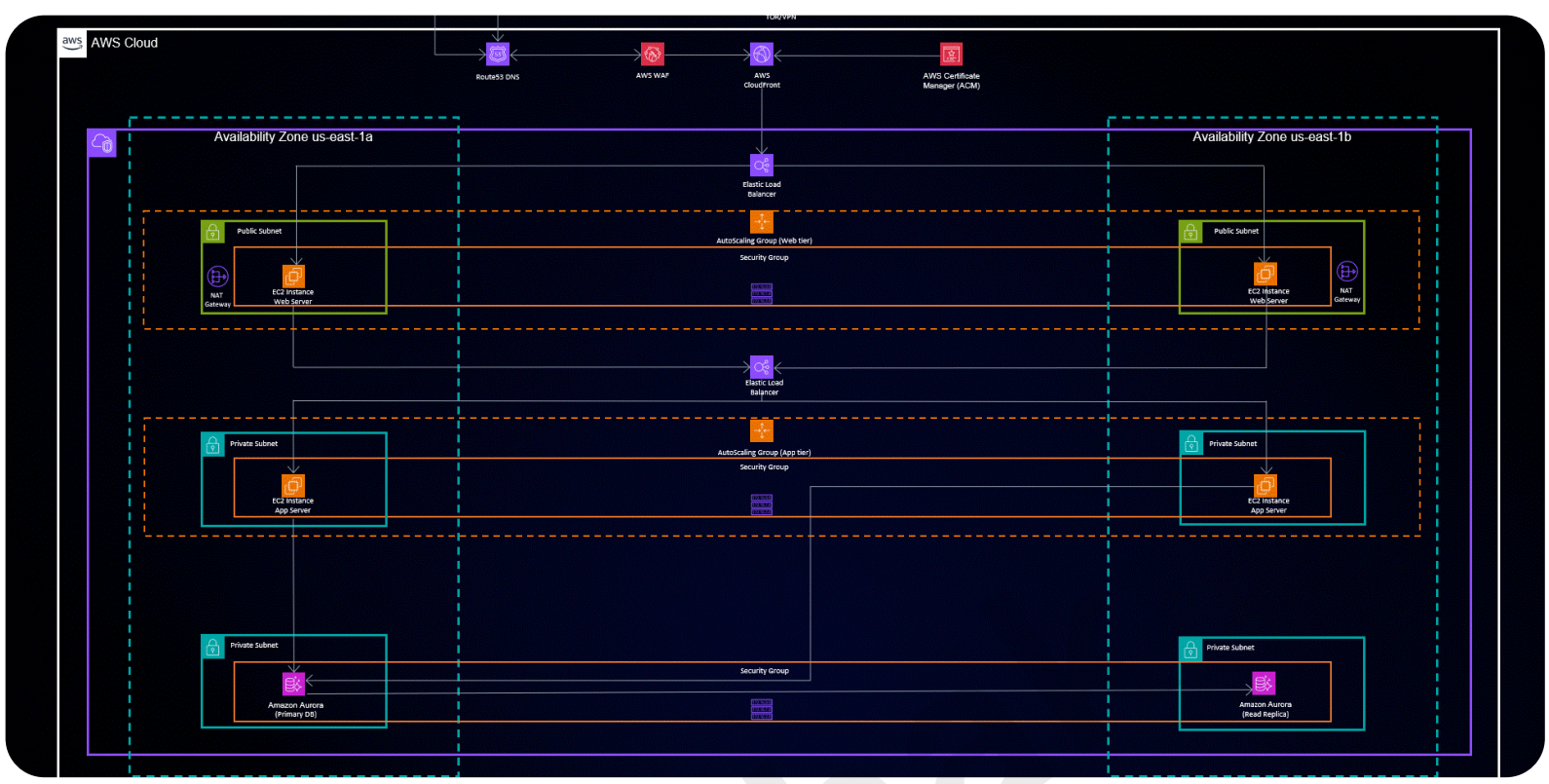
GITHUB REPO

SERVERLESS AWS TERRAFORM FULLSTACK

Mastering AWS Three-Tier Infra with Terraform

Build a production-grade three-tier architecture with Auto Scaling EC2 instances, Aurora RDS, Application Load Balancer, WAF, and ACM. Terraform automates it all, bringing infra-as-code to the enterprise level.



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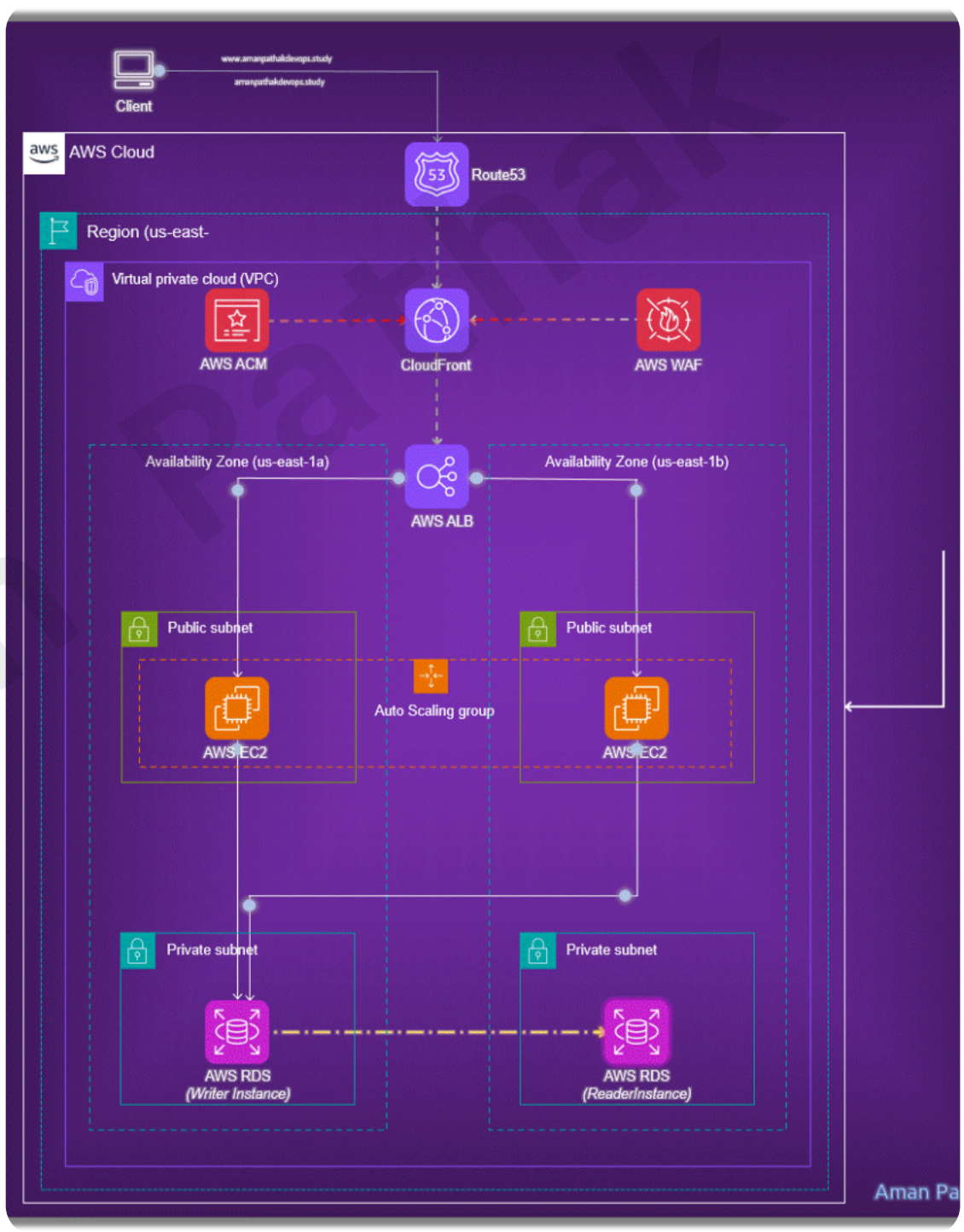
GITHUB REPO

TERRAFORM AWS RDS THREE-TIER

Two-Tier App on AWS with Terraform

Deploy a two-tier architecture on AWS: EC2 for web, RDS for data, and set up ACM, CDN, and Load Balancer. All infra provisioned using Terraform with best security practices.



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GITHUB REPO

AWS

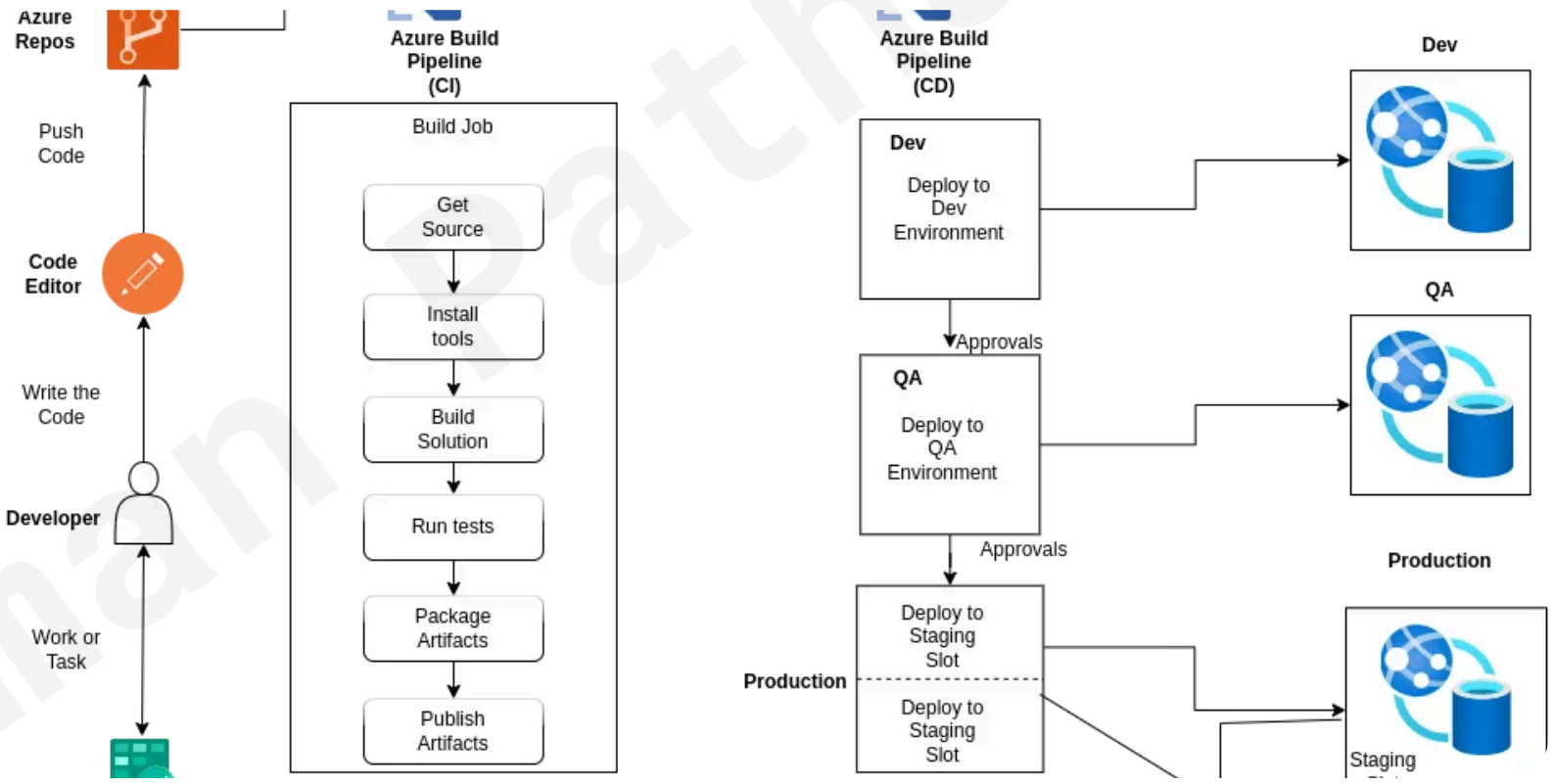
TERRAFORM

TWO-TIER

IAC

Azure CI/CD with Azure DevOps Pipelines

Set up a CI/CD pipeline using Azure DevOps to build, test, and deploy applications on Azure App Service. Leverage Azure Artifacts and Boards to manage end-to-end development and delivery.



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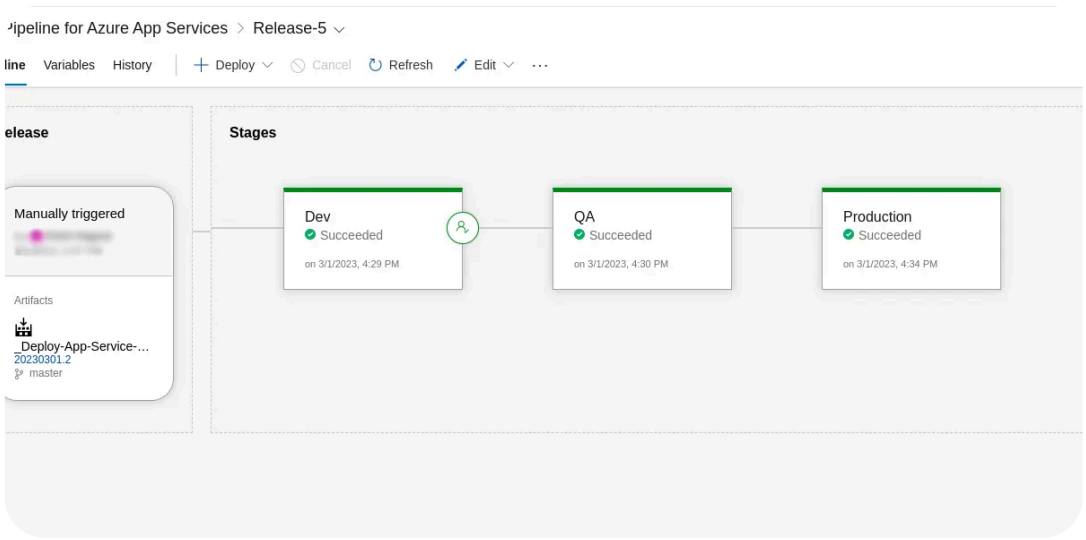
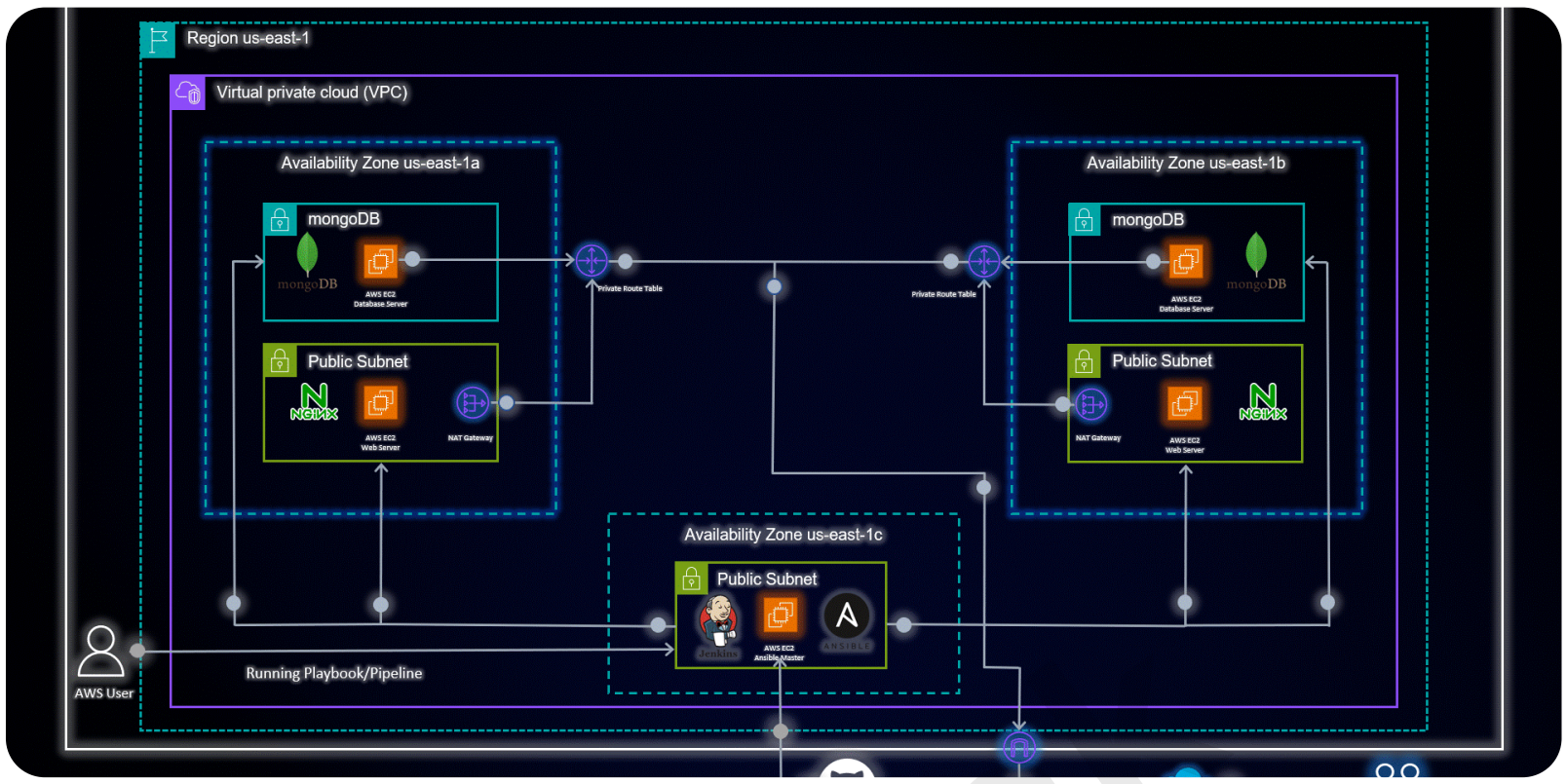
GITHUB REPO

CODEPIPELINE | EC2 | CI/CD | AWS



Ansible Infra Automation Chapter 1

Use Ansible Playbooks to configure Nginx and MongoDB across multiple AWS EC2 instances. Automate setup, security, and service validation. Ideal for those stepping into infrastructure-as-code.



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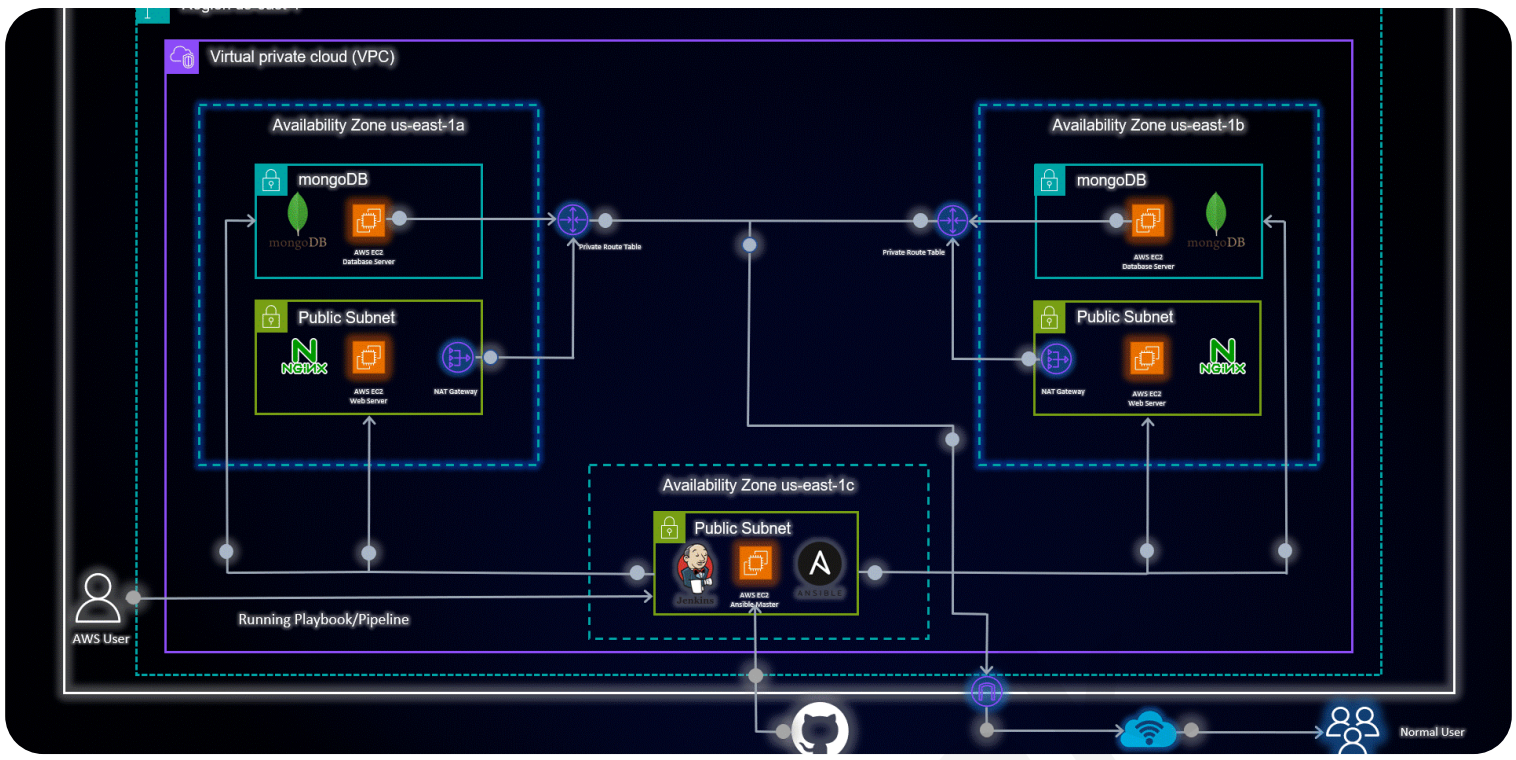
GITHUB REPO

ANSIBLE AUTOMATION NGINX MONGODB

```
ip-31-32-195:~$ mongosh "mongodb://localhost:27017/aman_db"
Mosh Log ID: 64c7bfbb3ae8b58b05656d6f
ect to:          mongodb://localhost:27017/aman_db?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+1.10.3
ver DB:          6.0.8
sh:              1.10.3

 info see: https://docs.mongodb.com/mongodb-shell/


er generated these startup warnings when booting
-01T13:57:50.316+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
-01T13:57:51.383+00:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
-01T13:57:51.383+00:00: vm.max_map_count is too low

.getUsers()


'aman_db.admin',
d: new UUID("c4f2435b-c66e-488c-b310-d1ba03c61620"),
 'admin',
aman_db',
: [
ole: 'readWrite', db: 'admin' },
ole: 'readWrite', db: 'aman_db' }

nisms: [ 'SCRAM-SHA-1', 'SCRAM-SHA-256' ]


'aman_db.backup/usr',
d: new UUID("1467b79e-23be-471e-9930-7aafbb37dded"),
 'backup/usr',
aman_db',
: [ { role: 'backup', db: 'admin' } ],
nisms: [ 'SCRAM-SHA-1', 'SCRAM-SHA-256' ]
```

Ansible Infra Automation Chapter 2

Extend Chapter 1 to handle advanced configs, backup, user management, and remote log integration. Implement Ansible roles for reusable, scalable playbook architecture.



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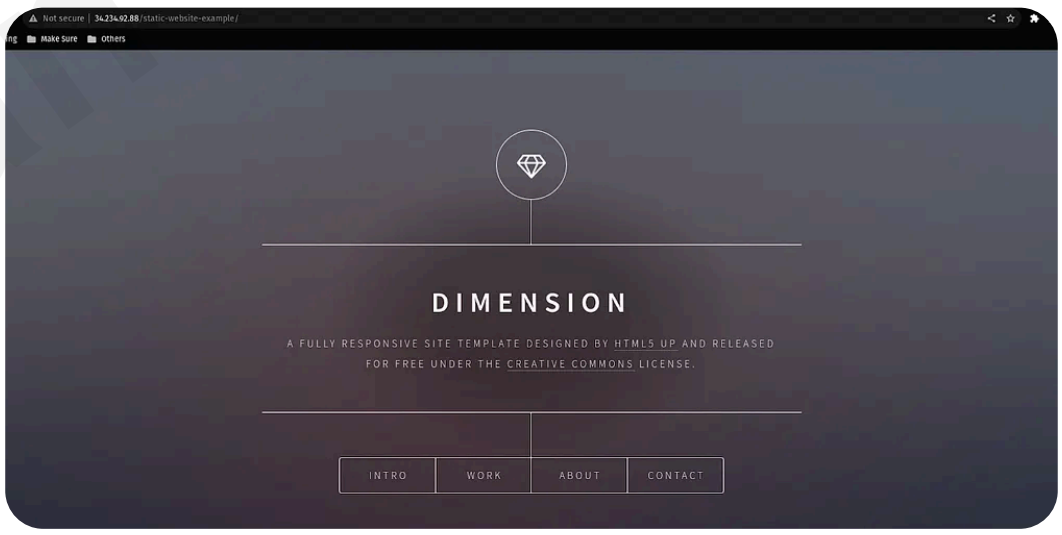
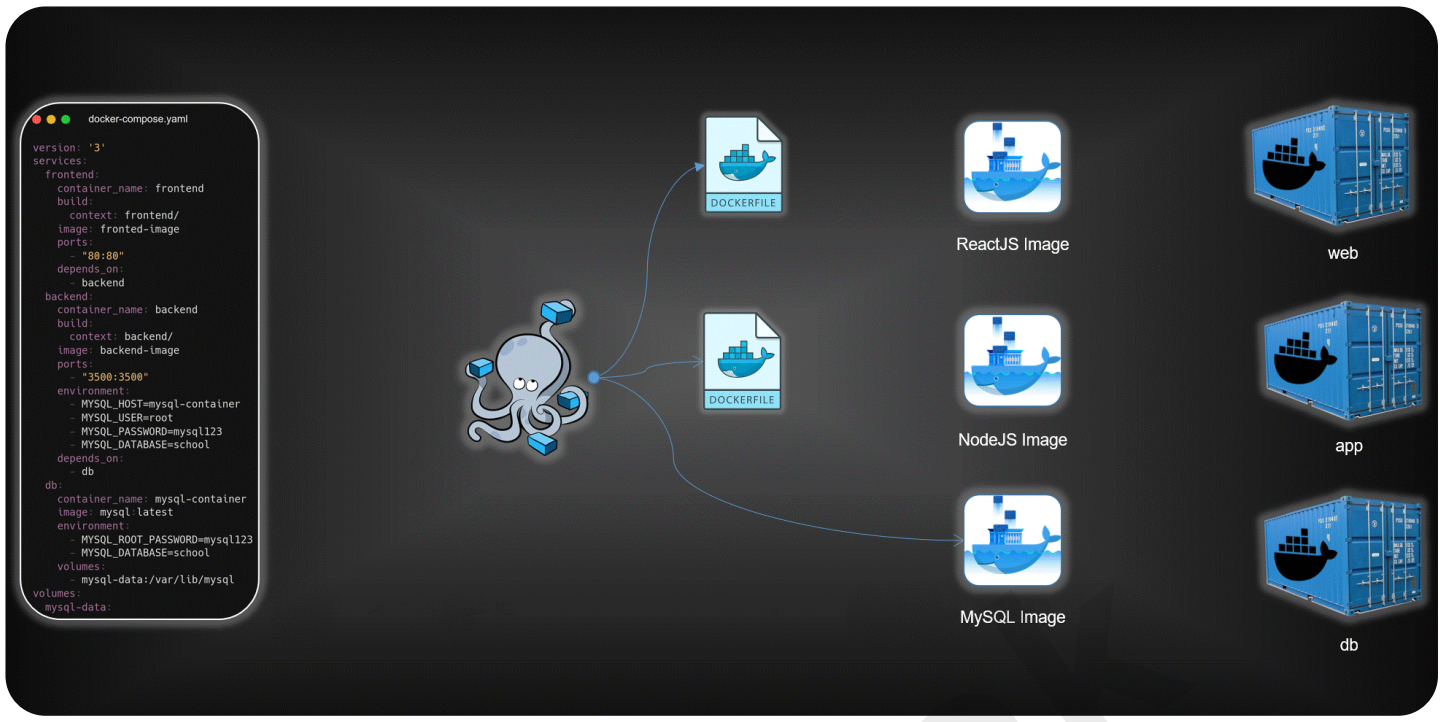
ANSIBLE AUTOMATION NGINX MONGODB



Deploy MERN Stack with Docker Compose

Package and deploy a complete MERN stack using Docker and Docker Compose. Learn service linking, volumes, and network configs to run frontend, backend, and DB in harmony.



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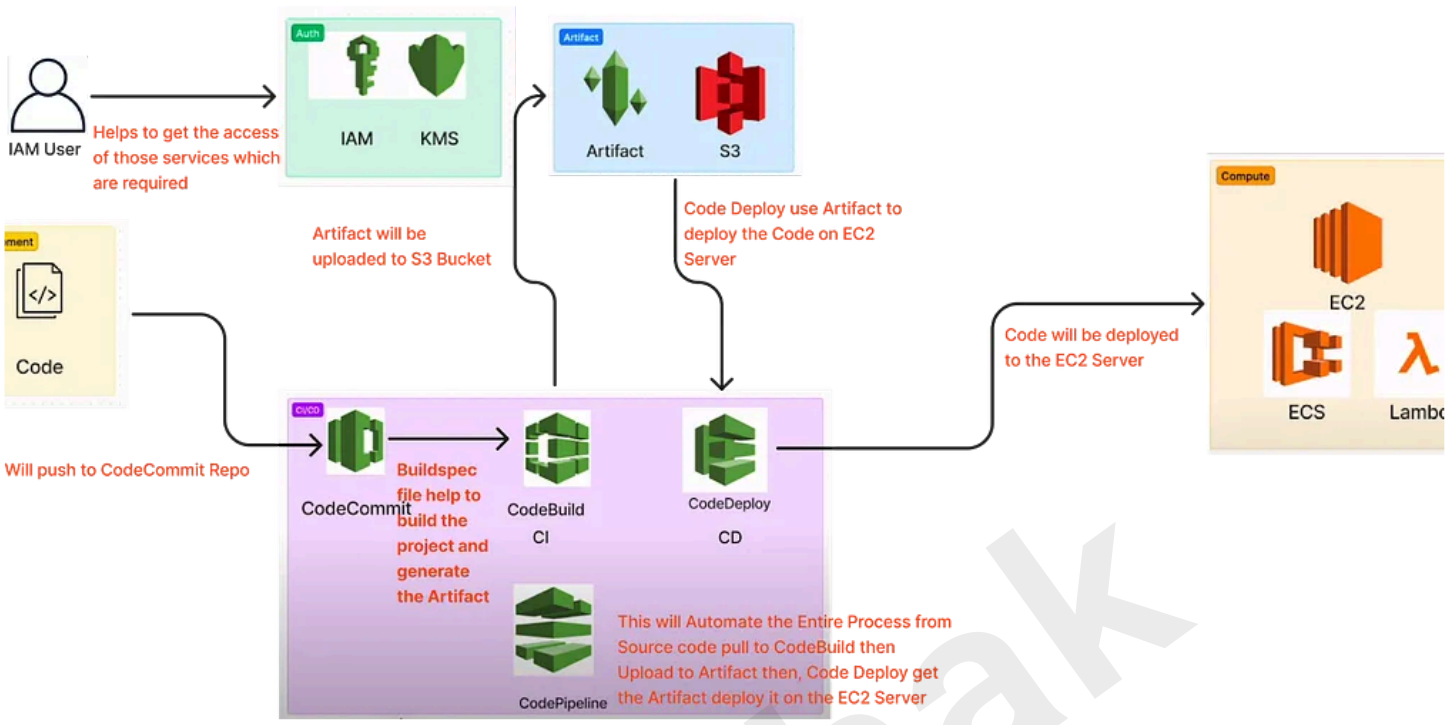
GITHUB REPO

KUBERNETES EKS DOCKER MERN

AWS CodePipeline for EC2 App

Build a robust CI/CD pipeline using AWS-native tools: CodeCommit, CodeBuild, CodeDeploy, and CodePipeline to deploy apps on EC2. Integrate with S3 and Lambda for automation.



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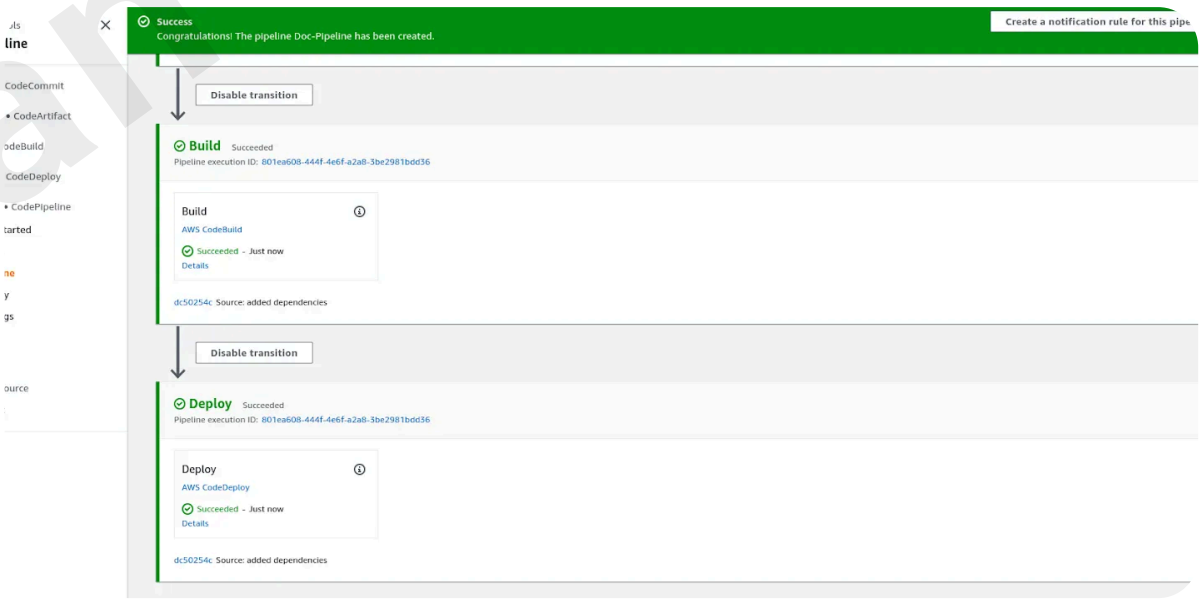
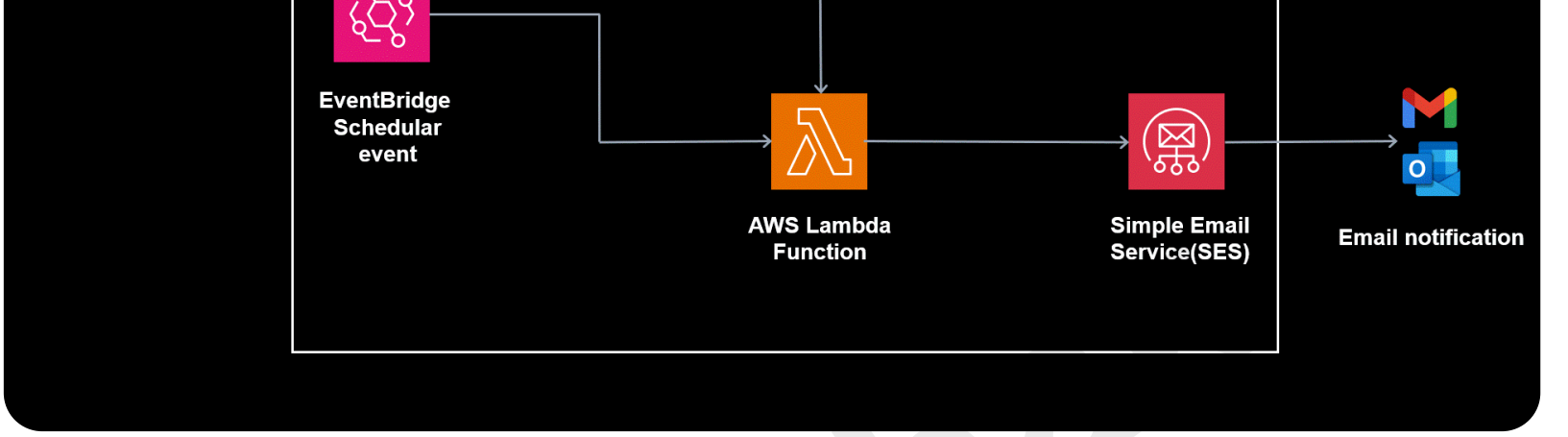
GITHUB REPO

CODEPIPELINE CI/CD AWS EC2



Automated AWS Cost Reports

Generate automated AWS billing reports using EventBridge, Cost Explorer API, and SES. Receive daily/monthly emails with detailed usage insights. Cost transparency + alerting in a single serverless pipeline.



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GITHUB REPO

AWS BILLING | AUTOMATION | SES | EVENTBRIDGE

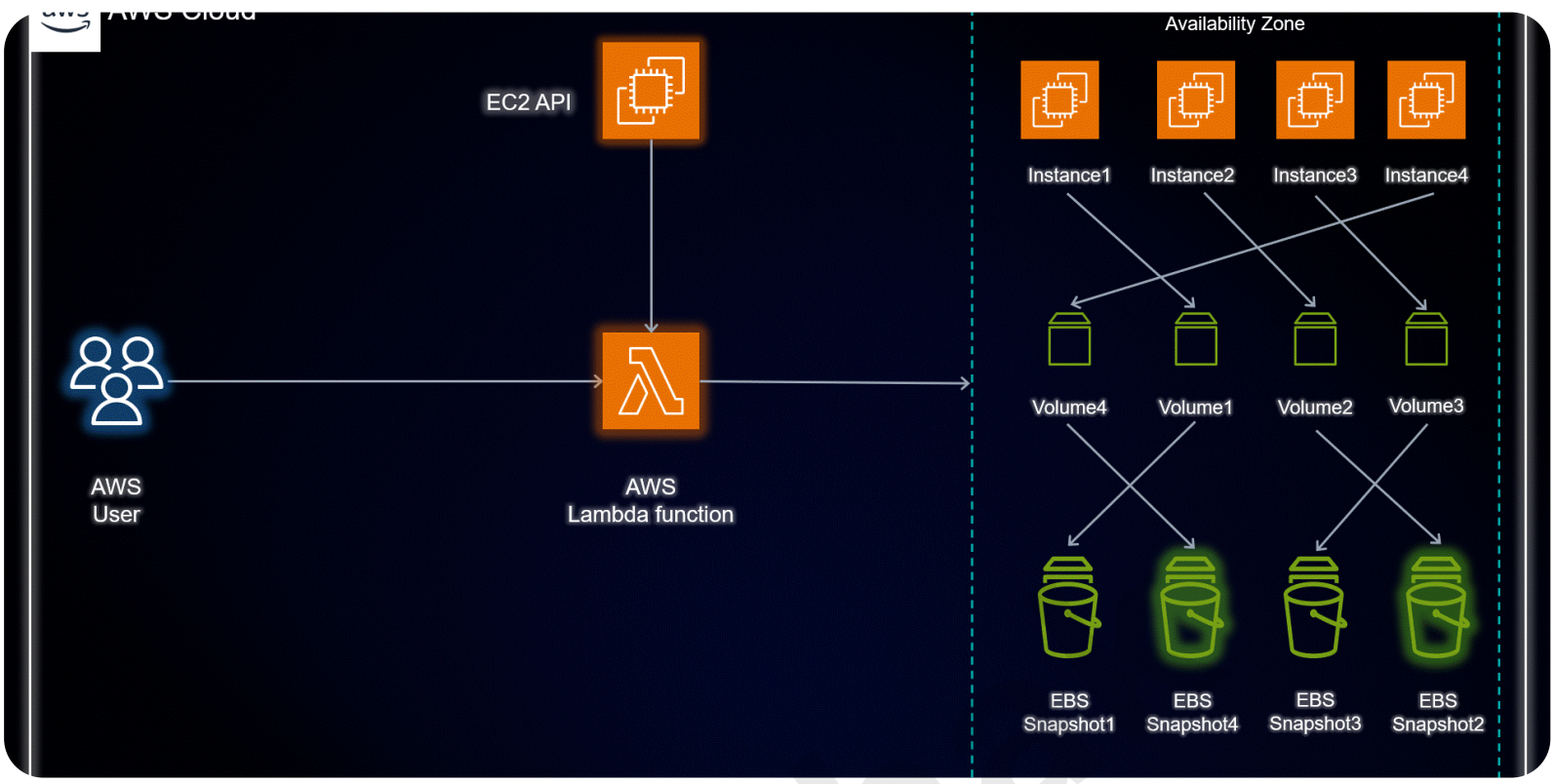
amazonses.com

$0.002

Usage Type	Cost
medStorage-ByteHrs	$0.002

EBS Snapshot Optimiser Lambda

Save costs on unused snapshots by building a Lambda function to automate retention and cleanup. Tag-aware snapshot rotation and notifications with zero manual effort.



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GITHUB REPO

EBS | LAMBDA | COST SAVINGS | AUTOMATION

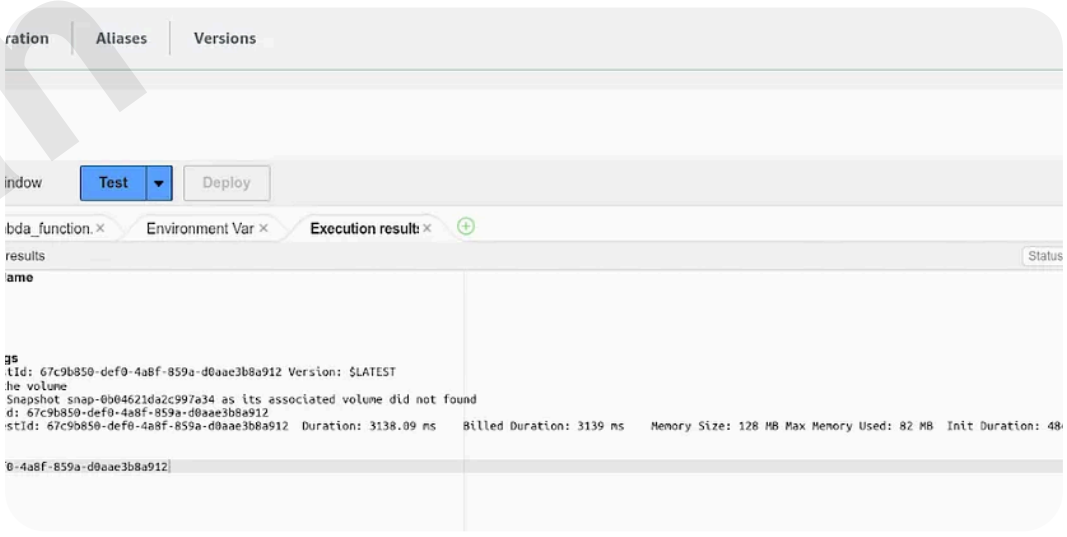
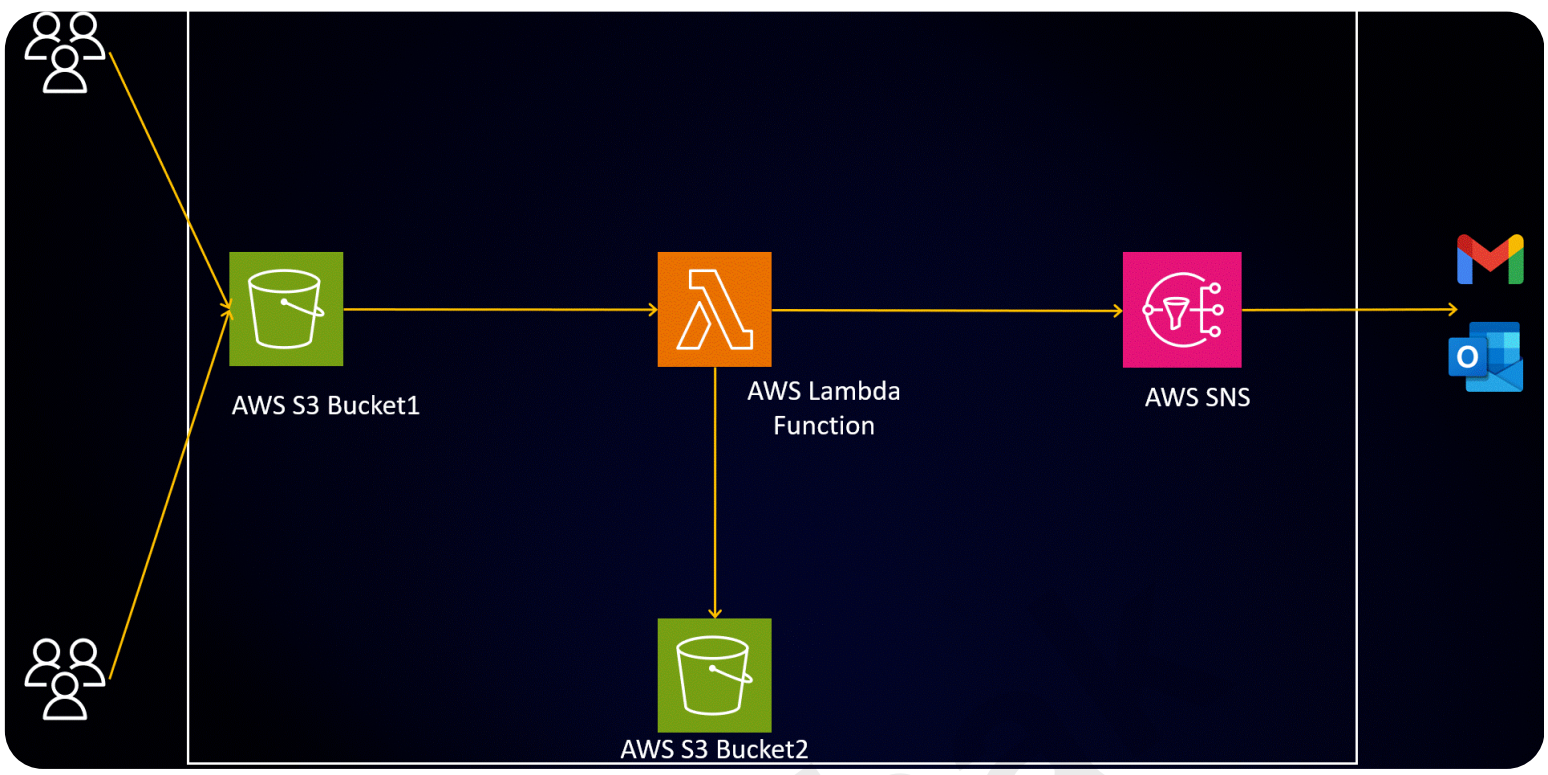


Image Resizing Pipeline (S3 + Lambda)

Create an event-driven image resizing pipeline triggered via S3 uploads. Lambda resizes the image, SNS notifies downstream systems. Fully serverless and scalable for media-heavy apps.



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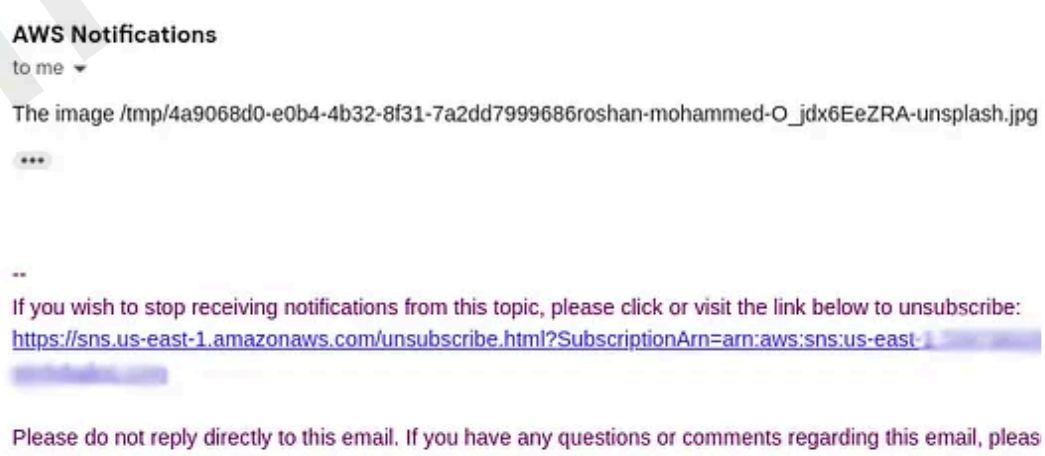
GITHUB REPO

LAMBDA | S3 | SNS | IMAGE PROCESSING


AWS Notifications
to me

The image /tmp/4a9068d0-e0b4-4b32-8f31-7a2dd7999686roshan-mohammed-O_jdx6EeZRA-unsplash.jpg

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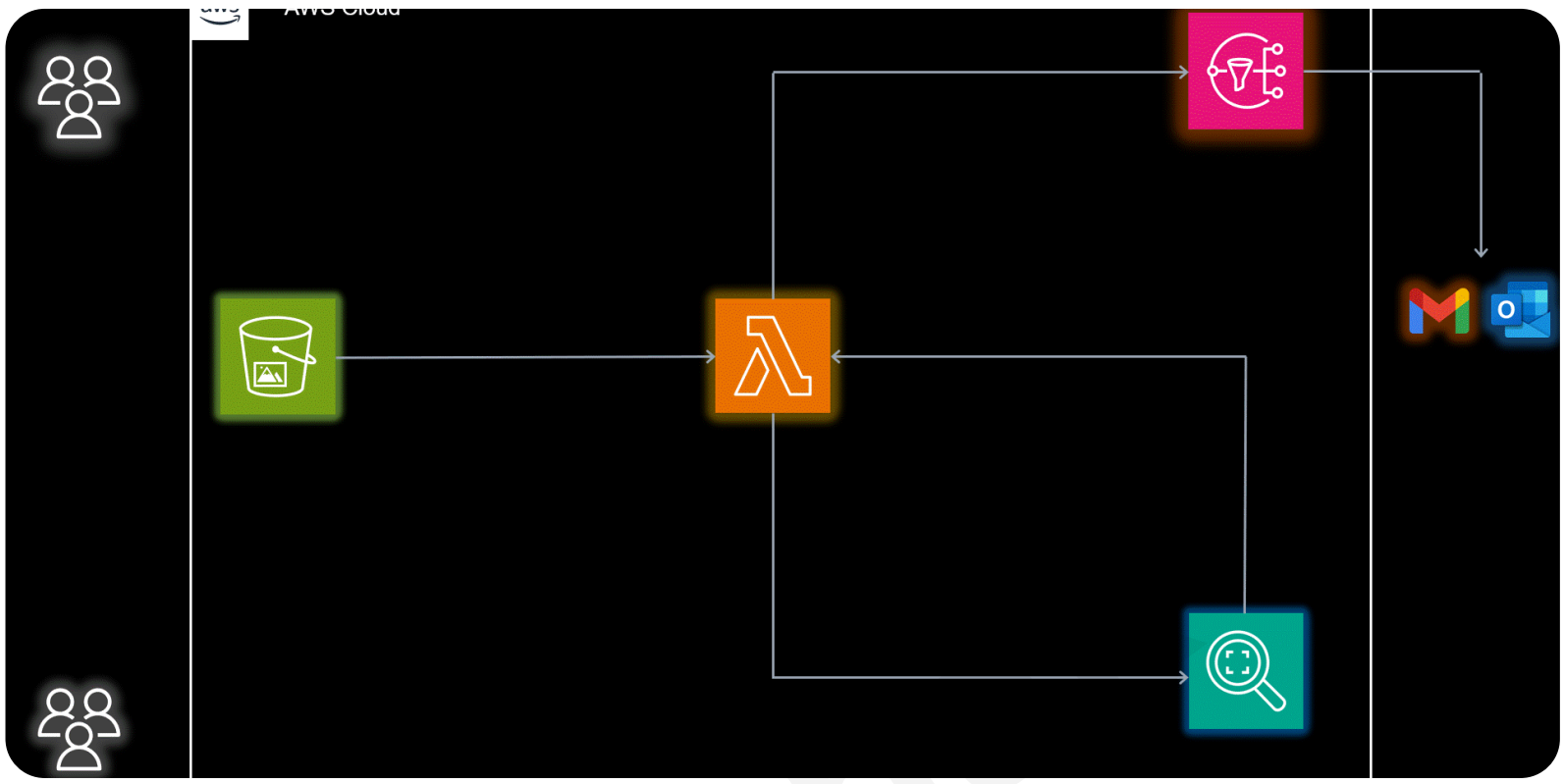
Image Recognition with Rekognition

Automatically analyze images uploaded to S3 using AWS Rekognition, notify users via SNS, and orchestrate flows using Lambda. Adds machine vision to your serverless stack



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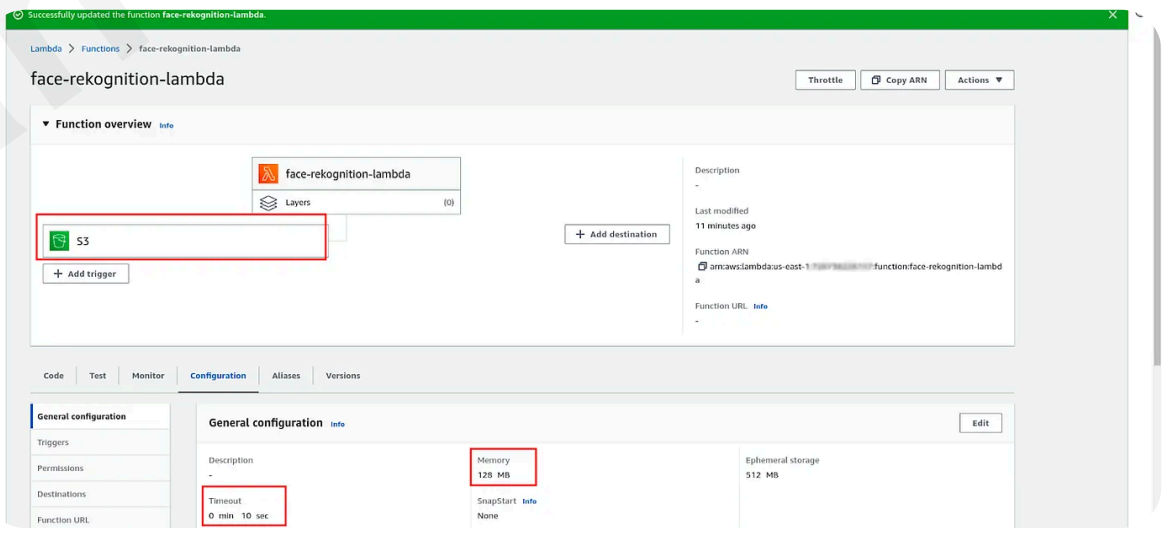
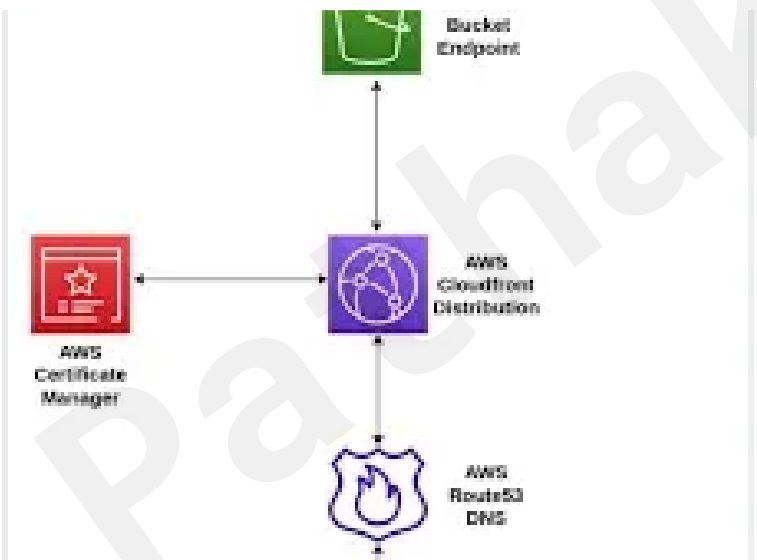
REKOGNITION LAMBDA AI S3



Static Website on AWS with Terraform

Deploy a modern static site using AWS S3, CloudFront, ACM, and Route53 — fully automated via Terraform. Fast, global, and secure content delivery made easy.



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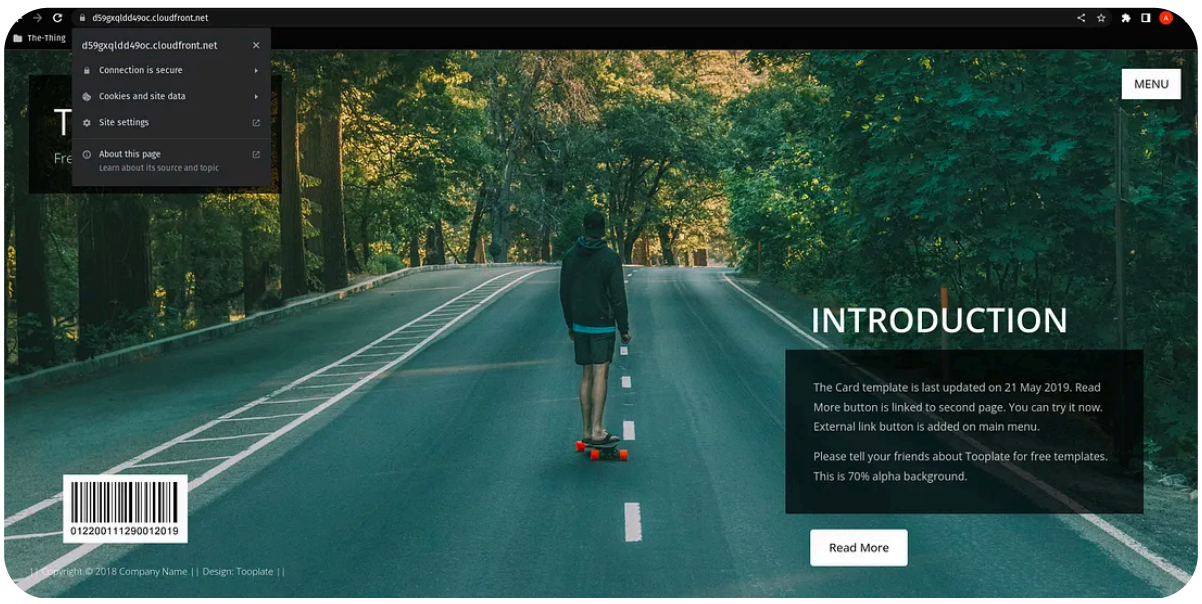
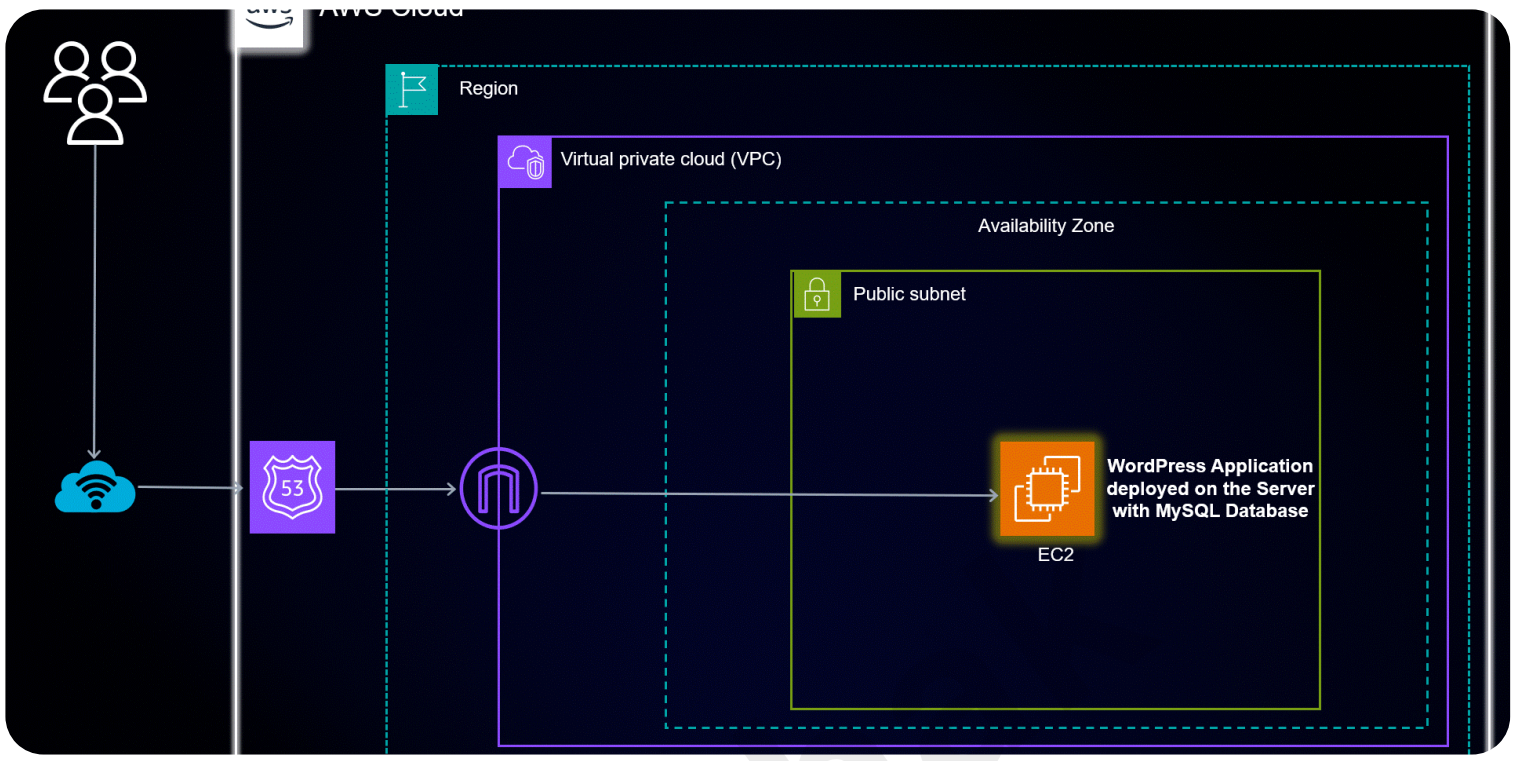
STATICSITE TERRAFORM CDN AWSINFRA



Deploy WordPress Application on EC2

Launch a WordPress blog using AWS EC2, configure web server and DB, and map domain via Route53. Perfect starter cloud deployment to learn AWS basics.



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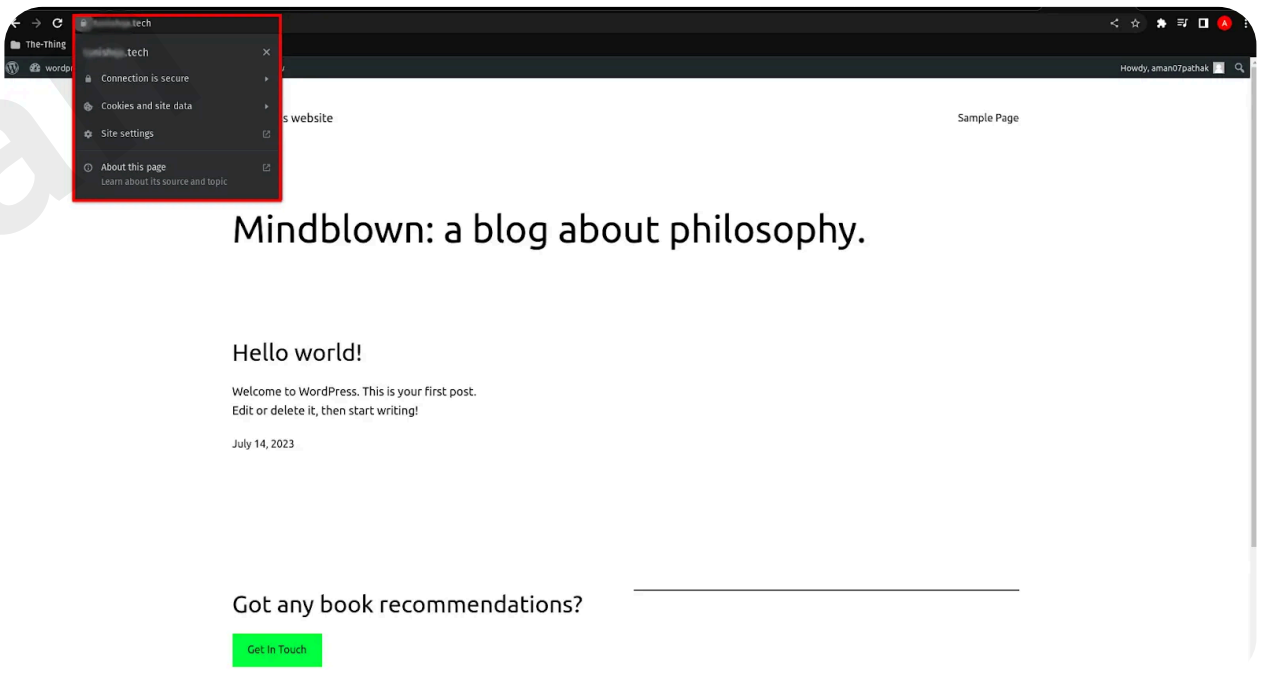
WORDPRESS **AWS** **EC2** **ROUTE53**



Touched the Cloud, Never Held It

Some architectures aren't meant to last
— but the love of building them always will.

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