CI/CD pipeline for microservices over AWS Cloud

DevOps Case Study

Executive Summary

Brightfield, through their Augmented Analytics Platform named Talent Data Exchange (TDX), provides a suite of analytical applications that help optimize both, extended workforce, and employee talent segments.

By leveraging the benefits that cloud services bring to the industry, Brightfield seeks to begin their migration to the cloud in an automated way for an efficient deployment.

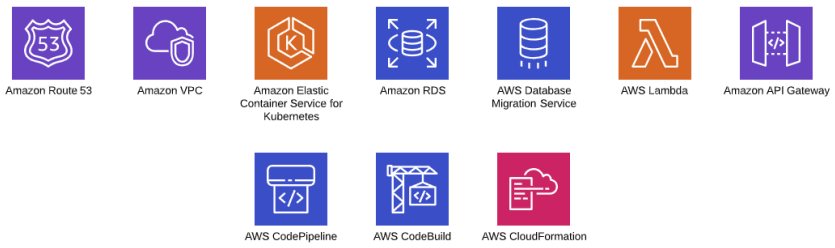
The Challenge

Create a fully automated Continuous Integration/Continuous Delivery flow that deploys the microservices when there is a change in the code. The main points that this approach must have:

- Fully automated
- Infrastructure as Code
- Fault Tolerance
- High Availability
- Security

Why AWS

AWS is a cloud platform which has all the necessary services to create a robust, fully automated, highly available and secure infrastructure.



About Costumer

Brightfield

Brightfield is an Artificial Intelligence and Big Data Analytics company that optimizes contract labor and performance for employers and staffing firms.

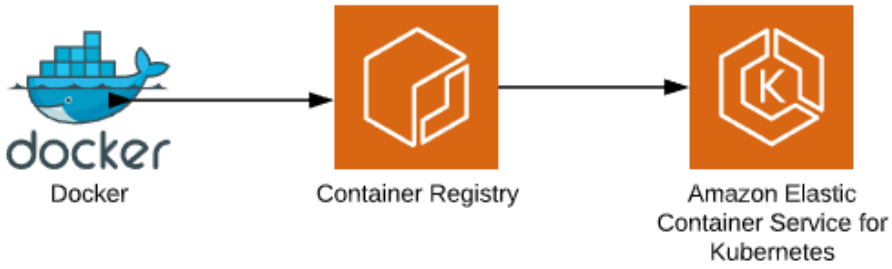
"Fully automated, high available and secure architecture."

- 100% AWS based solution
- Microservices migrated to Amazon Elastic Kubernetes Services (EKS)
- The CI/CD flow if achieved by using **CodePipeline** and **CodeBuild**
- The solution has best security practices

The Solution

The new architecture was designed to run in the cloud entirely. It includes a fully automated CI/CD pipeline for deploying microservices when it detects a change in their respective repository. A docker image is created, then registered into Amazon ECR (Elastic Container Registry) and subsequently Amazon EKS (Elastic Kubernetes Service) takes the image from ECR and deploys it in the container. These microservices were migrated to containers and the databases from Oracle (On-Premises) to MySQL (Cloud). The platform design was created following the best practices recommended by the **AWS Well-Architected Framework** where the following points are highlighted:

- 100% AWS based solution
- DevOps practices
- Fully automated

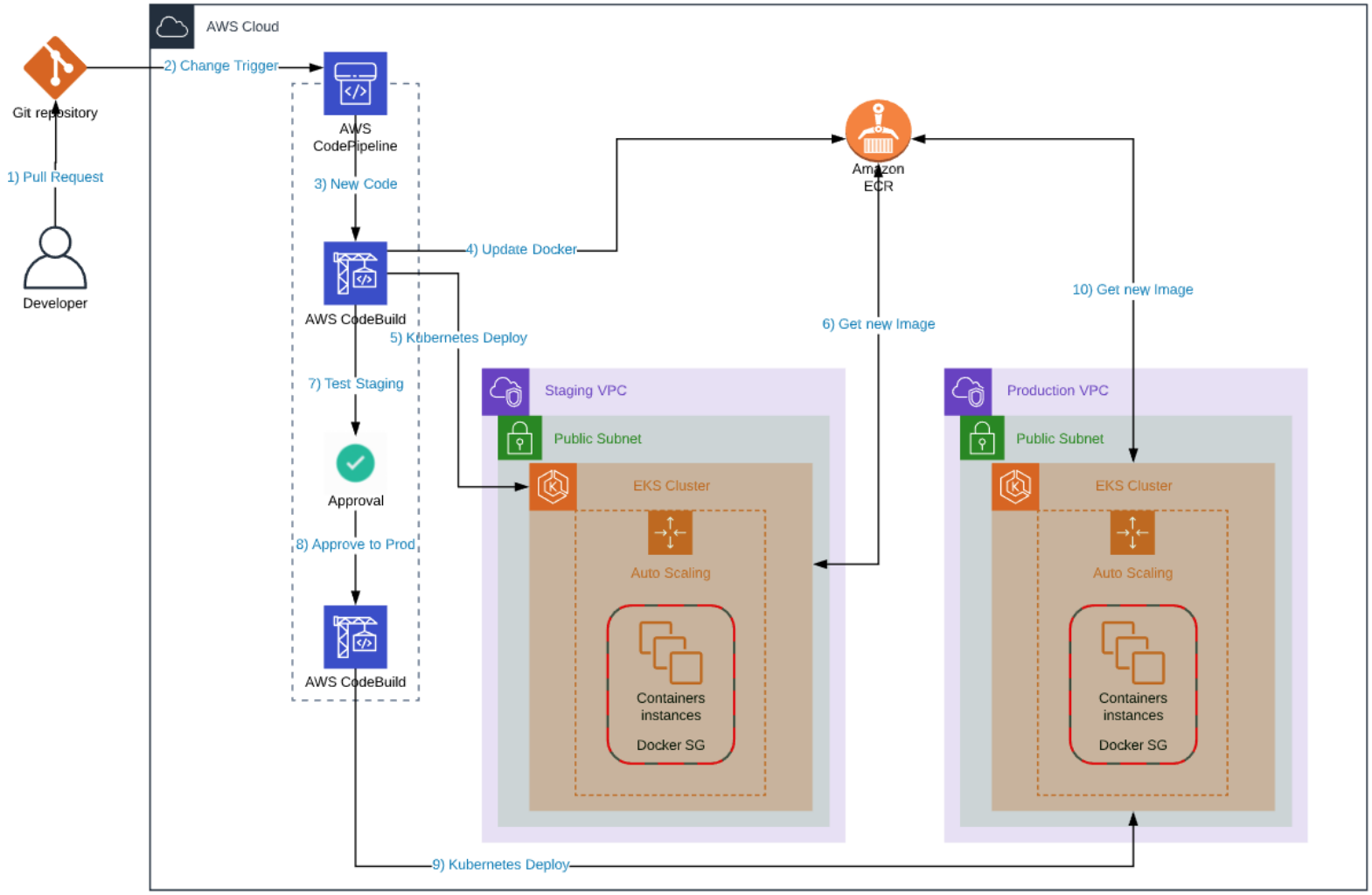


Results and Benefits

The final product for the customer was a highly scalable and fully automated architecture, with the use of **CloudPipeline** and **CodeBuild** . Whenever there is a change in the repository it will deploy the microservices without any intervention.

With this, we successfully achieved a highly available, secure, and fully automated AWS architecture.

CI/CD Microservices Solution Diagram



Next Steps

One main objective is that the microservices and databases can be reused in the future by other projects and applications.

AWS has five pillars of a well-architected framework: **security, reliability, performance efficiency, cost optimization, and operational excellence**. As part of the migration, the applications will have been properly configured, patterned after the reference implementation architectures, standards, and conventions following AWS best practices.

Benefits

Superior Performance

This infrastructure provides a fast, resilient and high availability environment for the application.

Agnosticism

By using Kubernetes (EKS), all microservices can be migrated to other services in a fast manner.

Fully Managed

With fully managed resource provisioning, maintenance, backup, deployments are more efficient.

About IO Connect Services

IO Connect Services is a company specializing in Information Technology Consultancy Services. All our team members have one thing in common: our enthusiasm for technology and our passion for customer service excellence. We provide services in all North America, LATAM and Europe. Our headquarters are located in the NYC metropolitan area, and we also have offices in Guadalajara, Mexico and Madrid, Spain.