Senior DevOps Engineer Technical Assignment

Abstract

Our team currently uses CI/CD pipelines to build, test and deploy code to Kubernetes clusters using Helm. Our infrastructure is deployed using Terraform. The goal of this assignment is to see how you approach these tasks. They can be done on any cloud provider of your preference. We prefer Azure DevOps for CI/CD, however this is optional. Azure, GCP, and AWS all have free trials and access. Please create a free account with your favorite providers to complete the tasks.

Scenario

The engineering team at Ingenio has created a new JavaScript application using the NextJS Framework. This application needs to be deployed to a non-production environment and tested before being deployed to production. The application will run on Kubernetes.

The base repository is located here. Please download this repository to seed a new repository of your creation where you can commit your changes (do not fork, please).

Task

1. Create a new repository on your preferred version control platform to host your solution (GitHub, GitLab, Azure DevOps)
2. Create a two-node Kubernetes cluster using Terraform, preferably also via a CI/CD pipeline.
3. Create a CI/CD pipeline to build and deploy the application code
    a. The deployment should use a helm chart
    b. The non-prod environment should deploy from the **develop** branch
    c. The production environment should be deployed from the **master** branch
    d. The production environment should be fault tolerant and able to scale automatically
    e. “Hello, World!” text should be modified during deployment to reflect the environment it is running in when viewing the site on the web
4. Deploy the application so that it is publicly accessible

Result

Once complete, there should be two publicly available URLs that clearly shows on-screen the environment they are running in. The pipeline(s) to do this should build and deploy the infrastructure and code.

Send us the URLs for the production and development sites, as well as the code repository.

Evaluation

Your code will be reviewed by two engineers from our team. They will take into account your level of experience and evaluate on the following criteria

1. Clarity
    a. Does the ReadMe file clearly explain the process?
    b. Comments in code
2. Correctness
    a. Does it work overall?
    b. Is anything missing, and if so, is it explained why?
3. Code Quality
    a. Is the code simple to read and maintain?
    b. Are naming conventions clear?
4. Security
    a. What are some obvious vulnerabilities, or improvements that would make the application/infrastructure more secure?
    b. What is the reasoning behind any security concessions that were made?

Additional Considerations

- Code quality and clarity are valued more highly than feature completeness
- This is purposefully broad as there are multiple ways to do it
- Show your work.
- Explain your thought processes for decisions you made while designing the architecture of the application and infrastructure components.