

DevOps Assignment

Project Overview

Develop an API system to manage the infrastructure required to deploy IPFS (InterPlanetary File System, <https://github.com/ipfs/kubo?tab=readme-ov-file#install-go>). The system should include APIs to provision, update, and destroy infrastructure with at least 5 ipfs nodes in the network each running in an individual machine using Terraform, Packer, and other tools, on any cloud provider of your choice (e.g., AWS, GCP, Azure).

Requirements

Core Functionalities

1. Provision Infrastructure:

- Develop APIs to provision cloud instances.
- Utilize Terraform for infrastructure as code.
- Use Packer for creating machine images if needed.
- Ensure instances are configured to run IPFS nodes.

2. Deploy IPFS:

- Automate deployment of IPFS code onto instances.
- Use Nomad for container orchestration.

3. Update Infrastructure:

- Develop APIs to update infrastructure based on the latest IPFS commits or specified branches. (Refer: <https://github.com/ipfs/kubo>)
- Implement mechanisms to minimize downtime during updates.

4. Destroy Infrastructure:

- Provide APIs to dismantle the provisioned infrastructure cleanly.

Technical Stack

- **Terraform** for IaC.
- **Packer** for building machine images.
- **Nomad/Any preferred tool** for deployment and orchestration.
- **Programming Language:** Any language preferred by the developer (bonus points for implementation in GoLang).
- **Cloud Providers:** AWS, GCP, or Azure.

Deliverables

1. Code Repository:

- A GitHub repository with source code.
- Separate directories for Terraform, Packer, Nomad configurations, and API code.

2. API Documentation:

- Clear instructions on how to use the APIs.

3. Deployment Guide:

- Detailed setup and testing instructions.

4. Demo:

- Optional video demonstrating the API functionalities.

Evaluation Criteria

- **Functionality:** All required APIs (provision, deploy, update, destroy) must work as expected.
- **Code Quality:** Code should be clean, readable, maintainable, and well-documented.
- **Tool Usage:** Effective use of Terraform, Packer, Nomad, and other tools.
- **Security:** Implementation of security best practices.
- **Understanding of IPFS:** Demonstrates a clear understanding of IPFS and its deployment requirements.

- **Bonus:** Implementation in GoLang with comprehensive tests.

Good luck with your assignment!