Infrastructure Test Assignment

DevOps test

Thank you for taking the time to take this test.
Please don't hesitate to contact us via email with whatever question you have about it.

This task is divided into two parts:

Part-1: Programming

- Create a simple REST API using your preferred programming language that does the following:
  - It responds to the URL like `http://<host-ip>/` and returns: `Halan ROCKS`
  - It responds to the URL like `http://<host-ip>/?n=x` and returns `n*n`.
  - It responds to the URL like `http://<host-ip>/ip` with the IP address of the client making the request and save that IP address on Postgres
  - It responds to the URL like `http://<host-ip>/allips` with all of the saved IP addresses after retrieving it from Postgres.
  - Dockerize your Application.

Part-2: Deployment

You have two options for deploying your service:

Option-1: On-premise deployment using a configuration management tool

Using the automation tools of your choice prepare a FULLY provisioned environment.

This automation should:

- Provision 3 nodes on any CloudProvider or on any hypervisor
- On these 3 nodes deploy:
  1. Your API
  2. DB Master (PostgreSQL)
  3. DB Slave (PostgreSQL) and Setup master-slave (streaming replication) PostgreSQL between node 2 and 3.
- Deploy the **Dockerized** API that you've created on the App node

Tips:

- Fully provisioned means that you run one command and deploy everything starting from the creation of VM, then provisioning Postgres and deploying your API.
- For configuration management, you can use one of the popular automation tools like Ansible/Puppet/Chef/SaltStack.
- You can use tools like Vagrant/Terraform in order to provision the VMs on any hypervisor like VMware/VirtualBox/KVM or on any CloudProvider.
- Don't forget The detailed documentation for every step in your journey. Anyone Should be able to use your solution following your documentation only without the need to any prior knowledge.

Option-2: K8S deployment

1. Prepare a 3 Nodes Kubernetes Cluster using Kubeadm/Rancher/k3s and document every step to get this cluster up and running.
2. Prepare a Kubernetes Helm Chart for this deployment that:
    - Deploy database Master and Read Replica based on PostgreSQL.
    - Deploy the Simple REST API that you created on the first part and make make it **accessible** out of the cluster.
    - Please Make sure that each of the provisioned pods get scheduled on a separate node. SearchKeyword: `k8s affinity`

Time limit:

We expect you to do it in 10 days. Feel free to ask any questions.

We wish you good luck 😃