Cloudathon @ UH '22 Team LeftCarried Project Final Report

Members:

Bryant Le (CS Major, Freshman)   Mihir Sahu (CS Major, Sophomore)

Ali Zain Charolia (CS Major, Sophomore)   Frank Bui (CS Major, Sophomore)

MVP
1) Infrastructure as Code (AWS Cloud Formation)
2) Not being able to quickly and consistently deploy, manage, and update resources across multiple AWS services and multiple locations
   Solution: VMs (EC2), Docker containers (ECS (Docker), EKS (Kubernetes))
3) The load on all the servers gets too heavy during high demand hours
4) The read requests on databases overwhelm the server
   Solution:
5) Do not have an international presence, PayCorp would like to expand its userbase to India (For instance: Mumbai, IN)
   Solution: Deploy EC2 instance in Mumbai and Delhi

MVP+
1. There is no way to notify the admins when a server goes down
   a. AWS Cloudwatch, AWS Sns
2. The current infrastructure is a huge cost centre because of the static datasets

MVP++
1. Had a DDoS attack last year
   a. AWS Shield
2. Admins do not get notified when a fire wall rule gets altered

Optimise Current Architecture
- 3 local zones -
  - [Kingsville TX], Houston TX is generally available
    - https://aws.amazon.com/about-aws/global-infrastructure/localzones/locations/?pg=ln&cp=bn#GA
  - [Sacramento CA], LA is generally available
    - https://aws.amazon.com/about-aws/global-infrastructure/localzones/locations/?pg=ln&cp=bn#GA
  - [Annapolis, MD], NYC in New Jersey
    - https://aws.amazon.com/about-aws/global-infrastructure/localzones/locations/?pg=ln&cp=bn#GA
- International just ANNOUNCED not available
  - Delhi india (Actually capital) has ANNOUNCED not avail AWS local zone
  - Mumbai India (financial capital of india good for services there) ANNOUNCED
  - If international deployment increases cost without benefit, cancel Mumbai
- OpenVPN
  - Use Ubuntu linux servers, install openvpn using

Members:

Bryant Le (CS Major, Freshman) Mihir Sahu (CS Major, Sophomore)

Ali Zain Charolia (CS Major, Sophomore) Frank Bui (CS Major, Sophomore)

- - ○ Install apache2
- Load Balancer
  - ○ Application Load balancer
  - ○ Gateway Load Balancer
  - ○ Network Load Balancer
- Database - AWS RDS use DMS to transition to RDS to migrate from their mySQL area to aws mySQL
- Database - AWS DMS
- Consider AWS Snow family

Notes:https://aws.amazon.com/getting-started/hands-on/move-to-managed/migrate-sql-server-to-amazon-rds/

- Server should be a linux. Ubuntu linux (most popular and debian based so stable af)
- Server should have openVPN **server** installed on their since that's how the company usually connects to it
- Final Products
  - ○ Architecture diagram
    - ■ Explaining our decisions to judges etc
  - ○ Final report
    - ■ Final things we consider
  - ○ Proof of concept

Cloudathon @ UH '22 Team LeftCarried Project Final Report

Members:

Bryant Le (CS Major, Freshman)   Mihir Sahu (CS Major, Sophomore)

Ali Zain Charolia (CS Major, Sophomore)   Frank Bui (CS Major, Sophomore)

Architecture Diagram: