Proposta de Projeto/Estágio

Ano Letivo de 2022/2023

CLOUD FinOps – CLOUD 2 CLOUD Portability

SUMÁRIO

Ritain.io is a technology & consulting services company specialized in Cloud & DevOps, Software Quality Assurance, and ML/Data Science.

Cloud FinOps is the application of financial management principles to cloud computing. It is a new discipline that combines aspects of financial management, operations, and cloud computing. The goal of Cloud FinOps is to optimize the financial performance of an organization's cloud computing resources.

Why Cloud Portability? This new vision is that the place where applications and data exist are not relevant from a technical perspective. Both must be able to move to the most beneficial location in the business perspective without any technical barriers. The future of cloud usage must be on enabling the portability of applications between the various clouds. It is a key factor in the success of cloud computing, as it allows organizations to avoid vendor lock-in and move to a different platform if they are not satisfied with their current provider or to reduce costs with cloud services while maintaining the same application performance.

1. ÂMBITO

Ritain.io is a Center of Excellence for Automation and Business Agility, powered by the Readiness IT Group, which has a global team of 500+ consultants, offices in three continents, and clients around the globe. Our focus is to enable ability for our client's business through our automation mind-set.

The objective of this project is to build a complete GitOps pipeline, that can be used by cloud projects to port-out their applications from one cloud provider to another. Cloud portability can be achieved by managing and orchestrating applications with containers. Container orchestration makes the decision of choosing a cloud service provider a solely business strategy

decision rather than a technical one. Kubernetes is an open-source container orchestration platform that automates the necessary operations to be conducted in these containers

Additionally, automation in Kubernetes helps achieve operational simplicity: application environment's expansion both in scale-up and in scale-out needs when adopting private, public, and/or hybrid cloud environments.

2. OBJECTIVOS

The project's main objectives are the following:

- Perform every operation as code
- Protect confidentiality and integrity of ported applications and data
- Be a distributed system
- To select and automatic provision the right cloud resource types and sizes on the ported-in cloud requirements based on port-out requirements
- Move application clusters between public cloud providers

Using a GitOps approach, this data engineering pipeline must be fully automated, from required cloud infrastructure deployment and configuration to container instantiation

3. PROGRAMA DE TRABALHOS

This project will have the following macro activities:

T1. State of the Art Review, technology stack selection and proof-of-concepts

T2. Application containerization automation

T3. Cloud services provisioning automation

T4. Migration pipeline execution delivered as a service

T5. Ported-in application real-time monitoring

4. LOCAL E HORÁRIO DE TRABALHO

The trainee can choose between performing the internship at Ritain.io's at Porto or Fundão offices, or under a remote work regime. It will also be feasible to carry out the internship in a hybrid scheme - office and remote work. The working hours will be defined together with the trainee.

5. TECNOLOGIAS ENVOLVIDAS

This project can/may use the following frameworks / technologies:

- GitHub or similar
- Kubernetes
- Terraform
- Ansible
- Helm / Docker / ArgoCD
- ELK stack and Grafana for logging and monitoring
- AWS, GCP and Azure as the main cloud providers to port-out and port-in applications

6. METODOLOGIA

The project will be developed using an agile/scrum methodology with time-boxed two-week sprints. Use of continuous integration and continuous delivery is mandatory.

7. ORIENTAÇÃO

Entidade de acolhimento:

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