University of Aveiro Portal for Services Mesh in Virtualized Environments

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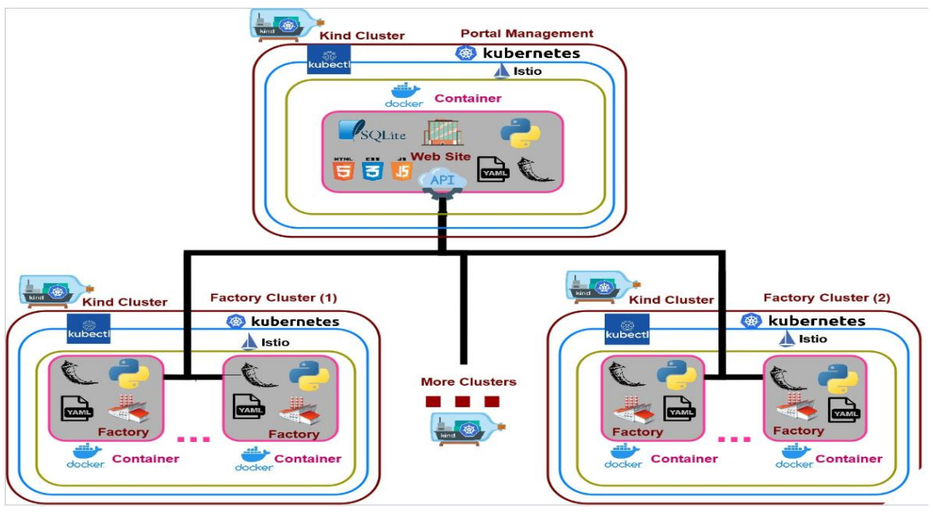
ABSTRACT

In today's world, many applications are adopting a multi-service based approach, leading to the implementation of microservices architecture. However, this architecture presents challenges such as inconsistent user experiences across different server locations. To solve this problem, a Service Mesh is proposed as a solution. This project goal it to automate, streamline and mitigate these drawbacks by deploying a Service Mesh across multiple Kubernetes clusters, allowing developers to focus on core tasks. The project includes a user-friendly portal that allows users to deploy services on their preferred cluster, control all aspects of the architecture, and access real-time management information and settings in a easy way.

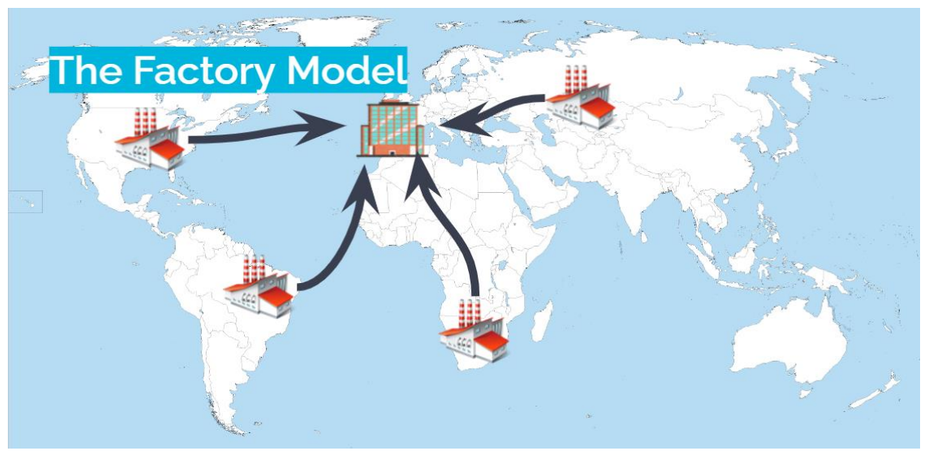


ANALYSIS

Our project develops a service mesh portal to improve communication and service management in Kubernetes virtualized environments.

Technologies such as Flask were used to create the portal, Kubernetes for container orchestration, and Istio for the implementation of the service mesh.

With this combination of technologies, we maximize the efficiency, performance, and security of our applications.



FACTORY MANAGEMENT SYSTEM 4.0

Our project simulate a real-world scenario where a main office manages multiples factories in different countries.

Each cluster represents a different country with its factories, these factories communicate with the main office through an API sending live data from each factory, in this case we're simulating each factory recording the material that is coming in and product that is coming out and sending that info to the main office.

Our main office will receive that information and display it on the dashboard of our portal. Our portal allows to filter each factory info ,by logging in into a specific factory account and displaying the live data from that factory, and to add more factory clusters to the main office.

Conclusion

The service mesh portal we developed revolutionizes the way we manage Kubernetes virtualized environments, optimizing communication between services and enhancing the performance and security of applications.

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