Abstract

Delivering Software Services In An Open Multi-Cloud Environment

Edge computing is a rapidly evolving field that leverages the vast and fragmented processing capacity at the network's edge to create a seamless and scalable computing continuum. The FLUIDOS project, a European initiative, aims to change how computer resources are used by developing an adaptable, expandable, secure, and decentralized operating system.
This thesis focuses on essential components within the FLUIDOS Node ecosystem, emphasizing their role in efficient communication and resource management. These components, including the Local Resource Manager, Discovery Manager, Available Resources, REAR Manager, Contract Manager, and Peering Candidates, form the core of FLUIDOS Nodes, operating collectively on Kubernetes clusters.
Additionally, the thesis delves into the development of the REAR Protocol, designed for secure data exchange of resources and capabilities among different cloud providers. It serves as a means to advertise resources, such as virtual machines with CPU and RAM specifications, capabilities like Kubernetes clusters, and, in the future, services such as database-as-a-service, to third parties.
This thesis contributes to the FLUIDOS project while providing valuable experience in edge computing. The insights and advancements obtained during this thesis aim to explore the potential of decentralized systems in the field of edge computing and innovative technology.