Open Source MEC platform

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Background and Goals

In the era of ever-increasing data consumption and the rapid expansion of connected devices, the need for efficient and low-latency computing solutions has become paramount. Despite offering powerful processing capabilities, cloud computing has an increasing problem: it usually is distant from where data is created. This problem led to an increasing interest in new computing paradigms promising to bring computing closer to clients. Multi-access Edge Computing (MEC) is one of these new models, which aims at bringing a cloud-like computation closer to the network's edge.
Although MEC has been standardized by the European Telecommunications Standards Institute (ETSI) since 2016, its practical realization remains unrushed. Nevertheless, the scientific community and ETSI are trying to advance this concept. One of the recent ideas to accelerate its development and adoption is the integration with Network Functions Virtualization, where multiple functional blocks present in this concept can be reused to achieve MEC. With this in mind, this work aims to bridge the gap between NFV and MEC and provide new interfaces to realize MEC workloads using the NFV capabilities.

Step-by-step Work Description

- Analyze state of the art and standards on MEC, NFV, orchestration, and management;
- Study the architecture and functioning of Open Source MANO (OSM);
- Design and implement a MEC Application Orchestrator (MEAO) that translates the MEC-related functionalities to the analogous NFV ones;
- Design and Develop a MEC platform for show-casing purposes
- Deploy a monitoring platform for bothe the MEC and MEC Applications
- Evaluate the developed solutions

Expected Acquired Skills

The student is expected to gain valuable knowledge in areas in vogue, such as Multi-access Edge Computing, Network Functions Virtualization, and orchestration. Moreover, the student must learn how to work and contribute in open-source communities and develop and use Free and Open-Source Software (FOSS), especially the ETSI-hosted OSM project.