Gru Project & PoliCloud

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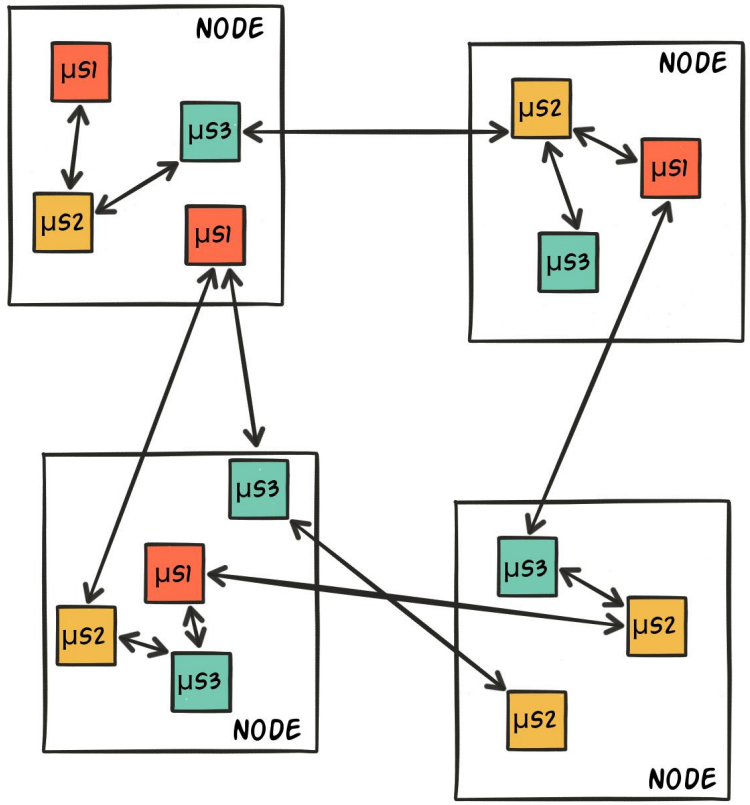
Gru Project: Self-Adaptation to Microservices

Gru: tool to apply self-adaptation to microservices application deployed in Docker containers in a transparent way

Microservices based application: distributed, composed of thousand of communicating independent (small) services providing a single functionality (a.k.a. microservices)

Docker: virtual containers to isolate a process from the others running in the same host



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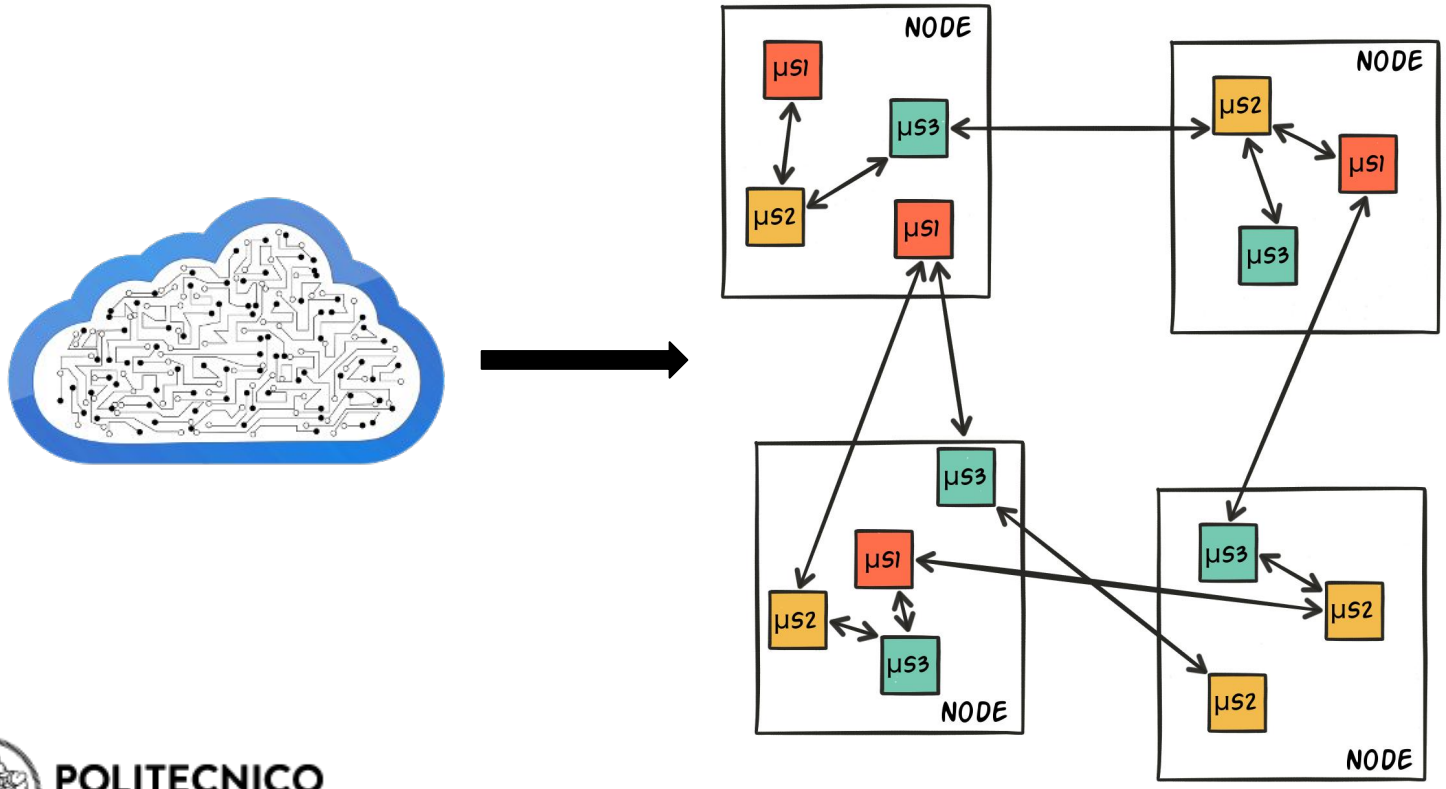
The Problem

Cloud applications based on the Microservices Architecture present a high complexity, even using Docker containers for the management of the infrastructure.



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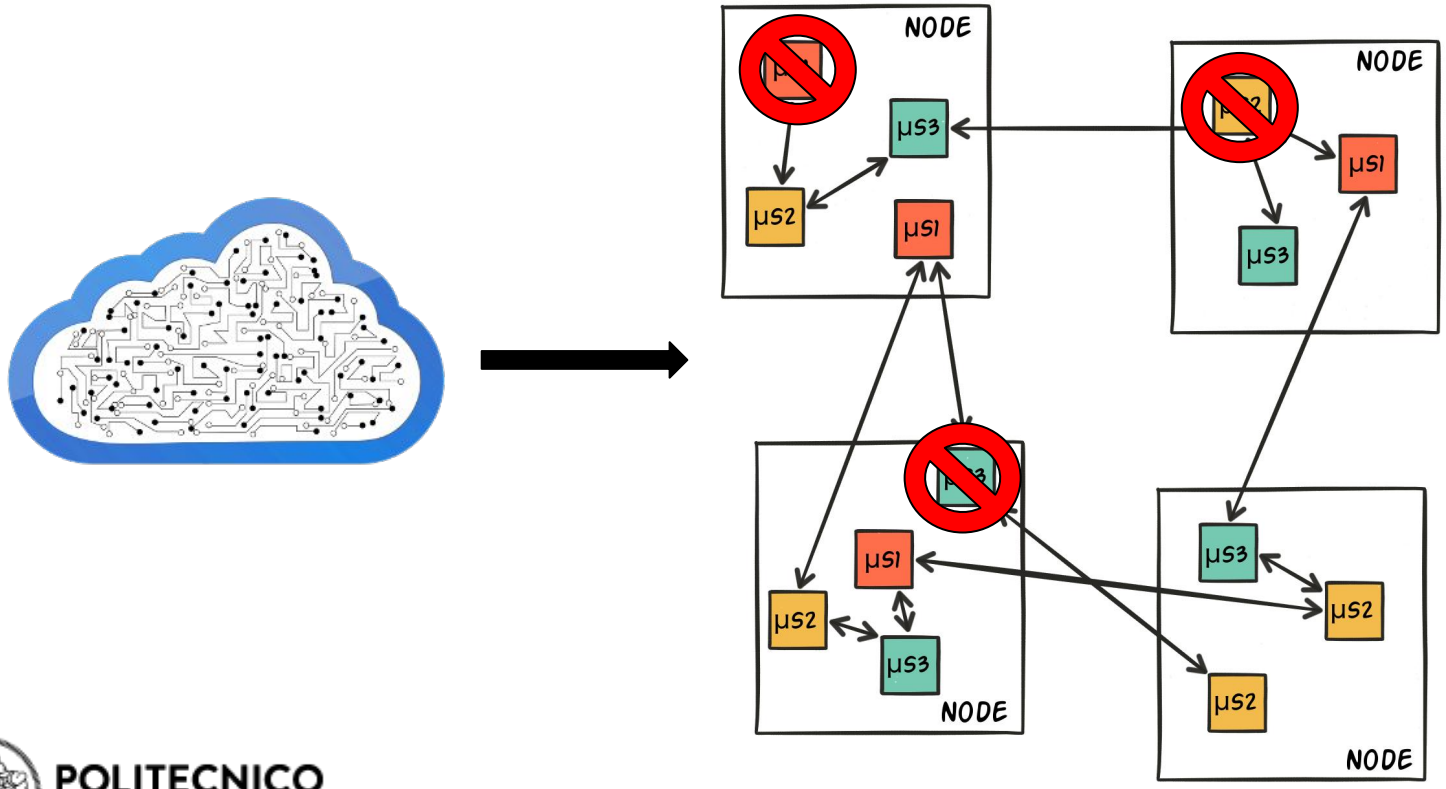

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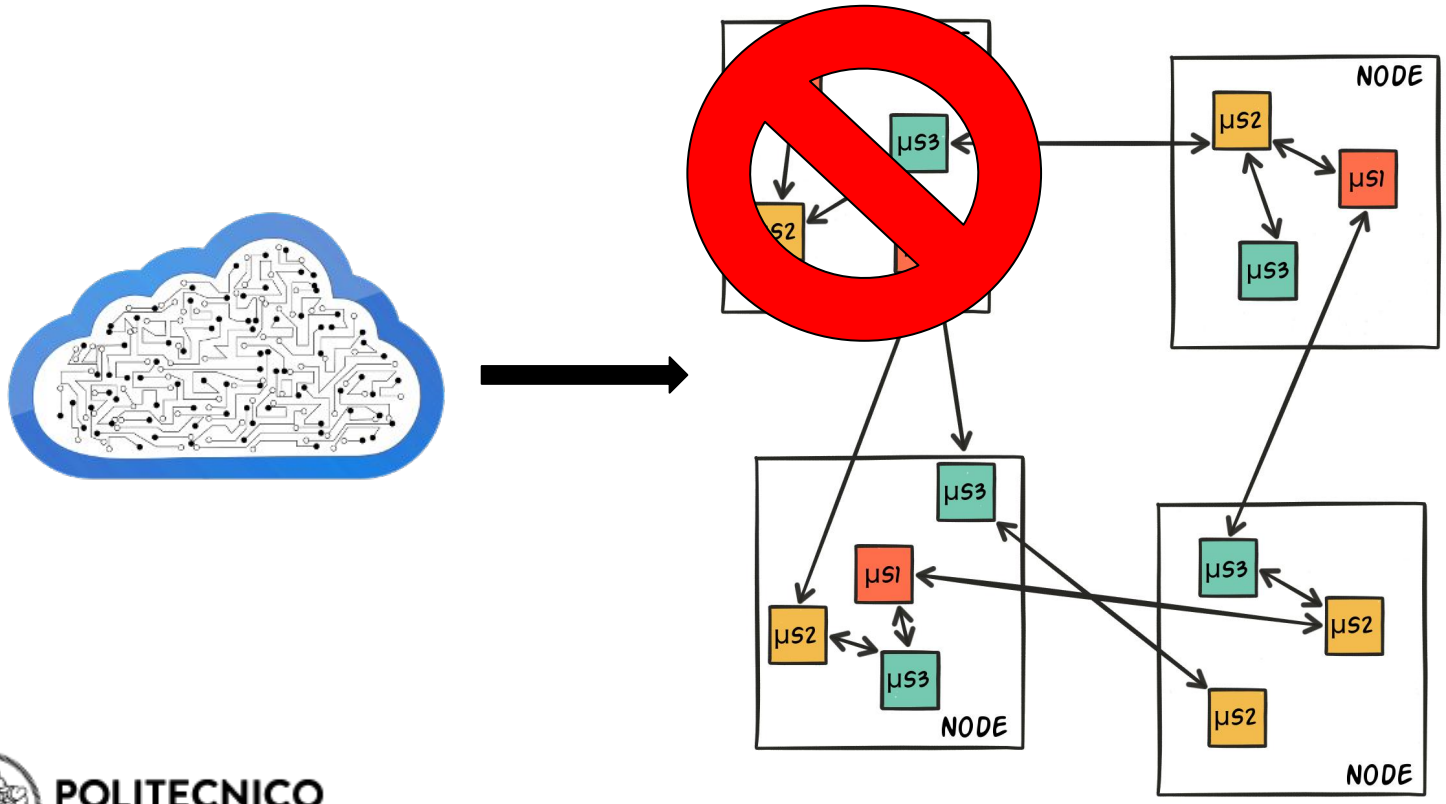

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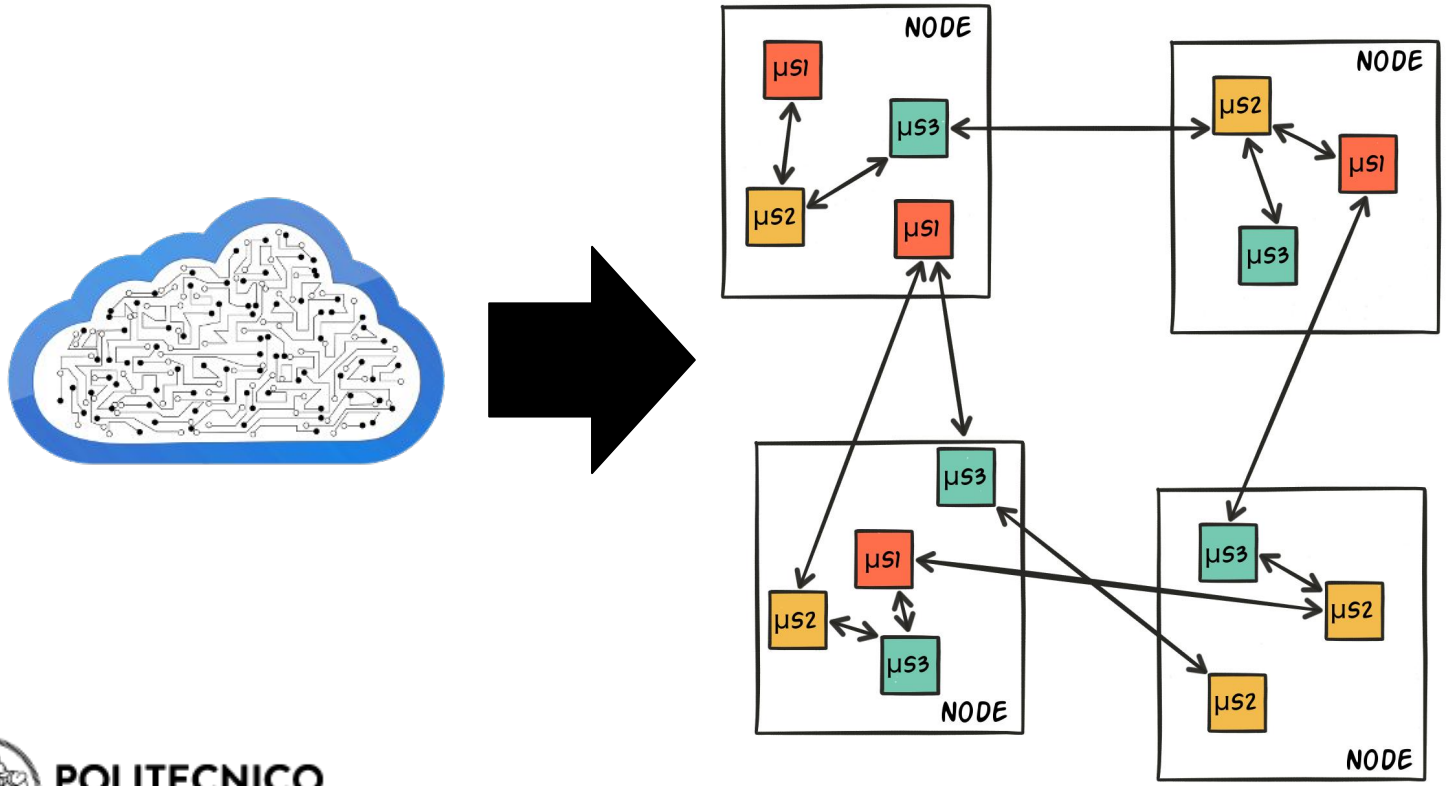
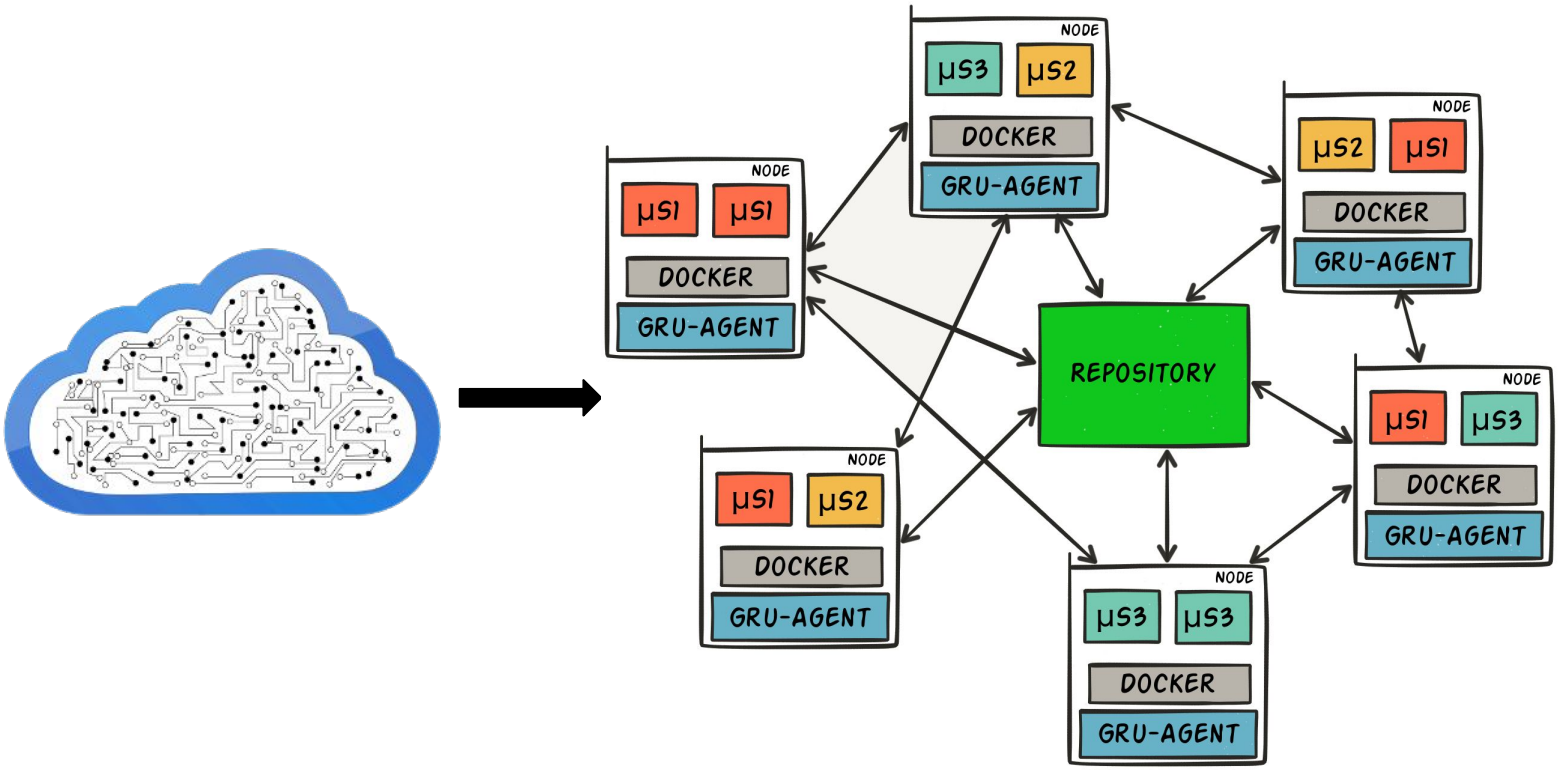


Our solution

Improve the management of the Microservices application through the use of decentralized self-adaptation and a multiagent system



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Gru & PoliCloud

What? Gru Agents as well as the microservices application developed as a use-case have been deployed in PoliCloud infrastructure

Why? We needed a testing environment with several nodes to deploy a distributed application and the agents composing our system

How? We used 30 instances, 60 VCPUs, almost 40Gb of RAM. We run tests sending http requests to the application (up to 6 hours).

When? July 2016 - Ongoing

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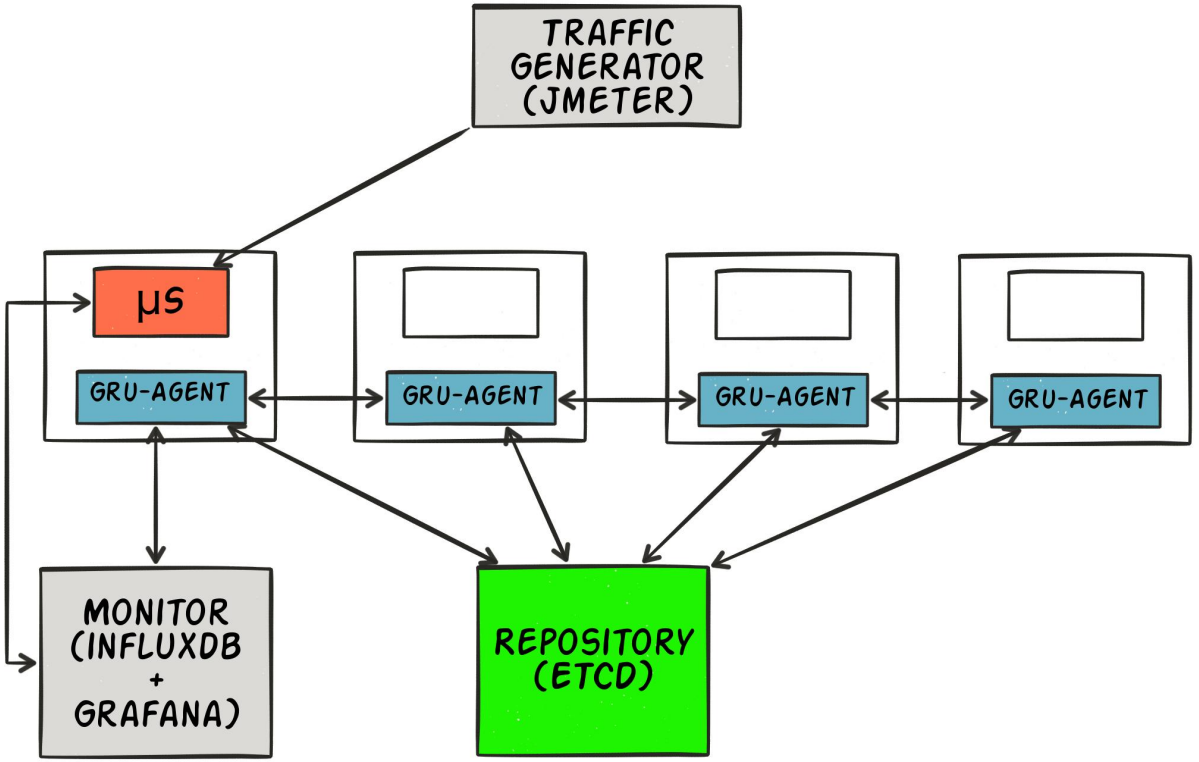
Deployment

1 main-node (general.large):

- Apache Jmeter
- HAProxy
- etcd
- InfluxDB

28 gru-node (compute.small):

- Docker
- Microservices
- Gru



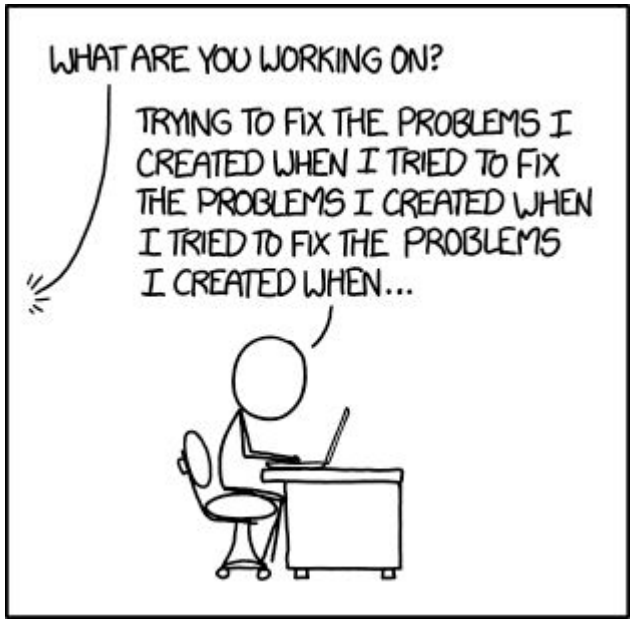
Problems & Limitations

Problems

We experienced some problem related to the network. However, they have been solved quickly.

Limitations

- Instances creation takes a long time (up to 30 minutes) and sometimes returns an error
- The external access to the instances is limited



Thank you!

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