Contribution ID: 19 Type: Presentation

EKaaS - Elastic Kubernetes as a Service in EGI Federated Cloud

Wednesday, 8 May 2019 09:45 (20 minutes)

The use of Docker containers for packaging applications is becoming extraordinarily popular. With more 100.000 applications, Docker Hub is becoming the de-facto standard for application delivery.

In the last years, Kubernetes has also become a highly convenient solution for deploying Docker containers in a multi-node backend. Kubernetes is, therefore, a suitable platform for many types of application topologies, such as

microservices applications, function-as-a-service deployments, high availability services or even high-throughput computing.

Kubernetes applications can be described as services embedded into Docker containers and their configuration dependencies, with convenient tools for scaling up and down, publishing endpoints or isolating traffic. Kubernetes manages the resources where the Docker containers are deployed and run. Kubernetes installation and configuration requires some system administration knowledge, especially concerning the overlay network plugins.

EKaaS aims at developing a service to deploy self-managed and customised Kubernetes clusters as a service with additional capabilities to support specific hardware backends in the EGI Federated Cloud. In such aim, the proposal will provide the user with a convenient and user-friendly interface to customise, deploy and manage the Kubernetes cluster, including the integration of software management components such as Helm for managing applications on the cluster. The clusters will be self-managed thanks to CLUES, an elasticity management service that powers on and off physical or virtual resources on demand, according to the workload. Infrastructure Manager, an orchestration system already integrated into the EGI Federated Cloud infrastructure will perform the deployment of the cluster. The cluster definition will be coded into TOSCA documents, to maximise portability. We will integrate Helm to offer a catalogue of ready-to-deploy applications inside Kubernetes, to be able to deliver a fully deployed application on a customised Kubernetes cluster to the user. Finally, a convenient, user-friendly user interface will be developed and integrated into the Applications on Demand service of EGI. A set of application examples will be developed and integrated into the catalogue to address common problems arising in scientific communities.

The solution addresses mainly the long-tail-of-science researchers who find it difficult to find resources for medium-scale processing or want to expose a processing service for a specific research problem. In such cases, there is a need for a moderated amount of computing resources and a simple way to manage them, as the resources and expertise on system administration are low.

Finally, it also serves system administrators to ease end-users to access the resources and to reduce the misuse of resources.

This activity is co-funded by the EGI Strategic and Innovation Fund.

Type of abstract

Presentation

Primary authors: CALATRAVA, Amanda (UPVLC); DE ALFONSO, Carlos (UPVLC); Dr BLANQUER, Ignacio

(UPVLC); Dr CABALLER, Miguel (UPVLC); Dr GERMÁN, Moltó (Universitat Politècnica de València)

Presenter: Dr BLANQUER, Ignacio (UPVLC)
Session Classification: Cloud Platforms