Cloud Service Futures – Wider and Deeper Cloud Service Delivery

Authors:
Peter Szegedi, Project Development Officer
Karl Meyer, Product Marketing, GEANT
Andres Steijaert, Activity Leader GÉANT project JRA4

Keywords:
Clouds, containers, containerization, Machine Learning , Artificial Intelligence

Abstract
With commodity cloud services now being widely accepted into the R&E community and implementation and roll-out underway now is the time to look forward to the next generation of cloud based services, their delivery and "cool" use cases for emerging technologies such as containers, AI and Machine Learning.

Format
Plenary, with possible break-out discussions.

Objectives
Work with Public and Private cloud providers and developers to understand the future landscape for advanced cloud services – moving beyond commodity cloud facilities into the leading edge of CSP technology

Target audience
General audience; service managers, cloud managers, key account managers, CEOs, CIOs, service and support personnel, Institutional users would also be a key audience.

Introduction - Widening and Deeping the clouds

Wider Cloud Usage
In the first years, the GÉANT cloud collaboration mainly dealt with commodity cloud offerings: collaboration tools, file storage, web and video conferencing, infrastructure as a service.

Using this strong foundation, the future of cloud services will be widened to encompass:

- Cloud security services
- Educational services: learning management, learning analytics, online testing and grading systems
- Research specific tools

Deepening the clouds - Machine learning and Artificial Intelligence
Cloud offerings now encompass more than just the lift-and-shift model where institutional virtual machines are transferred off-premise, into a community or public cloud. Leading cloud providers are investing heavily in the next wave: machine learning and artificial intelligence. These are services institutions and NRENs do not have available locally. These services are 'born in the clouds'.

It is important GÉANT and the NRENs position themselves well for these groundbreaking new

services and:

- assess strengths, weaknesses, opportunities and threats of machine learning and artificial intelligence for Research and Education;
- apply the scale GÉANT brings, to position themselves well in this domain, which could include adding machine learning and artificial intelligence services to the collective portfolio.

Container based Virtualisation

Another area of interest is the use of a containers based approach (Docker, Kubernetes, etc) to automate, deploy, scale and operate online applications. Containers bring a more lightweight approach that eliminates the hypervisor and OS layers, leading to more flexibility. This provides options for an easier usage of multiple clouds, in different locations: easier moving of workloads between the suppliers in the GÉANT portfolio and easier sharing of resources between NRENs.

A commonalised container-based infrastructure could serve to virtualize the delivery of cloud services with the underlying fabric provided by a range of service providers (both public and private and a hybrid) with the service delivery managed by NRENs, GÉANT or any combination of service managers. This session will examine this innovative delivery mechanism in the context of European R&E providers.

Proposed session structure

The session is proposed as primarily a plenary approach with the option (subject to availability) of a round table discussion format at the end to investigate “blue sky” futures for cloud services.