

Cloud data for the data cloud

European research institutions use new science cloud – one of the providers of the hybrid IaaS solution is A1 Digital with the cloud platform Exoscale.



For its Cosmics Leaving Outdoor Droplets (Cloud) project, the European nuclear research organization CERN in Geneva also uses the cloud as a data storage medium and platform for petabyte data analysis

The client: CERN

At the European Organisation for Nuclear Research (CERN) in Geneva, the clouds are filled with data: The particle accelerator Large Hadron Collider (LHC), the largest machine in the world, finishes more than two million tasks a day in its search for dark matter and produces more than 25 petabytes of data every year. (For comparison: 1 petabyte is equivalent to a thousand times the amount of a terabyte, that is, a commercially available hard drive size today). One of CERN's current projects is CLOUD, but this is only indirectly related to cloud computing. The acronym stands for „Cosmics Leaving Outdoor Droplets“ and is used to explore the possible connection of cosmic rays and earthly cloud formations. The scientists of CERN hope for the project's findings on the atmosphere and the climate. The cloud is nevertheless represented in the project: as an IT infrastructure for the processing and analysis of project data.

The challenge: Large amounts of data need a powerful cloud

The huge amount of data that the LHC and the climate research project generate need a powerful cloud environment. To create such an environment, a European initiative led by CERN with partners such as the German DESY or the Karlsruhe Institute of Technology (KIT) has launched the

Helix Nebula Science Cloud (HNSciCloud). A1 Digital, who has been offering the Cloud Plattform Exoscale as part of its portfolio since August 2017, is one of the contractual partners to the science initiative.

Unlike commercial cloud providers, which are poorly distributed in publicly funded scientific operations, the HNSciCloud initiative links cloud partners to research institutions. They can offer their services at manageable costs with the necessary security for infrastructures and data.

Among other things, the trusted cloud providers must meet the following criteria:

- It must be possible to handle performance and data storage with data sets in the petabyte range.
- The cloud solutions must support container technologies for the development and distribution of software solutions,
- provide network connectivity and identity management as well as
- service and support, and
- present payment models that are of interest to the scientific community.



The solution: Hybrid cloud initiative for science across Europe

In April 2017, a total of three consortia were formed to develop and deploy the science cloud prototypes. As a member of one of the consortia, A1 Digital contributes 10,000 CPU cores and additional storage for one petabyte of scientific raw data with Exoscale. The orchestration of the consortial cloud solution under the leadership of the Belgian Rhea Group takes over its subsidiary SixSq.

All scientific groups affiliated to the HNSciCloud have access to the data in order to test their applications and to collaborate with other research facilities on long-term science projects. With the openness and interdisciplinarity, the science cloud is a big step towards research and innovation at a large networked level.

The result: Open Science Cloud of the EU

The initiative to establish HNSciCloud led to the creation of the European Open Science Cloud (EOSC) of the European Union (EU) in April 2018. The objective of the open cloud is to provide 1.7 million scientists and more than 70 million people employed in science and technology in Europe with a virtual environment for storing, managing, analysing and reusing research data across borders and research disciplines. To this end, the EU initiative and the HNSciCloud are bringing public research organisations and their internal IT organisations together with commercial cloud providers in order to offer Infrastructure-as-a-Service (IaaS) to scientific institutions for the cost-effective use of cloud services.



Exoscale – the cloud solution for science and business

The Exoscale cloud solution from A1 Digital offers companies of all sizes access to the latest infrastructure from the cloud: highly available servers, redundant data storage, GPU servers for sophisticated IT tasks. The servers are located in European data centres that meet the high requirements of the EU General Data Protection Regulation (GDPR).

Exoscale offers cloud hosting focused on simplicity, scalability, and security for SaaS companies and web applications. With a simple and intuitive web administration interface, coupled with a transparent pricing model, Exoscale makes complex infrastructure concepts easy to implement. Exoscale focuses on fast and flexible self-service solutions for the customers.

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