

A CASE STUDY FOR:

CERN

Rackspace and CERN collaborate in the cloud to help humankind answer some really big questions

BUSINESS

CERN, the European Organization for Nuclear Research, is making global scientific collaboration a reality with CERN openlab, a unique public-private partnership.

CHALLENGES

To build a hybrid environment that could burst workloads into the public cloud when more compute power was needed.

SOLUTION

OpenStack-base Hybrid cloud

OUTCOME

CERN openlab is accelerating the development of cutting-edge solutions for use by the worldwide Large Hadron Collider community, as well as wider scientific research.





Research into matter and the origins of the universe needs the brainpower of many thousands of researchers and physicists. It also requires collaboration on a gigantic scale. CERN, the European Organization for Nuclear Research, is making this global scientific collaboration a reality with CERN openlab, a unique public-private partnership with leading ICT companies and other research institutes. CERN openlab was created by CERN in 2001. Its mission is to accelerate the development of cutting-edge solutions for use by the worldwide Large Hadron Collider (LHC) community, as well as wider scientific research.

OPEN COLLABORATION ON A MASSIVE SCALE

Rackspace first joined CERN openlab as a contributor in July 2013. Together, experts from Rackspace and CERN collaborated to build a hybrid environment that could burst workloads into the public cloud when more compute power was needed. CERN has been deploying its own private cloud platform to run the huge data analysis associated with its research programmes.

Tim Bell, leader of the Operating systems and Infrastructure Services Group within the CERN IT Department, explains: "As the architects of OpenStack, Rackspace offered the chance to accelerate our innovation by building an OpenStack-based hybrid cloud. The seamless federation between public and private cloud platforms provides significant flexibility given the massive workloads we deal with every day".

Indeed, CERN's compute environment is extremely demanding. The CERN Data Centre stores more than 30 petabytes of data per year, generated by experiments on the LHC. All of this data is then made available in near real-time to physicists around the world via

a distributed infrastructure. The Worldwide LHC Computing Grid comprises over 170 sites in 42 countries, with over half a million cores processing 2 million jobs per day.

MULTIPLE CLOUD FEDERATION

CERN and Rackspace have also collaborated to extend this concept further, to enable organisations to 'spin up' their own cloud environments and bring these together via standardised cloud orchestration. Rackspace created a reference architecture and operational model to develop authentication over multiple OpenStack Clouds. Tim Bell explains, "Rackspace's collaboration in CERN openlab is ever evolving. Together we are building on the previous work done in order to create a full multi-cloud open-standard orchestration capability. It's one of the key tools for ongoing collaboration and discovery."

As well as providing hosting services and remote testing assistance in design and implementation, Rackspace has also funded a full-time research fellow at CERN to help with the federation project.

Tim concludes: "Our collaboration with Rackspace has enabled us to tackle some ambitious challenges covering the most critical needs of our IT infrastructure.

These include data acquisition, computing platforms, data storage architectures,

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compute provision and management, networks and communications, and data analytics. CERN openlab is now facilitating global collaboration amongst the LHC scientific community and accelerating the development of cutting-edge solutions.”



The CERN Data Centre stores more than 30 petabytes of data per year, generated by experiments on the LHC.
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CERN site of Meyrin and Globe of Innovation.
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Rackspace (NYSE: RAX), **the #1 managed cloud company**, helps businesses tap the power of cloud computing without the challenge and expense of managing complex IT infrastructure and application platforms on their own. Rackspace engineers deliver specialised expertise on top of leading technologies developed by OpenStack®, Microsoft®, VMware® and others, through a results-obsessed service known as **Fanatical Support®**.

Learn more at www.rackspace.co.uk

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