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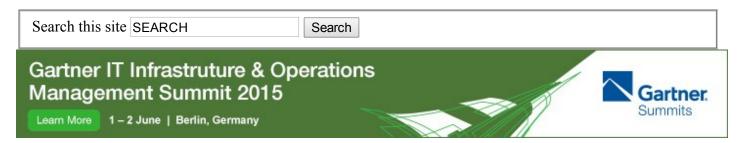
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CERN and Rackspace use OpenStack clouds to aid global research efforts

Caroline Donnelly Wednesday 20 May 2015 15:15

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The European Organisation for Nuclear Research (CERN) is calling on long-time technology contributor Rackspace to help it create multi-cloud, collaborative working environments for its global research teams.

The two parties have been working together since 2013, when Rackspace was enlisted to help create an

OpenStack-based hybrid cloud set-up to underpin the organisation's research into particle physics through its CERN openlab initiative.



This work has already resulted in the creation of a reference architecture and operational model to make managing its various cloud environments easier.

As part of this, the pair have also developed identity authentication tools that cover multiple OpenStack-based clouds that can be knitted together to create a global, federated cloud.

Speaking to Computer Weekly, Rackspace director of customer technology services Giri Fox said this model makes it easier to share the data CERN gathers from its Large Hadron Collider (LHC) particle accelerator with its overseas research teams.

"CERN create large amounts of scientific data when the Large Hadron Collider is running, resulting in petabytes of data flowing through OpenStack to be processed and stored and used for later scientific research," he said.

"They don't do all this research themselves. They work with dozens of universities around the world, so they need to solve the problem of how best to share that data and the less technology that gets in the way, the better.

Read more about CERN

- IT scale, big data challenges and high-throughput compute needs are of a different order of magnitude altogether for CERN, the organisation that aims to find out what the universe is made of by conducting experiments in its Large Hadron Collider
- CERN is using <u>Oracle enterprise IT management software</u> to monitor and manage its Oracle applications, middleware, databases and hardware

"Federation and moving those workloads and information between other scientific and research institutions goes towards improving science," he added.

To support the delivery of this, Rackspace also covers the cost of a full-time research fellow at CERN who is on hand to provide remote assistance with design and implementation issues that crop up among its multitude of OpenStack cloud environments.

The latter's open-source software is also used to manage the datacentre resources that power the LHC, which reportedly generates more than 30PB of data a year.

The decision to use open-source, rather than proprietary software, was driven by the need to keep costs down, while enabling flexibility, according to Fox.

"For scientists, the thing that makes open-source technologies like OpenStack attractive is that they're able to deploy science without the same level of cost or proprietary licensing fees and deploy it on pretty much any infrastructure," he said.

"Some research labs aren't as well funded as we'd like them to be, but they can still run OpenStack technology and solve some scientific problems or move that problem to bigger infrastructure around the world and work with many other scientists."

Accelerating particle research

The next phase of the project will see the pair develop standardised templates to speed up the creation of OpenStack clouds, so that CERN's researchers can reap the benefits of having access to these environments sooner.

Infrastructure manager in the IT department at CERN, Tim Bell, said: "Our CERN openlab mission is to work with industry partners to develop open, standard solutions to the challenges faced by the worldwide Large Hadron Collider community.

"This is a very important step forward. For CERN, being able to move compute workloads around the world is essential for ongoing collaboration and discovery," he added.

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