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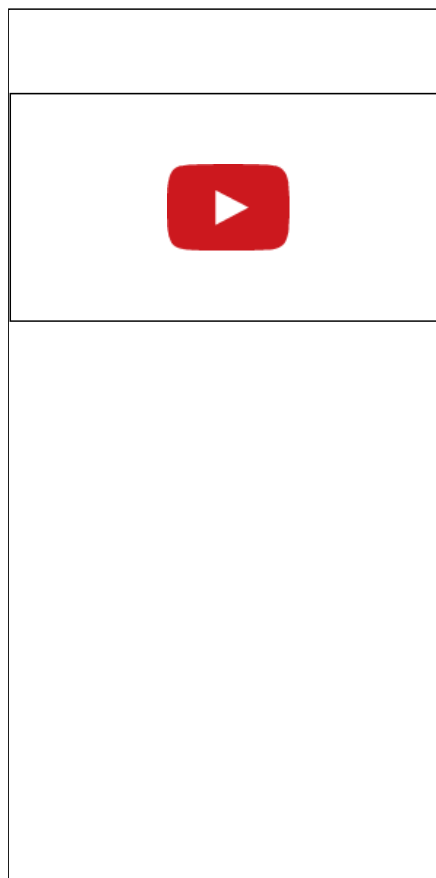
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CERN Keeps Options Open With Its Clouds

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Europe’s particle physics lab, CERN, generated its share of cloudy headlines at the recent OpenStack Summit in Vancouver, as a multi-year collaboration between CERN’s openlab Project and managed cloud provider Rackspace reached prime-time as the underpinnings of OpenStack Kilo’s federated identity capability. Other organizations also contributed code and ideas as this project rolled into OpenStack, but CERN continues to explore other cloud technologies and perhaps even other ways of solving very similar problems.

As Frederic Lardinois [reported](http://techcrunch.com/2015/05/18/openstack-launches-vendor-certification-federated-identity-support-from-over-30-cloud-providers/) (<http://techcrunch.com/2015/05/18/openstack-launches-vendor-certification-federated-identity-support-from-over-30-cloud-providers/>) for TechCrunch at the time, OpenStack Executive Director Jonathan Bryce used the opening keynote at last month’s Summit in Vancouver to announce a number of advances within the project. One of those was support for ‘federated identity,’ or the ability to log in to a remote OpenStack cloud using credentials associated with your own OpenStack cloud. Given the early – but essentially unrealized – promise of a global network of interoperating OpenStack-powered clouds, this federated identity capability is an important step in the right direction. And use cases like CERN’s – where international teams of scientists may very reasonably wish to regularly process data on CERN’s servers, on servers at their own universities and research centers, and even on the public cloud – are a prime example of why an ability to access all of these resources with a single login matters.





European flags outside the European Commission headquarters in Brussels (Source: EMMANUEL DUNAND/AFP/Getty Images)

CERN has been a Rackspace customer for a number of years, but this particular collaboration began in 2013 (<https://gigaom.com/2013/07/01/rackspace-and-cern-collaborate-on-massive-hybrid-cloud/>). Rackspace funded a post at CERN, and the two organizations worked together to tackle issues around the federating of workloads between CERN's data centers and Rackspace's public and private cloud environments. A year ago, the first outputs from the collaboration were contributed to OpenStack Icehouse (<http://www.datacenterknowledge.com/archives/2014/06/30/rackspace-cloud-user-cern-contributes-code-to-openstack/>), and contributors have continued to polish and enhance the code to reach the more functional offering within the latest Kilo release.

Issues around federation of identity and distribution of workloads clearly matter to CERN, where petabytes of data are routinely generated by large – and expensive – projects that are of global interest. CERN's ability to add additional computing resources on-site is severely constrained by a lack of power and space for larger data centers. Along with other European generators of big science, the European Space Agency (ESA) and European Molecular Biology Lab (EMBL), CERN participated for a number of years in a European Commission-funded project called Helix Nebula (<http://www.helix-nebula.eu/>).

Helix Nebula should not be confused with the defunct NASA cloud project called Nebula (<http://research.gigaom.com/report/cloud-computing-nasa-case-study/>), the open source cloud project called Open Nebula (<http://opennebula.org/opennebulas-session-at-gigaom-structure-europe/>), or the failed OpenStack-based builder of cloud appliances called Nebula (<http://www.forbes.com/sites/paulmiller/2015/04/02/nebula-openstack-appliances-and-market-sizing/>). Helix Nebula began as a research project, funded by the European Commission, and involving both the demand-side interests of large European science centers and the supply-side capabilities of cloud providers (like CloudSigma) and technology firms (like SAP). Together, they hoped to explore the ways in which a group of technology providers might collaborate and share resources to meet the rather specialized requirements of

Big Science. The initial project finished some time ago, but the partners (and new additions) continue a loose collaboration as something called the Helix Nebula Initiative. They've developed a [marketplace](http://cloudofdata.tumblr.com/post/85004996812/europes-helix-nebula-enters-cloud-marketplace) (<http://cloudofdata.tumblr.com/post/85004996812/europes-helix-nebula-enters-cloud-marketplace>) for cloud resources, and are [promoting](http://www.helix-nebula.eu/events/towards-the-european-open-science-cloud) (<http://www.helix-nebula.eu/events/towards-the-european-open-science-cloud>) the long-rumored concept of a European Science Cloud with increasing vigor. CERN remains closely involved, with former openlab boss Bob Jones Chairing the Helix Nebula Initiative and authoring a [recent paper](http://www.helix-nebula.eu/events/towards-the-european-open-science-cloud) (<http://www.helix-nebula.eu/events/towards-the-european-open-science-cloud>) on the European Science Cloud idea.

And [now CERN is inviting interested parties to Geneva later this month](http://indico.cern.ch/event/388437/) (<http://indico.cern.ch/event/388437/>), to explore the feasibility of securing the money and cooperation to do more:

“ In order to explore further avenues for the establishment of an open, secure and trusted cloud computing Marketplace for European science, businesses and society, The Helix Nebula Initiative is organising an open day event entitled *Towards a European Open Science Cloud* in co-location with the Helix Nebula Initiative's 6th General Assembly.

The participation of the European Commission with (*sic*) encourage the alignment of the Helix Nebula Initiative with the EC's vision of a Single Digital Market and the potential role of a European Open Science Cloud.

Helix Nebula tackled some tricky issues associated with the way that science can work in the cloud, and the group continues to play a role in raising awareness of the challenges that remain. Aggregating existing computing resources amongst European universities and research centers clearly makes some sense, and the commercial organizations involved in the Initiative obviously see opportunities to offer their own services into the mix. But so many of the biggest players in cloud are quite obviously absent. Even Rackspace, with which CERN already collaborates on very similar issues, is not at the Helix Nebula Initiative's table. And [almost anyone can join](http://www.helix-nebula.eu/become-new-member) (<http://www.helix-nebula.eu/become-new-member>), now the formally funded project has ended.

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