OpenStack Developers Collaborate to Deliver Cloud Components

Brian Heaton | August 21, 2012

Moving technology services to the cloud has become commonplace over the last few years. But as government agencies weigh the pros and cons of various big-name cloud providers, another option has begun to surface — open source cloud computing.

One such platform is OpenStack, created by NASA and Rackspace Hosting, a data storage solution provider. Launched in July 2010, OpenStack has grown to become a global collaboration of developers and cloud computing technologists producing ubiquitous code for public and private clouds.

Now featuring almost 4,000 people and more than 178 companies, the community's goal is to develop a cloud standard and scalable cloud operating system that any organization can use to offer services on typical computing hardware. The technology is composed of various projects that become the components that make up a cloud infrastructure.

According to Jim Curry, general manager of Rackspace Cloud Builders, the need for open source cloud technology was spurred by stagnation in the cloud provider market a few years ago. Prior to OpenStack, there was concern in the industry that the market for cloud platforms was moving too slowly, Curry said, in-part because providers such as Amazon and Rackspace were building their own proprietary systems.

The problem was that by choosing to go with one specific provider, a customer could theoretically get locked into a cloud model and would be unable to easily switch off if a need to transition arose. But if a customer's cloud was instead based on an open source cloud platform, that situation might not be as big of an issue, and may even spur growth in the cloud market.

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Rackspace had made some progress on the storage end of cloud technology but lacked development on the computing side of an open source cloud platform. That's where NASA came in. The federal agency was having the same concerns and issues as Rackspace about how to use and develop cloud most efficiently.

At the time, NASA was in the midst of constructing its own proprietary cloud system called "Nebula." NASA had been working on the system since 2008 and had made strides with the compute portion of the technology, which they dubbed "Nova," but lacked advancement on cloud storage capacity. So the union between Rackspace and NASA was a natural marriage of technology that spawned OpenStack.

Ray O'Brien, former project manager of Nebula and current acting CIO of NASA's Ames Research Center, said it took about a month of cutting through red tape and obtaining the proper clearances to get the partnership off the ground. NASA and Rackspace first met in mid-June 2010 and federal government approval was granted in the weeks following, ushering in a new era of sorts in the way NASA works with the outside community.

O'Brien said the story is a great public-private partnership case study. NASA projects usually involve a contract or grant agreement. But that structure doesn't apply well to an open source endeavor, so O'Brien's team had to get a waiver from standard policy to make the collaboration a reality.

Getting that approval wasn't easy, however. NASA had used open source products in its projects before and also developed its own open source technologies and released them to the public in the past. But the agency didn't have a policy that governed how to partake in community development that was predicated on working hand-in-hand with people virtually over networks from a variety of different companies.

"That was new and that was a challenge to get that waiver," O'Brien admitted. "There's a group here at NASA that wants to use the success that came out of OpenStack to push for policy revision that will allow this to happen on a broader scale within NASA."

The benefits of open source cloud computing center on flexibility, particularly for state and local government agencies already vested or looking to move into a cloud infrastructure.

Curry said there are two things state and local officials should know about open source cloud computing. First, it's an emerging standard that will be included in the various

vendor-created cloud platforms. Second, in the future, he believes government IT personnel will be able to implement their own cloud platforms instead of relying on vendors and potentially high licensing costs.

"There is going to be some level of compatibility among all these different offerings … so when a state or local government is considering provisioning technology, they can ensure that they are not just getting a Microsoft-flavored or HP-flavored solution," Curry said. "There will be obviously their own value on top of it, but the kernel will be OpenStack, which gives them capability and flexibility between vendors."

In addition, Curry thinks that IT professionals across all levels of government will one day have the option of taking open source code and managing it themselves. Although there will always be companies that will work on building professional resources and services around maintaining the OpenStack environment, he said, people will ultimately be able to implement and run an open source-based cloud platform on their own if they choose.

"We're hoping to level off the playing field here where there is a more common kernel, and yes, those vendors will provide additional value, but there will be much more leverage in the hands of the users to assure that they will not get locked into one solution or another," Curry said.

O'Brien, however, said it was unlikely that large numbers of state and local governments would chose to development of their own open source-based cloud platforms. He said agencies will likely still choose a vendor, but as Curry said, if those vendors incorporate open source code in their cloud technology, government customers will have a richer set of options at their disposal.

"There is more choice for local and state governments, and that's a good thing," O'Brien said. "The right choice might be another product, but those other products know that they have to keep pace to be considered an option. So OpenStack is going to be like any other product, and people are going to use it if it meets their needs."

While OpenStack started with a public-private partnership between NASA and Rackspace, its development future will be more community- and sponsorship-driven. On May 15, NASA announced a new cloud computing strategy that includes reducing its role with OpenStack development. Instead, the agency will focus on being more of a cloud service consumer.

While OpenStack started with a public-private partnership between NASA and Rackspace, its development future will be more community- and sponsorship-driven. On May 15, NASA announced a new cloud computing strategy that includes reducing its role with OpenStack development. Instead, the agency will focus on being more of a cloud service consumer.

"This outcome has always been one of our highest goals for Nebula, and now permits us to transition from the role of developer to that of enthusiastic adopter of a broad range of cloud services, including those based on OpenStack," O'Brien wrote.

The news came on the heels of an announcement by OpenStack earlier this year that its members were launching a foundation made up of various companies to help fund future OpenStack community-based projects. Curry said the sponsoring companies have been selected and a team is drafting documents to make the OpenStack Foundation a chartered organization.

He expected the process to take two or three months, with a goal of formally launching the foundation this fall. Curry estimates the foundation's operating budget will be about $4 million to help further build the OpenStack community, maintain an OpenStack trademark and add further experts to OpenStack projects.

For example, Curry said the community will discuss if a team should be hired within the foundation to maintain a core testing environment for OpenStack — one that the entire community can use to test code and new developments — or whether funding should be spent on an as-needed basis to help out with key projects.

Although OpenStack is becoming a more formal organization, Curry was adamant that its core community of developers will remain an integral part of developing open source cloud technologies.

"Lots of people in the community contribute back to the knowledge base, [and] we want to continue to build that," Curry said. " Community is extremely important to us, and it is an area where we will continue to invest in and grow in the coming years."

http://www.govtech.com/pcio/OpenStack-Developers-Collaborate-to-Deliver-Cloud-Components.html