

E-Guide

Expert spotlight on Eucalyptus open source cloud platform

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Open source cloud platforms are gaining popularity with small and medium-sized businesses alike for their open availability and reduced costs. This e-guide, from SearchCloudComputing.com, provides everything you need to know about this technology, including what you should consider when building open source clouds, different licensing models and top vendors in this market place. Learn how one IaaS vendor can help move applications between public and private clouds and gain a vendor comparison to help you choose which open source model is right for your organization.

Amazon taps Eucalyptus to integrate public and private clouds

By Stuart J. Johnson

Amazon Web Services has a weak spot -- the interface between its cloud and customers' own private clouds running in their own data centers.

The cloud giant made a move Thursday to remedy at least part of that problem, announcing a deal with on-premises IaaS provider Eucalyptus Systems to make it easier for customers to migrate workloads between their own data centers and AWS.

Under the agreement, Amazon Web Services (AWS) will help Eucalyptus extend the compatibility of its software with AWS APIs, enabling customers to run existing data center-based applications compatibly with key Amazon cloud services such as Elastic Compute Cloud (EC2) and Simple Storage Service (S3), according to the two companies.

The idea is to provide a common set of APIs that work with both companies' products. Among the benefits will be the ability to use the same management tools between the two platforms, and leverage AWS software developer kits (SDK), the companies claim.

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"The Eucalyptus deal is indeed a big deal," said Robert Mahowald, research vice president at analyst firm IDC Corp., a technology market analysis firm. "It is the kind of public-private cloud resource extension that will not only give customers the flexibility to deploy where they want and change their minds, but to use common APIs around image composition and management, so they can be plugged into either resource."

Others agree the partnership is significant.

"By strategically and selectively removing the uncertainty regarding its APIs, Amazon gains literally overnight a credible private cloud offering, minimizing that as an angle of attack for competitors who might otherwise attempt to sell against Amazon by emphasizing its public cloud-only technology story," Stephen O'Grady, senior analyst and co-founder of analyst firm RedMonk, said in a blog post Thursday.

"[Amazon doesn't] have to deviate from its public cloud orientation by creating a more traditional software organization," O'Grady added. "This deal instead effectively outsources that to Eucalyptus."

FAQ: The lowdown on open source cloud computing

By Caitlin White

Open source cloud vendors are gaining steam in IT departments of enterprises and small and medium-sized businesses alike. Experts agree that they're set to make major waves in the cloud computing market as a whole, pointing to open source's free model and the tools and benefits it can bring to your cloud environment. But, as with all cloud innovations, it's met with a measure of precaution.

Could open source cloud be a boon to your business? These frequently asked questions offer information and tips on the benefits and drawbacks of using open source, what's going on in the provider market and how to use open source to build your cloud.

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Why should I consider building a cloud infrastructure with open source?

Let's start with the most compelling reason for budget-conscious companies: Open source software is a lower-cost option than commercial cloud products that require user licenses. With open source, there are no expensive contracts and less of a chance to get locked in to one cloud vendor.

Using open source means the source code is freely available for users to modify according to their business needs. Open source cloud software also gives users freedom from vendor lock-in and proprietary barriers. While proprietary vendors are holding tight to expensive licensing models, open source looks to the future, many experts say, giving companies the flexibility to use free tools to build and manage their clouds. And flexibility feeds innovation. Without a commercial owner, businesses regain control of their data. Expert buzz claims open source software can contribute to interoperability and improved return on investment (ROI), among many other positives.

Who are the big vendors in the open source market?

There are loads of open source vendors and projects from which to choose. OpenStack is currently causing the most hubbub, and some even consider it the biggest development in cloud computing to date. A project developed by NASA and Rackspace, OpenStack boasts big name customers like MercadoLibre, Disney, CERN and Wikimedia. But who says you have to use what NASA uses?

After HP, IBM and Intel threw support behind OpenStack, Eucalyptus, an open source option that had broad appeal, seemed to fade into the background. But don't dismiss Eucalyptus so fast. Don't forget cloud industry titan Amazon Web Services' (AWS) EC2 platform is tied in with Eucalyptus.

OpenStack and Eucalyptus may be the major open source players, but plenty of other vendors offer niche open source products. Abiquo hopes to attract enterprise customers with the promise of managing clouds in a single interface, and Red Hat is growing quickly with support from many Fortune 1000 companies.

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How are open source licensing models different than those of proprietary cloud vendors?

For a good example of differences between open source cloud models, it's helpful to compare Eucalyptus and OpenStack. Eucalyptus Systems' Eucalyptus project is an example of commercial open source, while OpenStack is community open source. Commercial and community licensing models differ in terms of flexibility and support.

Commercial open source providers offer *some* fully open source software, but they offer bonus features and vendor support for those who are willing to shell out the cash. It's also known as a partially closed open source offering. Community open source providers can be licensed to an unlimited number of users, unbound by the number of processors. Users have full, free access to the code and are able to make changes to fit their needs -- but are limited by their in-house abilities, or what they can derive from the user community, because they receive no vendor support.

There must be a downside to open source cloud. What are some red flags?

There's a reason why large IT shops are interested in open source cloud but still hesitant to use big chunks of open source software. Even free, flexible models have restrictions. Consider using community open source tools, such as with OpenStack. If something goes wrong, who do you have to rely on? It's easy to shake your finger at a community full of users who have assisted you, but it won't garner any results. With open source cloud software, enterprise customers lose the ability to hold a vendor accountable for its problems.

It's also important to consider the additional costs of open source: You may save some cash on licensing, but you'll need to pay salaries of experienced in-house developers dedicated to the open source project or shell out money to hire an outside consultant to help stitch together your cloud.

Can I use open source tools to build my private cloud, too?

The public cloud market is abuzz with open source frenzy, but open source has gained popularity for constructing private clouds as well. Realizing the

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benefits open source's flexible model has for public clouds, companies are toying with the idea of using its technology to create private clouds.

It should come as no surprise that companies have cited using, or at least considering, Eucalyptus and OpenStack to build internal private clouds. It's important to remember, as with all cloud computing projects, security remains a concern. Appreciating its growing popularity, experts have stepped in with their advice on how to build a secure private cloud using OpenStack.

Comparing open source cloud platforms: OpenStack versus Eucalyptus

Rackspace and NASA recently launched OpenStack, a cloud software stack that has already generated significant buzz in open source and cloud computing circles. What it offers, in a nutshell, is an entryway for hosting providers that want to provide a cloud service to their customers, much like Parallels Virtuozzo opened up virtual private servers to Web hosting companies.

OpenStack offers the promise of do-it-yourself clouds in a secure, private test lab before moving to either private cloud or public cloud, along with insight into the real security issues behind cloud computing and Infrastructure as a Service (IaaS). OpenStack has been hailed as the most significant development in cloud computing to date. What *doesn't* it offer?

A tie-in to the number-one cloud provider, Amazon, for one. For that, you'd have to turn to Eucalyptus, the other open source cloud computing product on the market. Eucalyptus has been around for nearly three years, a long time in terms of IaaS products. It was founded out of a research project in the Computer Science Department at the University of California, Santa Barbara, and became a for-profit business in 2009.

The benefits of Eucalyptus

One benefit of Eucalyptus is that its open source software components are used without modification, meaning that they can run on unmodified GNU

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Linux kernels with relative ease. Ubuntu's baked-in cloud computing is Eucalyptus-based and is ready to be installed right after download, making it very convenient.

But that doesn't compare to Eucalyptus' biggest benefit: It is designed to be application programming interface (API)-compatible with Amazon's EC2 platform. That means that a company evaluating EC2 can use freely available software on freely available operating systems to build a compatible test lab. That same company, once they are an Amazon customer, can then use Eucalyptus for development work before pushing to the ever-live world of the real cloud. Eucalyptus is, at the moment, perfect to soothe the cloud angst in decision-makers everywhere.

Interestingly enough, Eucalyptus was also put to use by NASA at their Ames Research Center in California, on the Nebula platform project, until issues stemming from the partially-closed pieces of Eucalyptus forced their hand. It was originally only an issue of scalability, a problem most products suffer from at their inception, but the rift between Eucalyptus and NASA became irreparable when NASA found it could not contribute scalability-resolving code to the project without running afoul of Eucalyptus Systems Inc., the corporate entity behind Eucalyptus.

This is because Eucalyptus is not fully open source. The company behind Eucalyptus maintains some code for commercial Eucalyptus Enterprise Edition (E3) features like management, SAN integration, a better back-end database and compatibility with VMware -- necessary functions that the company either can't or won't open source. OpenStack, being 100% open source from the ground up, does not yet offer these features, though they are supposedly on the roadmap.

Eucalyptus is also not a full, 100% implementation of Amazon EC2. While it does implement most of EC2's APIs (and some of the E3 APIs), it is not, nor is it intended to be, a complete carbon copy. What it does well is instant provisioning -- taking the process behind the creation of new servers and automating it to be nearly instantaneous. This is meant to ease the burden on IT resources and improve efficiencies to meet spikes in demand. So long

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as the server being provisioned is of a supportable type (and that is the main goal in using EC2), all is well with using Eucalyptus either in place of EC2 or as a test zone before moving servers or templates into EC2.

Right now, Eucalyptus has the only fully-functional cloud product that adheres to any standards aside from its own, and it has chosen to align that compatibility with Amazon, the largest player in the market. Eucalyptus' ties to the biggest name in IaaS stand to help its product gain significant market share.

How OpenStack will affect open source

Historically, the open source community has impacted both the economics and the innovations of the computer industry. Open source software is known for causing previously monolithic applications to become commoditized. In the database space, one only needs to look at MySQL and PostgreSQL. In the Web server space, there is Apache, and in application servers, there are Tomcat, JOnAS, JBoss, Jetty and GlassFish. In programming and scripting languages, there are the likes of Java, Perl and PHP. GNU Linux, in particular, has done so much to commoditize the operating system market that even phones use it.

What OpenStack promises to do is to make the technologies behind the cloud a commodity. While markets will always have room for closed source projects, the impact of open source on those markets is profound and deep, driving innovation and making systems that were previously unable to communicate with one another become interoperable.

In theory, the OpenStack project offers this and much more, by virtue of being completely open. While it has attracted top-tier support (Citrix, Dell, NTT, etc.), it is still only available as a feature-limited "developer preview" with clear disclaimers about its maturity and stability. It also remains to be seen what Eucalyptus will do with its dominant position in the open source cloud platform market. Will it adapt to the change in the market, playing to strengths while minimizing weaknesses around compatibility and openness, or will the platform remain as it is and risk fading into the background?



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