redhat

TECHNOLOGY OVERVIEW

HOW RED HAT BRINGS OPENSTACK INTO THE ENTERPRISE

by Bryan Che and Gordon Haff

INTRODUCTION

A huge community is contributing to OpenStack® technology, a series of interrelated projects that collectively enable building an Infrastructure-as-a-Service (IaaS) cloud. OpenStack offers tools for pooling compute, storage, and networking resources throughout a datacenter, providing self-service access to users under administrative control. OpenStack therefore provides the foundation for organizations seeking to build and operate their own clouds.

In its role as a foundation, OpenStack will typically be complemented by other open source projects and products. For example, Gartner analyst Alessandro Perilli notes that "from an architectural and functional standpoint, what OpenStack does must be augmented by a commercial CMP [cloud management platform] for many enterprises that need strong process governance, sophisticated capacity management, and advanced automation capabilities."[1] Red Hat® CloudForms is a good example of a CMP. OpenStack brings fundamental infrastructure services around compute, storage, and networking to the cloud. CloudForms provides rich self-service as well as enterprise cloud management and operations. Together, a cloud infrastructure platform and a cloud management platform form a powerful combination for an IaaS cloud.
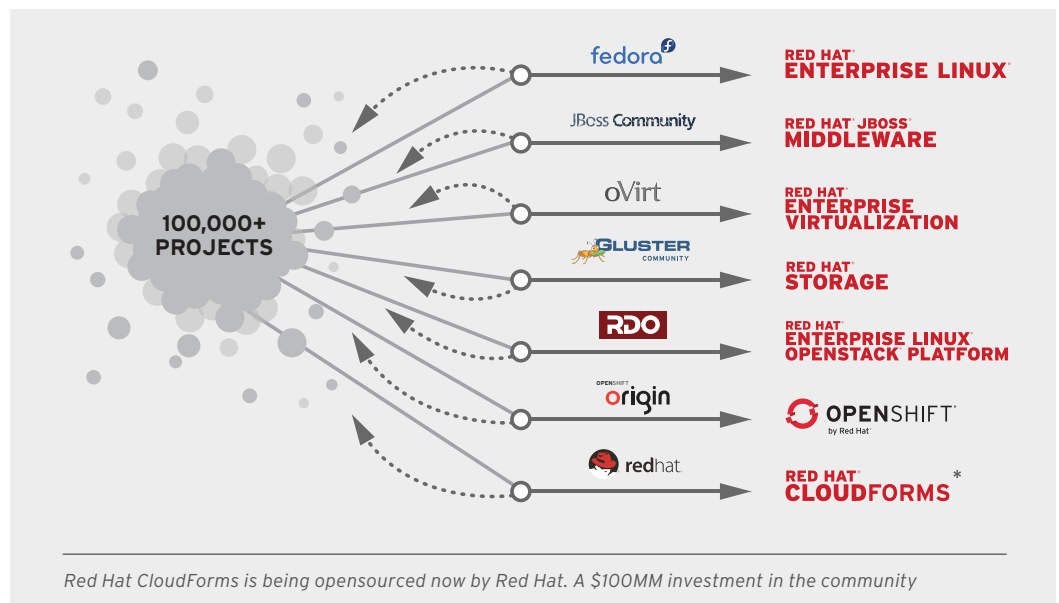
1 http://blogs.gartner.com/alessandro-perilli/why-vendors-cant-sell-openstack-to-enterprises/
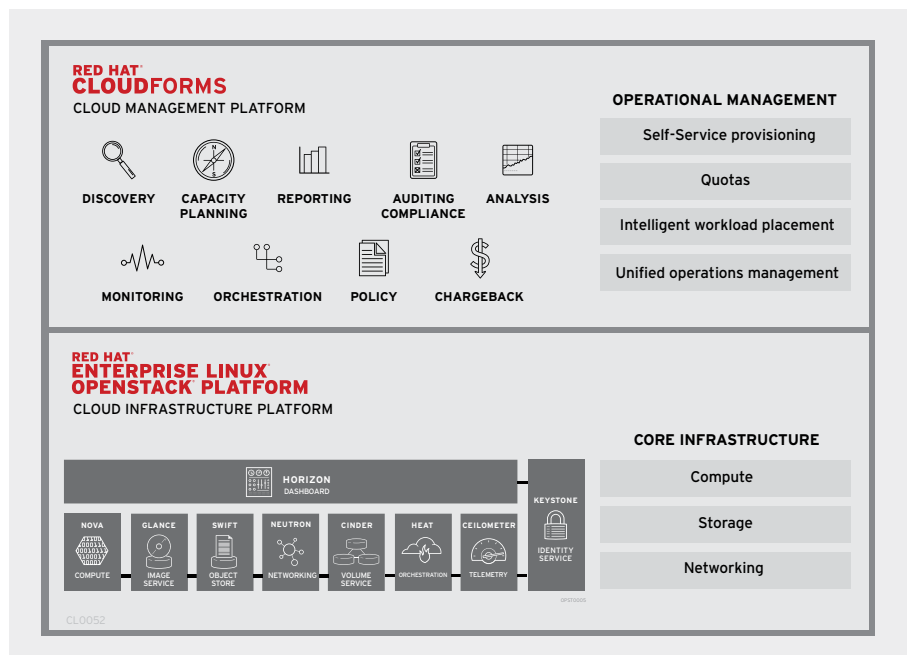
OpenStack can also serve as a foundation for a Platform-as-a-Service (PaaS) such as OpenShift by Red Hat, which can be deployed via the OpenStack Heat project. This lets OpenShift users apply native OpenStack technology to quickly run and scale their own PaaS in production. The marriage of these two rapidly growing, open source cloud technologies combines elasticity and efficiency for IT operations with self-service and automation for IT development teams.[2]

Some organizations will choose to use all this innovation directly by implementing, testing, patching, and supporting community releases on their own. However, as with Linux®, typical businesses will rely on a vendor like Red Hat with deep expertise in and day-to-day involvement with the upstream development process, which lets it deliver software that is ready for the enterprise out-of-the-box.

There's tremendous enterprise interest in OpenStack. Indeed, a recent survey that IDG Connect conducted of 200 enterprise IT decision makers on Red Hat's behalf found that 84% planned to adopt OpenStack.[3]

Of course that doesn't mean that mainstream and late-adopter enterprises, in particular, will necessarily adopt OpenStack immediately; it took years for server virtualization to move out of development/test environments and into production, and it took years for mainstream enterprises to adopt Linux. Adoption happened after two things: maturity of capabilities and breadth of ecosystem. We've already made great strides in these areas. In this paper, we'll discuss how Red Hat is bringing OpenStack to the enterprise, just as we've done with Linux.

Red Hat CloudForms is being opensourced now by Red Hat. A $100MM investment in the community

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 2 See OpenShift and OpenStack: A Match Made in the Cloud http://www.redhat.com/about/news/archive/2013/2/
    openshift-and-openstack-a-match-made-in-the-cloud

 3 http://www.redhat.com/about/news/press-archive/2013/10/2013-path-to-an-openstack-powered-cloud-survey-results-
    highlight-aggressive-openstack-adoption-plans-by-enterprises

Red Hat's business model is 100% open source. No bait-and-switches, and no open core with the valuable bits as proprietary add-on software.

THE RED HAT APPROACH

Our focus is on creating differentiation for the long term. We are laying the groundwork for OpenStack enterprise adoption and doing all the things we know enterprises need. For example, we have the only OpenStack product certified to run certified Red Hat Enterprise Linux and Windows guests. Enterprises care a lot about that, and it's a differentiator.

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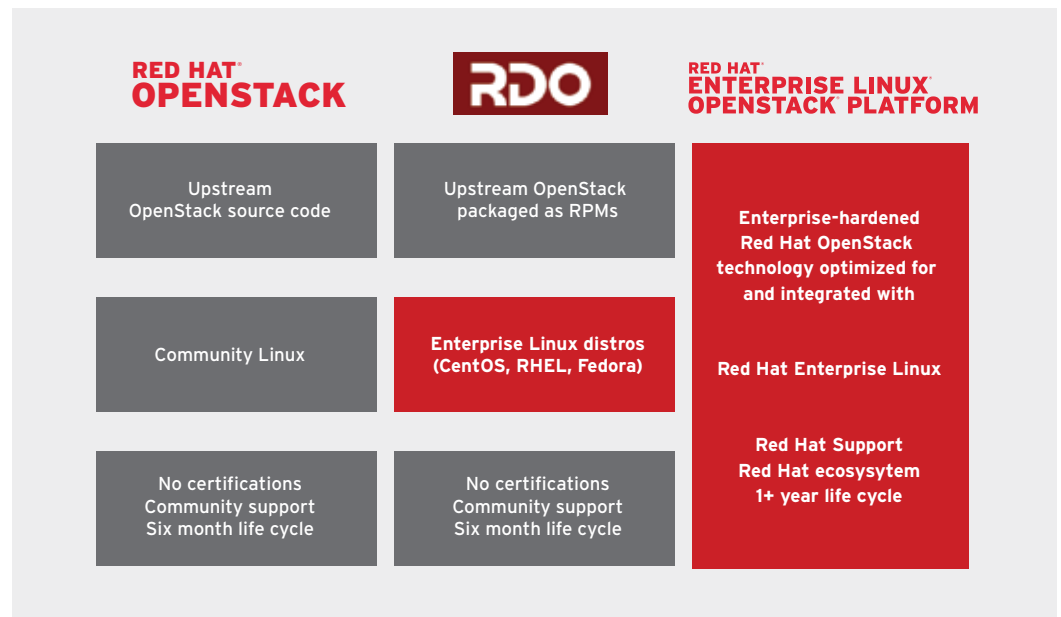
Just as we do for Linux, Red Hat JBoss® Middleware, and other offerings, we develop in the upstream OpenStack project. We do so, in part, because that's the best way to maximize the innovation that comes from the open source development model. We have RDO, a fast-moving community distribution for early adopters. And we have a 100% open source product for enterprises that we sell on a subscription basis: Red Hat OpenStack Platform, which provides support, certifications, access to our knowledge base and ecosystem, updates, and an enterprise life cycle.

WORKING WITH UPSTREAM COMMUNITIES

"The full OpenStack story has yet to be written, but from what IDC has seen, the trajectory is impressive –steeper than any open source solution we have seen before."

AL GILLEN AND
MARY JOHNSTON TURNER,
IDC, RED HAT SUMMIT MESSAGE:
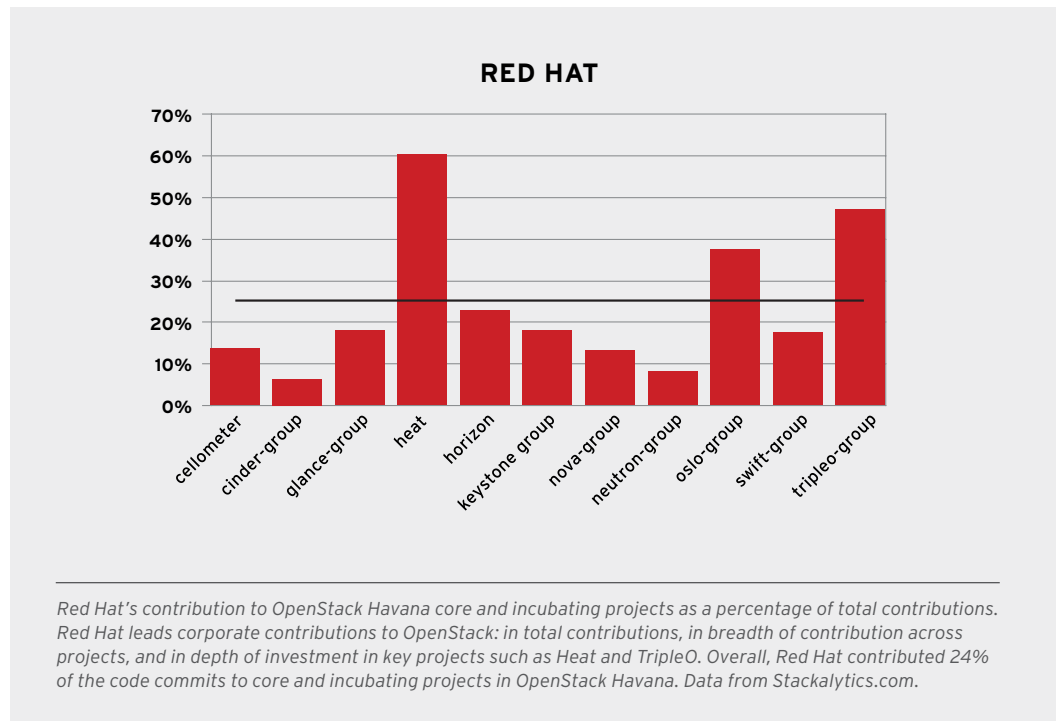ALL-IN ON OPENSTACK,
JUNE 2013
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Collaborating through upstream projects is at the heart of the economic and business model that makes open source such an effective way to develop software. The work done by vibrant open source communities such as OpenStack allows users to take advantage of the work done by hundreds of companies and individual developers, not just a single vendor. However, working through communities isn't about just taking open source code and doing the downstream testing and hardening necessary to make it into a commercial product.

RED HAT OPENSTACK	RDO	RED HAT ENTERPRISE LINUX OPENSTACK PLATFORM
Upstream OpenStack source code	Upstream OpenStack packaged as RPMs	Enterprise-hardened Red Hat OpenStack technology optimized for and integrated with
Community Linux	Enterprise Linux distros (CentOS, RHEL, Fedora)	Red Hat Enterprise Linux
No certifications Community support Six month life cycle	No certifications Community support Six month life cycle	Red Hat Support Red Hat ecosystem 1+ year life cycle

Contributing code is important. Working upstream in this way lets Red Hat to engage closely with the open source community and influence technology choices in ways that are important to us, our customers, and our partners. It helps ensure that we take the greatest advantage of the strengths associated with open source development and that we maintain the technology expertise to provide fast and knowledgable product support. We're developing new capabilities for OpenStack across the board, from application templating with Heat to new management tools with Tuskar/TripleO to IaaS-PaaS integration with Solum.

RED HAT

Red Hat's contribution to OpenStack Havana core and incubating projects as a percentage of total contributions. Red Hat leads corporate contributions to OpenStack: in total contributions, in breadth of contribution across projects, and in depth of investment in key projects such as Heat and TripleO. Overall, Red Hat contributed 24% of the code commits to core and incubating projects in OpenStack Havana. Data from Stackalytics.com.

Red Hat has a well-established process for turning open source projects into enterprise subscription products that satisfy the reliability and other requirements of some of the world's most challenging and mission-critical applications. Our enterprise-ready subscription products can be found across a variety of industries, from financial services to government to telecommunications and more. As we'll discuss in more detail, Red Hat is also focused on creating value through a portfolio of products and an ecosystem of partners. From the community to the enterprise, we're focused on creating innovation and value.

PROVIDING A BRIDGE TO THE FUTURE

Red Hat's OpenStack strategy includes making it consumable for early adopters and technology innovators today while maturing it for broader adoption in the future.

For example, OpenStack doesn't handle line-of-business (LoB) applications today. We're providing the means to manage those applications together with cloud-style workloads in the near term while also investing to advance OpenStack's native capabilities. That's going to take time to play out; you can't instantaneously make OpenStack ready to host all types of applications.

Our approach here is to enable enterprises to run their existing "System of Record" applications through our Red Hat Cloud Infrastructure product, which brings together CloudForms, Red Hat OpenStack Platform, and Red Hat Enterprise Virtualization. With Red Hat Cloud Infrastructure, enterprises can run and manage workloads across a hybrid environment. So, for example, an enterprise could run a large database on traditional virtualization capacity with Red Hat Enterprise Virtualization. At the same time, it could run a scale-out web tier on Red Hat OpenStack Platform. CloudForms then enables provisioning, managing, and operating across all that from a single console. So, even though OpenStack is not yet ready to host traditional applications like a database server, an enterprise can still use databases while adopting OpenStack without creating a new silo.

For the longer term, Red Hat is also driving new functionality and integration between Red Hat Enterprise Virtualization and Red Hat OpenStack Platform. We are advancing OpenStack to become more robust and eventually able to address a broader diversity of applications. We are sharing services between Red Hat Enterprise Virtualization and OpenStack for workloads to migrate between the two. For example, we are sharing the same storage services for image management and the same networking technology between the two infrastructure platforms. This takes time, but we're on our way. And meanwhile, CloudForms provides an abstraction and unification layer across these diverse types of infrastructure.

THE POWER OF ECOSYSTEM

One of the reasons that enterprises depend on Red Hat is to access the hardware, software, and partner ecosystems that we have built around our products; it's the same with OpenStack. Since launching our partner and certification programs around OpenStack in mid-2013, we now have:

- 140+ companies certifying their OpenStack solutions to Red Hat OpenStack Platform.

- 900+ certified solutions for Red Hat OpenStack Platform, available in the Red Hat marketplace.

- Hundreds of partner-led POCs of Red Hat OpenStack Platform with enterprise customers.

- Thousands of certified hardware systems for Red Hat OpenStack Platform.

- Thousands of certified applications for Red Hat OpenStack Platform. Notably, this includes full guest support for Microsoft Windows with WHQL support and Red Hat Enterprise Linux. We are currently the *only* OpenStack distribution that can claim this.

Leading hardware and software vendors around the world are all certifying their OpenStack solutions to Red Hat's product because we are leading the way towards providing an enterprise-class OpenStack.

See the Red Hat whitepaper Cloud Infrastructure for the Real World for a detailed discussion of how cloud-style workloads differ from traditional enterprise workloads and for more information about Red Hat Cloud Infrastructure.
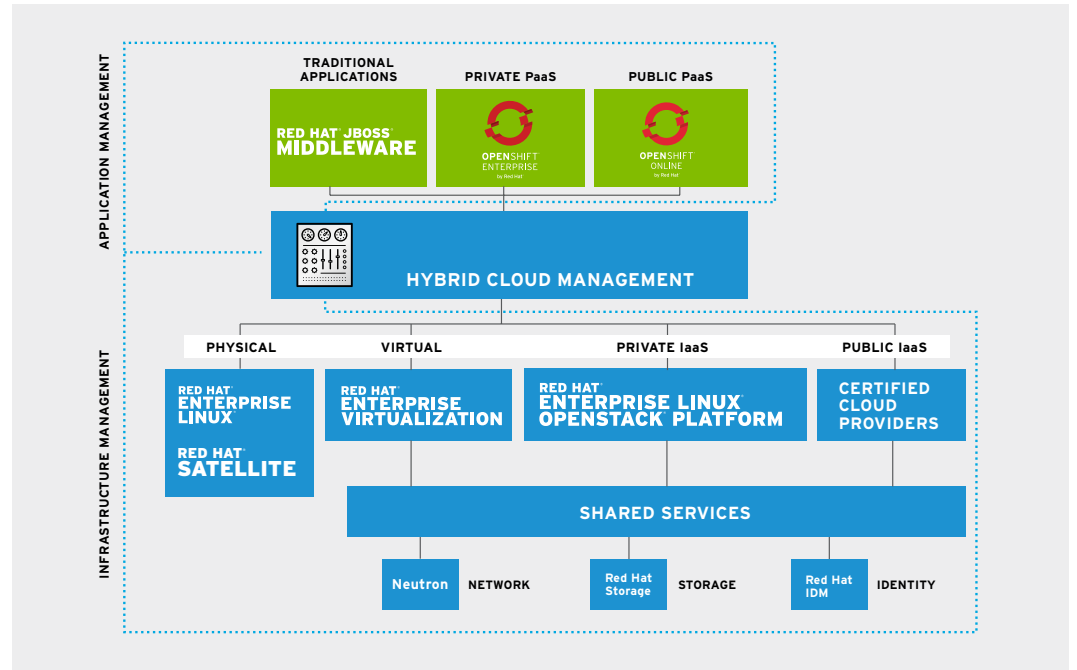
THE POWER OF PORTFOLIO

OpenStack is hugely important and a force in the industry. But, as we've already touched on in various examples, the power of OpenStack comes not in isolation but in conjunction with other technologies. Red Hat provides many of these as part of a broad portfolio of products for building and managing clouds and for running in clouds. Our technologies include:

• Red Hat Enterprise Linux, both for guests and to power OpenStack infrastructure.

• Red Hat Enterprise Virtualization, which provides our KVM hypervisor and can also run traditional applications not yet ready for OpenStack.

• Red Hat Storage, which provides an open, software-defined storage solution for clouds and plugs into OpenStack.

• Red Hat CloudForms for an enterprise cloud management platform.

• Red Hat Satellite for DevOps and systems management in the cloud.

• Red Hat JBoss Middleware for building and integrating applications in the cloud.

• OpenShift by Red Hat for PaaS.

All of these offerings work together with OpenStack to provide a complete software capability for building and managing open hybrid clouds, from raw infrastructure all the way through applications. Red Hat is doing extensive integration work and developing reference architectures and other aids for using our products together that make it easier to build and operate the complete solutions that they need to support their businesses. At the same, Red Hat products are modular and don't force you into a complete Red Hat stack; you remain in control.

CONCLUSION

Red Hat is working with many enterprises in their early adoption of OpenStack. Yes, the technology is still new and immature for most companies. But we are making significant progress in industries from retail to financial services—all traditional enterprises. They come to Red Hat because we are the leaders in taking open source projects like OpenStack to products ready for and valuable to the enterprise.

Support is important, but it's only a small part of the open source development and productization process. Anyone can staff a call center (and many do). However, it takes deep involvement throughout the entire process of developing open source software and bringing it to market to maximize its value for mainstream IT organizations. Value that includes support, yes. But that also includes driving innovation in the upstream, building an ecosystem, and providing a broad portfolio of cloud products that deliver far more value than a single point product can.

ABOUT RED HAT

Red Hat is the world's leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 80 offices spanning the globe, empowering its customers' businesses.

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