

Brief: OpenStack Is Now Ready For Business

Robust Technology And A Strong Community Make This Open Source Cloud A Good Choice For Powering New Enterprise Applications

by Paul Miller and Lauren E. Nelson

September 9, 2015 | Updated: September 16, 2015

Why Read This Brief

The open source cloud computing project OpenStack has come a long way since NASA and Rackspace launched it in 2010. Backed by leading technology infrastructure providers including Cisco, Dell, EMC, HP, IBM, Intel, and VMware, OpenStack underpins significant workloads at an increasingly diverse set of organizations, including BMW, CERN, Comcast, eBay, and Wal-Mart. For CIOs engaged in broader programs to win, serve, and retain customers — and refocus business technology (BT) spend — a planned and pragmatic rollout of OpenStack now demands serious consideration. This brief highlights lessons learned by OpenStack adopters, illustrating the technology's role in driving and sustaining change as CIOs move to embrace the age of the customer.

Key Takeaways

OpenStack Is Now A Technologically Credible Platform Upon Which To Grow

OpenStack's latest release offers CIOs the right tools to build an agile BT estate in support of the applications for their organization's rapidly expanding systems of engagement. Broad industry support for, and ongoing development of, the core open source components of OpenStack diminish the risk of vendor lock-in and expensive long-term licensing commitments.

Partners Make It Easier To Manage OpenStack's Remaining Rough Edges

Some see strategic advantage in nurturing or hiring talent to build and manage all aspects of their OpenStack deployment. But the dominant model behind most successful OpenStack implementations remains one based on working with systems integrators like Mirantis or larger vendors of OpenStack solutions, including Canonical, HP, IBM, Rackspace, and Red Hat.

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Five Years In, OpenStack Is Mature Enough To Trust In Production

OpenStack is a rapidly evolving open source cloud platform, backed by a global community of technology vendors and individual contributors.¹ Growing maturity in both code and governance drives adoption beyond that initial set of tech vendors and service providers that were interested in OpenStack itself as a new technology; now it's garnering interest as a solution to business problems. In the age of the customer, OpenStack offers CIOs a credible platform upon which they can drive the transformations required for their business to become innovative, agile, and truly responsive to evolving customer needs. At Wal-Mart, for example, OpenStack is the foundation for a global eCommerce platform that has reduced costs while also improving scalability and agility as the company introduces new products.² Elsewhere, CIOs from government, film and media, retail, finance and insurance, consumer goods, and manufacturing are among those moving beyond evaluations and pilots to adopt OpenStack-based clouds that meet the strategic requirements of their business. Forrester looks at three key areas for maturity: 1) code, 2) governance, and 3) adoption.

OpenStack's Code Is Production-Ready

Like other open source software projects, OpenStack's early code releases lacked polish. They were intended, primarily, for use by those who knew what they were doing. OpenStack's early users were also OpenStack's creators, and they had very different requirements — and tolerances — from a business seeking a robust and cost-effective platform on which to build, run, and support key customer-facing applications and processes. With Kilo, its 11th release, OpenStack demonstrates the completeness, robustness, and capability upon which a broader range of adopters can depend. OpenStack meets the needs of production workloads and is ready to enable CIOs in tackling the strategic requirements of their business.

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- › **It works.** Companies use OpenStack to run customer-facing apps that support millions of simultaneous users. If it didn't work, no Fortune 100 would risk its customer reputation on it.³ With that said, understand that bugs are certainly still present. Bugs exist in every technology, but open source tools make it possible to look behind the curtain. Awareness can be disconcerting, and the media relish this fact. But adopters have overcome this unease, leveraging seasoned partners to guide OpenStack implementation projects through this and contributing changes back to the community to assure long-term compatibility. Half of workloads reported in the OpenStack User Survey are production workloads, up from around 30% just 12 months previously.⁴
- › **It's getting better.** OpenStack's leading committers, reviewers, and documenters of code work for the companies that deploy OpenStack in different situations, every day.⁵ As new use cases, new combinations of hardware and software, and new business requirements are identified, they reach OpenStack developers quickly. Bugs get fixed because the developers fixing them need the solution for their own work. New OpenStack features like database service Trove and container service Magnum are added, at least in part, because they address real-world use cases. Looking forward, the networking project Neutron will undergo significant improvements, and problems like bulk provisioning won't require some of the workarounds still necessary today.⁶

OpenStack's Foundation And Community Continue To Mature

OpenStack's development and sustainability rely on the competence of its foundation and the strength of its community. It may seem like a gamble to trust an open source community to make the right decisions on behalf of the community, but, behind the scenes, large vendors that have experience with open source success help guide the OpenStack Foundation to avoid the pitfalls that earlier open source projects encountered. Thus far, OpenStack has delivered on regular product releases, open processes, and fostering broad community engagement, making it a valuable change agent in companies that are grappling with the complexity of moving from their established process and mindset toward a more open innovation ecosystem.

- › **The community is growing.** Figures from the OpenStack User Survey, fielded every six months, show continued growth in the number of code committers, the number of participating companies, and the number and size of OpenStack clouds. According to the latest survey, OpenStack is seeing adoption across North America, Europe, and Asia Pacific with a breakdown in survey respondents of 47%, 22%, and 27%, respectively.⁷
- › **The foundation's processes are maturing.** The OpenStack Foundation has developed a set of governance processes and procedures, all designed to keep the efforts of competing organizations aligned to the requirements of OpenStack and its users.⁸ Efforts foster innovation for new projects like Magnum and Trove while still emphasizing hardening and stability of projects that are core to every deployment like Nova (compute), Swift (object storage), and Glance (the image service).⁹ In recent work, the foundation has agreed on a common core of components and a set of tests that vendors must pass before labeling their products as "OpenStack Powered."¹⁰

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- › **The choices are real and abundant.** Firms can deploy OpenStack as a public or private cloud or in support of a hybrid model spanning enterprise and public cloud data centers. If they have the relevant skills, development staff can download and install the code themselves.¹¹ Alternatively, third parties offer public or private OpenStack-powered clouds and a range of bespoke services to work with customers on the design and deployment of new private clouds in their own data centers.¹² For companies like BMW and Wal-Mart, investment in OpenStack delivers a flexible foundation on which they are cost-effectively building and delivering the applications their businesses need.¹³

OpenStack's Enterprise Adoption Grows

In recent years, OpenStack adoption stories have progressed beyond the early successes of the technology sector's incumbents. The scale and mission-criticality of workloads have grown, and applications have become increasingly customer-facing. This new breed of enterprise adopters is not rushing blindly to embrace the latest cool technology. They are making sound, reasoned, and defensible decisions, on the basis of the evidence around them.

- › **It's the dominant platform for private cloud.** Since 2010, OpenStack has secured the backing of major technology vendors like Dell, HP, IBM, and Red Hat. That backing and the growth of a vibrant community of developers and adopters have helped the project overtake alternative open source approaches including CloudStack, Eucalyptus, and Open Nebula.¹⁴ For internal private clouds, it has also extended past proprietary alternatives.
- › **Enterprise adoption is here.** Early stories of OpenStack were limited to high-tech, research group, or non-enterprise stories like those from CERN, Digital Film Tree, and the NSA. More recently, Fortune 100s — like Wal-Mart — have not only shared their adoption stories but also published assessments of OpenStack's tangible benefits and Total Economic Impact™.¹⁵ However, most enterprise adopters still view experienced OpenStack partners as a key tenet of success.¹⁶ Some exceptions exist, such as Comcast, eBay, and Israel's LivePerson. While these have successfully built OpenStack clouds on their own, leveraging the partner ecosystem translates to faster onboarding, access to the latest reference architectures, sidestepping common pitfalls, and easier staffing.¹⁷ Although still difficult to acquire or retain, trained OpenStack employees could be a worthwhile investment to augment the skills and perspectives your implementation partners offer.¹⁸

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Recommendations

OpenStack Is Ready For You

For CIOs, building a cloud is not an end in itself. Cloud services are enabling technologies, intended to increase the agility and competitiveness of the organization as a whole. Other key initiatives within your organization will dictate how best to leverage cloud services. Those looking at OpenStack see developer productivity and agility as imperative to their future success at winning, serving, and retaining customers. They seek the optimal solution to provide choice, cost-efficiency, and fast access to resources to support the growing portfolio of new customer-facing or revenue-generating applications. They've decided to invest in that future. A change program of this magnitude takes time and is not without risk. It's best to handle OpenStack's part in the broader program in a phased fashion:

- › **Assess the success of your existing cloud services.** Cloud enters the enterprise from many directions, from officially mandated pilots and production services to unsanctioned — sometimes illicit — deployments by individuals and small teams. Find these existing uses of cloud infrastructure and find out what's working and what is not. Learn from — and co-opt — both people and lessons. In fact, 82% of OpenStack deployments exist in parallel to other cloud platforms.¹⁹
- › **Identify a self-contained project or area of the business.** Begin with a pilot project, and use this to build familiarity with OpenStack and any partners with whom you might be working.²⁰ OpenStack users have stated that working with OpenStack requires significant training in the first six months, especially if you don't have seasoned OpenStack veterans. Ensure that the pilot — and OpenStack — have a senior champion within the business, such as the chief technology officer.
- › **Limit use cases to test/dev and net-new applications.** Legacy workloads are rarely suitable for simple migration to a cloud environment, and retrofitting can be costly and time-intensive. OpenStack is no exception. Take advantage of OpenStack's fast provisioning and autoscaling features for net-new applications such as smart connected products that proved difficult to support in legacy environments.
- › **Consider adoption models.** There are a range of adoption models (hosted private cloud, on-premises installation, etc.) for OpenStack, and each of these should be evaluated in the context of a specific pilot. Security implications, existing skills, and data center capacity are among the issues to consider. How are other aspects of organizational IT currently managed, and does the rationale behind those historic deployment decisions also apply here? Figure out the right level of vendor support, given your team and your organization's BT strategies, in order to narrow down the adoption models and your vendor lists.
- › **Evaluate partners.** The majority of successful OpenStack deployments still tend to involve significant engagement from systems integrators or OpenStack technology vendors.²¹ This involvement includes everything from specification or installation to ongoing operation and

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support. Evaluate any strategic value in acquiring or nurturing the necessary skills in-house against the operational cost of ongoing support and maintenance arrangements. Even when ultimately intending to operate OpenStack in-house, there is value in working with — and learning from — a more experienced partner during the early specification and pilot phase.

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Endnotes

¹ The OpenStack project is guided and governed by the OpenStack Foundation and largely funded through member contributions. Platinum Members of the foundation are AT&T, Canonical, HP, IBM, Intel, Rackspace, Red Hat, and Suse, and the 17 Gold Members include Cisco, Dell, EMC, Ericsson, Hitachi, Huawei, and NEC. Source: "The OpenStack Foundation," OpenStack (<http://www.openstack.org/foundation/>).

More than 1,500 developers contributed to the latest OpenStack release, Kilo, representing an increase of 5% over the previous release. Source: "Snapshot of the OpenStack community behind Kilo," OpenStack Superuser, May 1, 2015 (<http://superuser.openstack.org/articles/snapshot-of-the-openstack-community-behind-kilo>).

OpenStack is an open source cloud platform that has become a compatibility standard for the private cloud market. Despite its headway into the Fortune 100 and long list of notable vendor supporters, coverage thus far has been limited to media articles and vendor propaganda that disproportionately inflate both the strengths and shortcomings of OpenStack. See the "[OpenStack Is Ready — Are You?](#)" Forrester report.

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² Wal-Mart operates one of the largest OpenStack deployments, with more than 150,000 server cores in active use. Source: Steven J. Vaughan-Nichols, "How Walmart uses OpenStack to deliver its 'everyday low prices'," ZDNet, May 19, 2015 (<http://www.zdnet.com/article/walmart-relies-on-openstack/>).

Source: Eric Knorr, "Walmart doubles down on OpenStack," InfoWorld, March 2, 2015 (<http://www.infoworld.com/article/2890873/cloud-computing/walmart-doubles-down-on-openstack.html>).

Speaking at the OpenStack Summit in May 2015, Wal-Mart Labs' Senior Director for Cloud Operations and Engineering Amandeep Singh Juneja reported that OpenStack had driven a 50% reduction in server costs and a "significant" reduction in the time and effort required to provision new hardware.

Wal-Mart's new OpenStack infrastructure supports a number of eCommerce sites, including walmart.com and is enabling the whole business to shift toward a more customer-centric offering across PCs, mobile devices, and in-store kiosks. Source: Matthew Finnegan, "Walmart eyes Open Compute as OpenStack investment scales," ComputerworldUK, May 19, 2015 (<http://www.computerworlduk.com/news/cloud-computing/walmart-ups-openstack-investment-eyes-open-compute-for-further-scale-3612174/>).

³ Comcast describes its experiences using OpenStack. Source: Mark Muehl, "Comcast and OpenStack: Engineering from Cloud to Couch," Comcast, May 19, 2015 (<http://corporate.comcast.com/comcast-voices/comcast-and-openstack-engineering-from-cloud-to-couch>).

Despite its headway into the Fortune 100 and long list of notable vendor supporters, coverage thus far has been limited to media articles and vendor propaganda that disproportionately inflate both the strengths and shortcomings of OpenStack. Additional use cases of OpenStack are provided in Forrester's recent report. See the "[OpenStack Is Ready — Are You?](#)" Forrester report.

⁴ These most recent results are from May 2015, reported in a series of three blog posts:

Source: "User survey identifies leading industries and business drivers for OpenStack adoption," OpenStack Superuser, May 14, 2015 (<http://superuser.openstack.org/articles/user-survey-identifies-leading-industries-and-business-drivers-for-openstack-adoption>).

Source: "OpenStack users share how their deployments stack up," OpenStack Superuser, May 15, 2015 (<http://superuser.openstack.org/articles/openstack-users-share-how-their-deployments-stack-up>).

Source: "OpenStack application developers share insights," OpenStack Superuser, May 15, 2015 (<http://superuser.openstack.org/articles/openstack-application-developers-share-insights>).

⁵ The OpenStack community's Stackalytics site offers one measure of engagement by companies and individuals. Source: Stackalytics (<http://stackalytics.com/>).

⁶ There are ongoing concerns regarding the robustness of Neutron networking within the community. Active steps are being taken to address these, as discussed in the following report. See the "[OpenStack Is Ready — Are You?](#)" Forrester report.

⁷ Source: "User survey identifies leading industries and business drivers for OpenStack adoption," OpenStack Superuser, May 14, 2015 (<http://superuser.openstack.org/articles/user-survey-identifies-leading-industries-and-business-drivers-for-openstack-adoption>).

⁸ Every six months, OpenStack hosts a summit to discuss its latest release while hosting its Design Summit and Ops Summit for its next release. These reports focus on the key takeaways as well as discuss ongoing governance activities from the May 2014 and May 2015 OpenStack Summits. See the "[Quick Take: OpenStack Summit, Q2 2014](#)" Forrester report and see the "[Quick Take: OpenStack Summit, Q2 2015](#)" Forrester report.

⁹ The latest OpenStack survey results clearly demonstrate that certain projects within OpenStack (such as compute and block storage) are far more widely used than others. Source: "OpenStack users share how their deployments stack up," OpenStack Superuser, May 15, 2015 (<http://superuser.openstack.org/articles/openstack-users-share-how-their-deployments-stack-up>).

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¹⁰ Source: Frederic Lardinois, "OpenStack Launches Vendor Certification, Federated Identity Support From Over 30 Cloud Providers," TechCrunch, May 18, 2015 (<http://techcrunch.com/2015/05/18/openstack-launches-vendor-certification-federated-identity-support-from-over-30-cloud-providers/>).

¹¹ Skilled OpenStack engineers are in demand. Source: Paul Miller, "451 Research Unpicks Private Cloud Pricing To Suggest Surprises," Forbes, May 1, 2015 (<http://www.forbes.com/sites/paulmiller/2015/05/01/451-research-unpicks-private-cloud-pricing-to-suggest-surprises/>).

The OpenStack Foundation and individual vendors such as Mirantis offer training to increase the pool of available talent. Source: Toby Wolpe, "OpenStack and Linux Foundations plan OpenStack skills certification," ZDNet, May 19, 2015 (<http://www.zdnet.com/article/openstack-and-linux-foundations-plan-openstack-skills-certification-by-early-2016openstack-and-linux/>) and Ben Kepes, "Mirantis Extends Its OpenStack Training Offerings," Forbes, January 21, 2015 (<http://www.forbes.com/sites/benkepes/2015/01/21/mirantis-extends-its-openstack-training-offerings/>).

¹² The OpenStack Marketplace currently lists 18 public cloud providers, managed both by smaller regional operators and global technology brands like HP, Internap, and Rackspace. Source: "Public Clouds," OpenStack (<http://www.openstack.org/marketplace/public-clouds/>).

The OpenStack Marketplace lists 13 hosted private clouds operated by vendors including IBM, Mirantis, and Rackspace. Source: "Hosted Private Clouds," OpenStack (<http://www.openstack.org/marketplace/hosted-private-clouds/>).

Sixteen consultancies and systems integrators able to undertake bespoke projects are listed in the OpenStack Marketplace. Source: "Consulting and Integrators," OpenStack (<http://www.openstack.org/marketplace/consulting/>).

There has been contraction in the OpenStack market recently, with a few venture-backed companies failing to demonstrate sufficient growth. Source: Paul Miller, "Nebula, OpenStack, Appliances, And Market Sizing," Forbes, April 2, 2015 (<http://www.forbes.com/sites/paulmiller/2015/04/02/nebula-openstack-appliances-and-market-sizing/>).

Startups selling distributions of OpenStack have been acquired, with Blue Box going to IBM and Metacloud and Piston Cloud going to Cisco. Source: Jordan Novet, "The day has come for OpenStack: IBM buys Blue Box, and Cisco buys Piston," VentureBeat, June 3, 2015 (<http://venturebeat.com/2015/06/03/the-day-has-come-for-openstack-ibm-buys-blue-box-and-cisco-buys-piston/>).

Last year, EMC acquired Cloudscaling. Source: Jack Clark and Dina Bass, "EMC Acquiring Cloud-Computing Startup Cloudscaling," Bloomberg Business, October 14, 2014 (<http://www.bloomberg.com/news/articles/2014-10-13/emc-acquiring-cloud-computing-startup-cloudscaling/>).

¹³ Source: Jonathan Brandon, "How BMW uses OpenStack to improve the scalability, flexibility of its cloud," Business Cloud News, November 3, 2014 (<http://www.businesscloudnews.com/2014/11/03/how-bmw-uses-openstack-to-improve-the-scalability-flexibility-of-its-cloud/>).

Source: Steven J. Vaughan-Nichols, "How Walmart uses OpenStack to deliver its 'everyday low prices'," ZDNet, May 19, 2015 (<http://www.zdnet.com/article/walmart-relies-on-openstack/>).

¹⁴ With the recent exception of Google, the major providers of public cloud services — Amazon Web Services (AWS) and Microsoft — are notable by their absence from OpenStack's roster of supporters. Source: Serdar Yegulalp, "4 reasons why Google joined OpenStack," InfoWorld, July 17, 2015 (<http://www.infoworld.com/article/2948901/openstack/4-reasons-google-joined-openstack.html>).

OpenStack maintains a degree of interoperability with Amazon Web Services' leading public cloud. Source: Randy Bias, "The Future of OpenStack's EC2 APIs," Cloudscaling, February 12, 2015 (<http://www.cloudscaling.com/blog/openstack/the-future-of-openstacks-ec2-apis/>).

HP acquired Eucalyptus' AWS-compatible private cloud solution in 2014, incorporating it into the OpenStack-based HP Helion family earlier this year. Source: Ben Kepes, "HP Acquires Eucalyptus — Positive Deal Or Bizarre Fire Sale? The Latter I'm Afraid," Forbes, September 12, 2014 (<http://www.forbes.com/sites/benkepes/2014/09/11/hp-acquires-eucalyptus-positive-deal-or-bizarre-fire-sale/>).

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Source: Neil McAllister, "HP adds Eucalyptus to Helion cloud, but OpenStack still reigns," The Register, March 3, 2015 (http://www.theregister.co.uk/2015/03/03/hp_adds_eucalyptus_to_helion/).

¹⁵ See Forrester Consulting's Total Economic Impact report, commissioned by OpenStack, on Wal-Mart's use case. Source: "The Total Economic Impact™ Of OpenStack," July 2015 (<https://www.openstack.org/assets/pdf-downloads/ForresterOpenStackTEIStudy-20150701.pdf>).

¹⁶ Not only does it require significant system configuration input, but maintaining and updating the solution to follow OpenStack's six-month release cycle can be prohibitively time-consuming. This type of development investment is beyond the time and skill of the typical enterprise. It is reserved for those with heavy developer investments in systems of engagement. You're better off starting from a commercial distribution. Recently, remotely managed private cloud offerings have become popular to fill the short-term gap in OpenStack expertise and accelerate the enterprise journey to an OpenStack-based private cloud. Forrester believes that this model will be short-lived. See the "[The State Of Cloud Platform Standards: Q2 2015](#)" Forrester report.

¹⁷ Source: Lauren Sell, "Why LivePerson goes hand-in-hand with OpenStack," OpenStack Superuser, June 18, 2015 (<http://superuser.openstack.org/articles/why-liveperson-goes-hand-in-hand-with-openstack>).

Source: Paul Miller, "Ensuring a Successful OpenStack Deployment," Gigaom Research, February 27, 2015 (<http://research.gigaom.com/report/ensuring-a-successful-openstack-deployment/>).

¹⁸ Although going it alone will take time and cost the organization in other ways, this is often the only path forward for those without significant pots of cash to spend. Several "unicorns" in the OpenStack space (e.g., CERN, Digital Film Tree, eBay) invested heavily in developing their own staff and hiring from the limited OpenStack talent pool to create their own centers of competence. Their needs are often unique and scalable. For most others, the cost associated with slower time-to-market and variability in seasoned staff (e.g., keeping your newly valuable and marketable staff) is reason enough to invest in vendor-supported solutions. See the "[OpenStack Is Ready — Are You?](#)" Forrester report.

¹⁹ OpenStack is an open source cloud platform that has become a compatibility standard for the private cloud market. Despite its headway into the Fortune 100 and long list of notable vendor supporters, coverage thus far has been limited to media articles and vendor propaganda that disproportionately inflate both the strengths and shortcomings of OpenStack. Refer to Figure 1 in the following report. See the "[OpenStack Is Ready — Are You?](#)" Forrester report.

²⁰ Direct adopter competency takes four to six months. You've likely heard stories about CERN, Comcast, eBay, and PayPal adopting OpenStack directly to completely avoid vendor lock-in. Their stories didn't happen overnight. It took months for them to develop a center of competence and select the right team to support their efforts. Once enterprises train members of the team, some find it hard to retain them, given the high demand for trained OpenStack engineers. For many enterprises, the challenges ahead seem too daunting without vendor distribution and/or services to accelerate their journey. See the "[OpenStack Is Ready — Are You?](#)" Forrester report.

²¹ The OpenStack Foundation's Marketplace offers a valuable source of information about potential partners and their areas of strength. Source: OpenStack (<https://www.openstack.org/marketplace/>).

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