Executive Summary

In February 2014, RightScale surveyed 1068 technical professionals across a broad cross-section of organizations about their adoption of cloud computing.

The 2014 State of the Cloud Survey identified several key findings:

- **Cloud adoption reaches ubiquity.**
  - 94 percent of organizations surveyed are running applications or experimenting with infrastructure-as-a-service.
  - 87 percent of organizations are using public cloud.

- **Hybrid cloud is the approach of choice.**
  - 74 percent of enterprises have a hybrid cloud strategy and more than half of those are already using both public and private cloud.

- **Enterprise cloud governance lags adoption.**
  - Less than a third of organizations have defined such critical aspects of governance as which clouds can be used, disaster recovery approaches, and cost management.

- **The challenge of cloud security is abating.**
  - The number of respondents who regard cloud security as a significant challenge has decreased among both cloud beginners and cloud pros.

- **Next-generation IT shapes up as Cloud + DevOps + Self-Service IT.**
  - Cloud-focused companies embrace DevOps (71 percent) and Self-Service IT (68 percent).
Amazon Web Services (AWS) continues to dominate public cloud adoption, while other vendors battle for second place. Key findings include:

- AWS adoption is 54 percent - 4x the nearest competitor.
- Rackspace Public Cloud is second within the SMB segment.
- IaaS offerings from Google and Microsoft are gaining the interest of cloud users, with Azure leading among enterprises and Google Cloud Platform among small and midsize organizations.

The battle among private cloud technologies is shaping up as a clash of cultures between the open-source OpenStack and proprietary solutions from VMware. Findings include:

- Thirty-one percent of enterprise respondents view their VMware vSphere/vCenter environments as a private cloud.
- OpenStack is well positioned to unseat vSphere in private cloud – coming in first in interest and second in current usage.
- Microsoft System Center is waiting in the wings with a strong third position among enterprise users.

Methodology

In February 2014, RightScale conducted its annual State of the Cloud Survey. The survey questioned technical professionals across a broad cross-section of organizations about their adoption of cloud computing. The 1068 respondents range from technical executives to managers and practitioners and represent organizations of varying sizes across many industries. Respondents represent companies across the cloud spectrum, including both users (28 percent) and non-users (72 percent) of RightScale solutions. Their answers provide a comprehensive perspective on the state of the cloud today.

Key Survey Stats:

- All respondents = 1068
  - Enterprise respondents (1000+ employees) = 254
  - SMB respondents (<1000 employees) = 814
- Margin of error = 3.2 percent
Respondent Demographics

Respondents by Company Size

Respondents by Industry

Role of Respondents

Level of Respondents

Source: RightScale 2014 State of the Cloud Report
The Cloud Maturity Model

In this report, RightScale uses its Cloud Maturity Model to segment and analyze organizations based on their levels of cloud adoption. The Cloud Maturity Model identifies four distinct stages of cloud maturity. Denoting cloud adoption by organizations from least to greatest experience, the four stages are:

Cloud Watchers are organizations that are developing cloud strategies and plans but have not yet deployed applications into the cloud. Cloud Watchers want to evaluate available cloud options and determine which applications to implement in the cloud.

Cloud Beginners are new to cloud computing and are working on proof-of-concepts or initial cloud projects. Cloud Beginners want to gain experience with cloud in order to determine future projects.

Cloud Explorers have multiple projects or applications already deployed in the cloud. Cloud Explorers are focused on improving and expanding their use of cloud resources.

Cloud Focused businesses are heavily using cloud infrastructure and are looking to optimize cloud operations as well as cloud costs.

The survey on which the RightScale 2014 State of the Cloud Report is based includes organizations across all the stages of cloud maturity.
Key Findings

Cloud Adoption Reaches Ubiquity

In the twelve months since the last State of the Cloud Survey, adoption of cloud computing has continued to grow unabated. Now 94 percent of respondents report that they are adopting cloud.

![Cloud Adoption Chart]

Although cloud adoption is significant, it is interesting to note that enterprise respondents are more heavily clustered in the middle stages of Cloud Beginners and Cloud Explorers. However, over the last year, many enterprises have moved beyond the Cloud Watcher stage – now representing only 16 percent of respondents vs. 32 percent in 2013.

![Cloud Maturity Model by Company Size]

Enterprises are enthusiastically moving forward in their journey to cloud. While their transformation may take longer than that of smaller organizations, it is clear that very few enterprises will remain on the sidelines.
Hybrid Cloud Is the Strategy of Choice

Although the use of cloud is a given, enterprises often have different strategies for adopting cloud that incorporate varying combinations of public, private, and hybrid cloud infrastructure. Enterprises have multiple choices when it comes to cloud architecture because multiple cloud vendors are ready to provide services. A hybrid cloud implementation enables organizations to choose the best cloud for each particular application or to span both public and private clouds with seamless cloudbursting architectures.

The 2014 State of the Cloud Survey shows that hybrid and multi-cloud implementations continue to be the end goal for enterprises: 74 percent of enterprise respondents have a multi-cloud strategy, and 48 percent are planning for hybrid clouds. In addition, 15 percent of enterprises expect to use multiple public clouds, and 11 percent are planning for multiple private clouds.

Over the last 12 months, enterprises have made significant progress toward their hybrid cloud goals. Among enterprises with a hybrid strategy, 73 percent are already running applications in public clouds (up from 61 percent in 2013), 64 percent in private clouds (up from 38 percent in 2013), and 51 percent in hybrid clouds (up from 29 percent in 2013). While companies with hybrid cloud ambitions are progressing faster on public cloud adoption, their private cloud initiatives are rapidly catching up.
Enterprise Cloud Governance Lags Adoption

While enterprises are progressing in cloud adoption, they often have yet to define key elements of their cloud strategy and governance. Just over half of enterprises have defined the business value they want to get from cloud initiatives or security policies for cloud. Only a minority has defined policies for choosing public or private clouds (36 percent), implementing availability or disaster recovery (32 percent), and managing costs (29 percent).

In addition to current gaps in cloud governance, there are differing views between central IT and technical teams in business units about the role IT plays in the cloud. While central IT envisions a broad role for itself in selecting clouds, setting policies, building a private cloud, and brokering cloud services; respondents in business units see the role of IT as much narrower.
In addition, business units are more likely to see public cloud adoption as the top priority and to see security as less of a challenge than respondents working in central IT organizations.

This disparity between adoption and governance and the viewpoints of business units and central IT is likely to diminish as IT organizations begin to offer cloud services to their internal customers and as former shadow usage of cloud comes under traditional IT governance functions.

**Cloud Benefits Grow in 2014**

The 2014 survey echoes a key finding of the 2013 State of the Cloud Report: cloud maturity matters. As organizations adopt cloud more broadly, they realize increasingly more value, and the challenges of adopting cloud decline.
As organizations progress in cloud maturity, the types of workloads they deploy in the cloud get broader. Test and development applications top the list, with more than 85 percent of cloud-focused companies deploying them in the cloud. Customer web apps (78 percent), internal web apps (70 percent), batch processing (62 percent) and mobile apps (54 percent) also are deployed in the cloud by a majority of Cloud Focused organizations. Only social apps saw significantly fewer cloud deployments in 2014 at 18 percent (down from 23 percent in 2013).

Respondents also report a growth in the benefits that organizations get from cloud computing as they mature. Organizations indicate that the top benefits that they have already realized are greater scalability, faster access to infrastructure, higher availability, and faster time to market for applications. These top benefits are reported by more than 29 percent of Cloud Beginners, more than 50 percent of Cloud Explorers, and more than 79 percent of Cloud Focused organizations. These findings show that cloud benefits are not only a future expectation, but also a reality today for many organizations.
In addition, the percent of all respondents reporting benefits from cloud computing grew in 2014 over the previous year in a variety of categories, including higher availability (48 percent, up from 41 percent in 2013), geographic reach (37 percent, up from 32 percent in 2013), cost savings (34 percent, up from 30 percent in 2013), and business continuity (34 percent, up from 28 percent in 2013). Greater cloud experience continues to unlock increasingly greater levels of value for organizations.

Security Concerns Abate; Compliance, Cost, and Performance Demand Attention

While the benefits of the cloud increase with experience, the challenges of cloud show a sharp decrease as organizations gain expertise with cloud.

Security remains the most-often cited challenge among Cloud Beginners (31 percent) but decreases to the fifth most cited (13 percent) among Cloud Focused organizations. As organizations become more experienced in cloud security options and best practices, the less of a concern cloud security becomes.
In addition, cloud security concerns decreased in 2014 for both Cloud Beginners and Cloud Focused organizations. These declines can be attributed to both an increase in security features of cloud providers as well as increasing availability of information on cloud security best practices.

While the challenge of cloud security declines with cloud maturity, other challenges demand attention in Cloud Focused organizations. Compliance continues to be an issue for 18 percent of Cloud Focused users, representing the largest challenge. In addition, cost and performance occupy the second and third slots as organizations need to focus ongoing attention on these issues.
Increasing cloud maturity combined with increasing capabilities from cloud providers is helping to reduce the challenges associated with cloud computing. Compliance continues to remain a challenge, but cloud providers are already beginning to address many of these issues by offering additional certifications and new features that address the needs of organizations facing HIPAA, PCI, or other regulations. We expect that significant progress will be made on this front over the next year. Cost and performance are ongoing issues that companies will learn to manage as they continue to expand their cloud expertise and implement cloud cost management and performance management solutions.

**Next-Generation IT Shapes Up: Cloud + DevOps + Self-Service IT**

At the same time that cloud adoption is growing, two other significant trends are taking hold in corporate technology offices: DevOps and Self-Service. Together, these three initiatives – Cloud, DevOps, and Self-Service IT – are shaping up as the critical pillars of next-generation IT.

DevOps, a software development approach that increases collaboration between operations teams and developers, is now being adopted by 62 percent of organizations, up from 54 percent in 2013.

In addition, penetration of DevOps practices grows as companies increase their cloud maturity. Seventy-six percent of respondents at Cloud Focused companies are adopting DevOps as opposed to 57 percent of Cloud Watchers.
As part of adopting DevOps processes, many companies choose to implement configuration management tools that allow them to standardize and automate deployment and configuration of servers and applications. Between the two leading configuration management tools, more respondents used Chef (26 percent) than Puppet (21 percent). This data shows that Chef pulled into the lead since 2013 when Puppet led in adoption (25 percent vs. 19 percent for Chef).

In the 2013 State of the Cloud Report, we found that developers and smaller organizations adopted Chef at higher rates, while IT users and larger organizations favored Puppet. Interestingly, in this year’s survey, respondents at large and small companies as well as those in development and IT all report using Chef at higher rates.

![Chef Leading in Configuration Management](image)

In addition to Cloud and DevOps initiatives, Self-Service IT also follows a parallel adoption path. Enterprises with higher level of cloud maturity are more likely to have a self-service portal for cloud services and enable fast provisioning of cloud resources. Sixty-eight percent of Cloud Focused organizations provide self-service access to cloud services, and 71 percent of those can provision cloud instances in under an hour.

![Enterprise Self-Service Capabilities Increase with Cloud Maturity](image)

Together, these three initiatives – cloud, DevOps, and Self-Service IT – deliver a new level of IT agility that enables companies to react and respond to market demands and drive top line revenue as well as bottom line efficiency.
The Cloud Wars Reach Fever Pitch

Over the last twelve months, the cloud landscape has continued to evolve at a rapid rate. Google and Microsoft announced general availability of their respective IaaS offerings. VMware threw its hat in the ring with vCloud Hybrid Services, and IBM purchased SoftLayer. On the private cloud front, OpenStack continued to add new capabilities, while VMware deprecated vCloud Director and repackaged its vCloud Suite. Most organizations are evaluating a variety of cloud alternatives.

We asked respondents to tell us which clouds they were using and whether they were running applications in the cloud, experimenting with the cloud, planning to use the cloud, or had no plans to use the cloud. Most respondents are using more than one cloud, so totals will add up to more than 100 percent. These results indicate whether a respondent is using a particular cloud, but do not specify the number of applications that are running in each cloud.

AWS Leads in Public Cloud; Interest Builds in Azure and Google

As expected, AWS continues to lead in public cloud adoption, with 54 percent of respondents currently running applications in this cloud. This is more than 4x the adoption rate of the second most used cloud, Rackspace Public Cloud. In the 2014 survey, we also asked about PaaS offerings from Google and Microsoft. Google App Engine rounded out the top 3 in current adoption.

Special note: One result that seemed unusual was that VMware vCloud Hybrid Service (vCHS) was ranked fourth. Because vCHS is a relatively new service and many VMware users are often unclear about which VMware products are in use, we did follow up interviews on a sampling of respondents that had stated they were running applications in vCHS. In most of the follow up interviews, we found that there was some testing of vCHS somewhere in the organization. However, in some cases, there was no use of vCHS. We believe it is likely that the vCHS responses reporting running applications represents early tests of vCHS and may actually be lower than survey results show.

We can also gauge interest and potential for future adoption by measuring respondents that are experimenting or planning to use particular clouds. AWS also commands a lead in mindshare, with Google IaaS and Azure IaaS close behind. This could indicate potential for those vendors to move up in future years as these experiments and plans come to fruition.
Among enterprises (1000+ employees), AWS still maintains a lead, but with adoption slightly lower at 49 percent. VMware vCHS ranks second (see note above), followed by Azure PaaS and Azure IaaS. Interest in future projects shows AWS topping the list followed by Azure IaaS.

Among smaller organizations (less than 1000 employees), AWS is in first (56 percent), followed by Rackspace and Google App Engine. Interest levels for future adoption are highest in AWS, Google IaaS, and Google App Engine.
Public cloud adoption patterns are very different between larger enterprises and smaller organizations. AWS remains in first place across both segments, but the remaining rankings have significant differences.

### Top Public Clouds Used

<table>
<thead>
<tr>
<th>Place</th>
<th>Enterprise (1,000+ employees)</th>
<th>SMB (Under 1,000 employees)</th>
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<tbody>
<tr>
<td>#1</td>
<td>AWS</td>
<td>AWS</td>
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<tr>
<td>#2</td>
<td>VMware vCHS</td>
<td>Rackspace Public Cloud</td>
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<tr>
<td>#3</td>
<td>Azure PaaS</td>
<td>Google App Engine</td>
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<tr>
<td>#4</td>
<td>Azure IaaS</td>
<td>VMware vCHS</td>
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<tr>
<td>#5</td>
<td>Rackspace Public Cloud</td>
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<td>#6</td>
<td>Google App Engine</td>
<td>Google IaaS</td>
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<tr>
<td>#9</td>
<td>HP Cloud</td>
<td>HP Cloud</td>
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Source: RightScale 2014 State of the Cloud Report

### VMware and OpenStack Battle for Lead in Private Cloud

The 2014 State of the Cloud Survey reveals that private cloud is even more competitive. The battle among private cloud technologies is shaping up as a clash of cultures between the open-source OpenStack and proprietary solutions from VMware.

Although virtualized environments from VMware or Microsoft don’t meet all of the requirements of cloud computing, many survey respondents currently view these environments as a private cloud, and so we gave respondents an option to identify them as private cloud technologies.

Across all organizations, 31 percent view their vSphere environments as private clouds. OpenStack ranked second, followed by vCloud Director (which was deprecated by VMware in 2013). Thirty-six percent of respondents were experimenting with or planning to use OpenStack – far ahead of any other private cloud option.

### Private Cloud Usage

- **VMware vSphere/VCent** 31% 11% 6%
- **OpenStack** 12% 23% 13%
- **VMware vCloud Director** 12% 14% 9%
- **Microsoft System Center** 11% 13% 7%
- **Citrix CloudStack** 6% 12% 6%
- **Eucalyptus** 3% 12% 6%

Source: RightScale 2014 State of the Cloud Report
In comparison to last year, there were noticeable changes in adoption rates of several private clouds. OpenStack adoption went up while VMware vCloud Director showed declines. The smaller reduction in usage of CloudStack and Eucalyptus is within the survey margin of error, so should not be considered significant.

Among enterprises, current private cloud usage was skewed toward traditional virtualization vendors – VMware vSphere (31 percent), vCloud Director (26 percent) and Microsoft System Center (26 percent). As mentioned before, this includes respondents who view their vSphere environment as a private cloud – whether or not it meets the accepted definition of cloud computing. While OpenStack ranks fourth in current usage by enterprises, it still leads the way in experiments and plans for use at 37 percent.
Private cloud adoption by smaller organizations was lower overall, but OpenStack took second place in this group with 11 percent already running applications (versus 24 percent for vSphere). Once again, OpenStack has gained mindshare with 36 percent of SMBs. Eucalyptus also holds strong interest with this group, with 20 percent of SMBs experimenting or planning to use it.

![SMB Private Cloud Usage Chart]

Overall, VMware and OpenStack are battling for private cloud usage and mindshare, while Microsoft is sitting in third position.

![Top Private Clouds Used Table]
Summary: Now Is the Time for Cloud

The 2014 State of the Cloud Survey shows that the time for cloud adoption has arrived. The vast majority of organizations have already embarked on a cloud journey that will make IT a critical component of corporate growth and profits.

IT organizations are rapidly moving toward a world where they can offer a portfolio of cloud services, both public and private, to meet the diverse requirements of their applications. Organizations are already seeing significant benefits from their use of cloud, and the barriers to adoption are rapidly disappearing. As a result, each step companies take in their cloud journey delivers increasing value.

Ten takeaways for IT teams adopting cloud include:

1. Identify your strategy and approach to cloud
2. Develop cloud governance capabilities
3. Ensure alignment between business units and central IT
4. Explore all of your cloud options and alternatives
5. Build a portfolio of clouds – public and private – that meet your needs
6. Determine how you will “cloudify” your virtualized environments
7. Find opportunities to expand your cloud workloads
8. Learn best practices for cloud security, compliance, and disaster recovery
9. Get a handle on cloud costs and look for ways to optimize
10. Align your cloud with DevOps and Self-Service IT initiatives

RightScale: Your Partner in the Journey to Cloud Value

RightScale can help you take the next step, no matter your current stage of Cloud Maturity.

The RightScale Multi-Cloud Platform enables you to leverage best-practices templates to smooth your cloud onramp and build a strong foundation as your cloud adoption grows across workloads and across both public and private clouds. In addition, RightScale helps you implement and expand DevOps initiatives to reach your agility goals for application delivery.

RightScale Services provides you with experts who can help guide you through your cloud journey. Our consulting team can help you choose the right cloud strategies, formulate a cloud roadmap, architect your cloud environments, and deploy cloud applications at scale. They are here to share the lessons learned from years of experience deploying thousands of cloud applications.
Advance Your Cloud Strategy

A RightScale CloudSight Consulting engagement will help you transition from your high-level cloud goals and strategy to a tangible roadmap and plan. Our cloud experts will advise you on:

- Public, private, and hybrid clouds
- Which applications to migrate
- Which architectures and technologies to use
- Project roadmaps and timelines
- Planning for cloud costs and ROI

For your free initial consultation, contact us at:

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About RightScale

RightScale® enables leading enterprises to accelerate delivery of cloud-based applications that engage customers and drive top-line revenue while reducing risk of outages and optimizing costs. RightScale Cloud Portfolio Management provides a single pane of glass to manage, govern and optimize applications in public, private and hybrid clouds. With RightScale, IT organizations can deliver instant self-service access to a portfolio of public, private, and hybrid cloud services across business units and development teams. RightScale provides enterprise-grade governance so that IT teams can control user access; standardize technologies and processes; ensure security and compliance; and enforce budgets. In addition, RightScale Consulting provides deep cloud expertise to help companies develop cloud strategies, deliver cloud projects, and optimize cloud usage. Since 2007, more than 50,000 users at leading organizations across a variety of industries have launched millions of servers and advanced their cloud infrastructure through RightScale.