

Top 3 Reasons Many Enterprises Are Moving to a Private Cloud

Concerns Over Performance, Security, and Control Are Driving Many Cloud Decisions

A Rackspace® White Paper

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1. Introduction

For many enterprises, the last few years were about deciding whether to move to the cloud. Would it be safe? Would it really deliver the promised cost savings and business flexibility? Today, those questions have largely been answered, and the “land rush”¹ to the cloud has begun, with over 60 percent of enterprises expected to have at least half their infrastructure on cloud-based platforms by 2018.² What remains for many businesses is the complicated task of determining how to move to the cloud — and which cloud model is right for their workloads.

Rackspace works with companies of all kinds, providing support and services regardless of whether they want to move their workloads to the public cloud, the private cloud, or some combination of the two. In this paper, we focus on the private cloud, which a recent Gartner survey predicts will grow at nearly twice the rate of the public cloud through 2016.³ Specifically, we focus on the three key reasons why many of the enterprises we work with are choosing a private cloud deployment:

1. **Performance:** They want optimal, predictable performance for their workloads.
2. **Security:** They want to secure their sensitive data and address their compliance requirements.
3. **Control:** They want to avoid vendor lock-in and retain control over costs.

By providing examples of how these three challenges have affected some of our customers, we hope to make it easier for you to make an informed decision about whether a private cloud is right for your business.

2. Performance: What You Need, and Nothing More

The businesses we work with that choose a private cloud typically want their cloud deployment to allow them to:

- Optimize workload performance by matching specific resources to specific workloads.
- Get consistent and predictable performance by eliminating noisy neighbor issues.
- Provision resources quickly to meet changing demands.

These are all difficult goals to achieve in the public cloud, where you don't control the hardware, cache, or storage mix. Your virtual servers are placed on whatever hardware and network infrastructure the public cloud provider designates for you. Noisy neighbor issues can lead to subpar performance on critical applications. And provisioning can be unpredictable in the public cloud; you may end up waiting longer than expected, and you'll have no way to know exactly how long your wait will be.

With a private cloud deployment, you have much more control over performance because you can design the cloud to meet your specific needs. With public cloud offerings, you might be stuck paying for more CPUs and RAM than you need just to get fast storage, but in the private cloud you can customize your infrastructure. You decide on the right mix of CPU, memory, and storage, customizing your physical hardware to maximize performance and minimize costs.

Some of our customers have also been driven out of the public cloud by noisy neighbor issues, which occur when co-tenants monopolize bandwidth, CPUs, and other resources, resulting in uneven network performance. With a private cloud deployment, there are no co-tenants, so you can eliminate noisy neighbor issues entirely and get performance when you need it. For example, if you know that you have a CPU-intensive workload, you can use faster CPUs or other infrastructure variations that deliver the fast, reliable performance you need.

To boost performance in the public cloud, providers often give you the ability to modify your applications so they'll work more efficiently within their predetermined hardware environment. But at many businesses, the majority of applications come from commercial sources so they can't be modified. A private cloud gives you a similar ability to tune your application layer where possible — but you can also experiment to find the best way to customize your underlying infrastructure for optimal performance.

CUSTOMER EXAMPLE: PERFORMANCE

RockYou runs the world's largest in-game video ad platform, connecting premium brands to over 75 million users. Like many enterprises, RockYou needed the flexibility to ramp up fast to keep pace with growth and meet unpredictable spikes in demand.

Through a managed private cloud deployment, RockYou is able to achieve reliable performance, even in the most demanding circumstances. Instead of waiting passively for a public cloud provider to find an available hypervisor to support provisioning, the company spins up its own virtual machines, as needed, on available hypervisors that are identified in minutes.

3. Security: Advanced Protections That You Control

Security is clearly the top concern for enterprises planning to move to the cloud. A BT Security survey of 640 IT decision makers in 11 countries found that more than three-quarters are “extremely anxious” about the security of cloud-based services.⁴ It’s not just the need to secure sensitive data that worries business leaders — it’s also the need to comply with legislative requirements and internal procedures that span physical, logical, and virtual layers. Data sovereignty is an issue, as is compliance with Sarbanes-Oxley, PCI, HIPAA, and a litany of other regulations.

Security and compliance concerns don’t go away in the private cloud, but many of our enterprise customers prefer to avoid multitenant environments and fully isolate their physical networks. While new technologies are emerging that promise greater security in the public cloud, most enterprises are waiting for those technologies to be fully tested and refined further before entrusting their valuable business data to them.

Another reason we see many of our security-minded customers choosing a private cloud is that they want to use their own security infrastructure, tools, and devices. Taking advantage of your existing security investments may make sense from a cost perspective, and it also means that your IT professionals — the people you’ve hired and trained — are protecting your environment with tools they’ve likely been using for years.

The other big concern is compliance, which can be difficult with many public cloud deployments. Public clouds can provide dedicated virtual networks, but only in a private cloud do you get hardware, storage, and physical network configurations dedicated to a single client — which makes compliance much easier to achieve. You can also tailor your on-site or hosted private cloud to meet the unique compliance and security requirements for your industry or region. For many companies, that alone is reason enough to choose a private cloud for at least some instances and workloads.

CUSTOMER EXAMPLE: SECURITY

As you might imagine, headlines about data breaches are more than enough to keep our large retail and financial customers from putting sensitive customer information in multitenant environments. They strongly prefer the private cloud, where they can isolate their physical network and customize their security protocols as needed.

Many of our smaller customers first move to the public cloud, which provides a fast and cost-effective testing and development environment. They can innovate faster, using far more sophisticated infrastructures than they could afford to purchase and maintain on their own. As these smaller companies grow, however, we see many come back for help moving some or all their workloads to a private cloud. One driving reason is security — once they start running applications that involve customer data or other sensitive information, they realize that it makes sense to invest in a hosted or in-house private cloud solution.

“Mission-critical applications are more likely to be deployed on a hosted private cloud than on a multitenant IaaS platform ... as mainstream buyers prioritize security, customization and performance over low cost.”

— 451 Research Vendor Window, April 2015

4. Control: Choose Open Solutions, Lower Your Costs

Enterprises that want control over their infrastructures and costs tend to choose open source cloud deployments. One of the main reasons is to avoid vendor lock-in, which is an enormous frustration we hear about from companies of all sizes.

Many enterprises are well aware of the pitfalls of vendor lock-in with everything from their physical infrastructures to their operating systems. When you have a dominant vendor that develops a product you need, and the offering is made up of proprietary elements, you lose control. When the vendor says you must buy associated products and support, you have no choice. When the prices for those additional purchases go up, you simply have to pay. Migrating out of this situation is often so cost prohibitive that companies remain stuck for years in this increasingly expensive cycle.

Vendor lock-in is not limited to physical deployments. Cloud deployments are also susceptible to issues related to data portability, user training, and integration with other cloud solutions and tools. In the public cloud, for instance, you might discover that proprietary tools only recognize virtual machines from a particular vendor. When you decide to move to another public cloud, you're forced to purchase new tools.

Freedom from vendor lock-in is the leading reason companies choose open source software.⁵ This is especially true for enterprises that are still deciding how best to leverage cloud resources. It makes sense to choose open source software because it provides the greatest flexibility; it is not proprietary, and is instead developed collaboratively and publicly for use in many types of environments.

The leading and most widely adopted open source cloud platform, OpenStack, has support from over 450 global companies and tens of thousands of users and contributors. Cloud solutions built on OpenStack are particularly flexible, preventing vendor lock-in to proprietary modifications or incompatible APIs and enabling easier migration to other vendors.

CUSTOMER EXAMPLE: CONTROL

CERN, the European Organization for Nuclear Research, operates the world's largest research environment. That includes work on the Large Hadron Collider, which produces up to 1 petabyte of data a day, recorded in two data centers.

CERN faced the same situation common to many enterprises: They wanted to avoid vendor lock-in. In their case, they had a highly heterogeneous environment with multiple types of hypervisors that were each necessary to meet specific tactical needs. CERN chose OpenStack to control all their hypervisors — an anticipated 15,000 in the near future. The OpenStack API layer made it possible for CERN's IT team to fully manage the entire virtual machine lifecycle, regardless of hypervisor type.

CERN also benefits from enhancements and innovations from the OpenStack development community, which they rely on to continually refine their private cloud deployment.⁶

What all this means to your business is that with OpenStack or other open source software, you can move as necessary from one cloud solution to another, with less disruption, and without losing the investments you've made in automation or other customizations to your cloud-based software. You have control, no matter which cloud (or clouds) you use.

Another advantage of open source software — as part of a private cloud solution — is that it can help lower operating costs. For instance, imagine a business with a large legacy investment in EMC storage that wants to move to a less expensive open source storage solution like Linux LVM. By moving to a private cloud, the company can take full advantage of both storage types. Sensitive data can be stored through existing EMC solutions that provide global replication, while other data can be stored at a lower cost in the open source storage solution.

To be sure, building a private cloud is a significant investment, but some of our customers find that it can actually be less expensive than operating in the public cloud. Especially for our customers with tens of thousands of instances or hundreds of workloads, public cloud deployments can be extremely expensive with sometimes unpredictable costs. In those cases, we see many customers move to dedicated, in-house servers running open source software, or a combination of an owned, in-house infrastructure plus a public cloud deployment to handle spikes in demand.

5. Conclusion

Companies of all sizes, in every industry, are deciding which cloud solution is right for them, whether a private cloud, public cloud, or some combination. The best answer depends on the specific needs of your business. In this paper, we've described the performance, security, and control issues that are leading many of our enterprise customers to move some or all of their workloads to a private cloud.

If you decide that a private cloud is the right choice for your enterprise, the next step is to decide whether your internal IT team has or can obtain the skills necessary to build and maintain your private cloud. Another option is to choose a managed private cloud solution, deployed in-house or off-site, which may be more cost-effective and can give your IT team more time to support your core business.

Regardless of who will manage your private cloud deployment, you can be sure that a private cloud is a solid choice if — like many of our customers — your business priorities are reliable performance, better security, and control over vendor selection and costs.

6. Endnotes

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About Rackspace

Rackspace® (NYSE: RAX) is the #1 managed cloud company. Its technical expertise and **Fanatical Support**® allow companies to tap the power of the cloud without the pain of hiring experts in dozens of complex technologies. Rackspace is also the leader in hybrid cloud, giving each customer the best fit for its unique needs — whether on single- or multi-tenant servers, or a combination of those platforms. Rackspace is the founder of OpenStack®, the open-source operating system for the cloud. Based in San Antonio, Rackspace serves more than 300,000 business customers from data centers on four continents.

GLOBAL OFFICES

Headquarters Rackspace, Inc.

1 Fanatical Place | Windcrest, Texas 78218 | 1-800-961-2888 | Intl: +1 210 312 4700

www.rackspace.com

UK Office

Rackspace Ltd.
5 Millington Road
Hyde Park Hayes
Middlesex, UB3 4AZ
Phone: 0800-988-0100
Intl: +44 (0)20 8734 2600
www.rackspace.co.uk

Benelux Office

Rackspace Benelux B.V.
Teleportboulevard 110
1043 EJ Amsterdam
Phone: 00800 8899 00 33
Intl: +31 (0)20 753 32 01
www.rackspace.nl

Hong Kong Office

9/F, Cambridge House, Taikoo Place
979 King's Road,
Quarry Bay, Hong Kong
Sales: +852 3752 6488
Support +852 3752 6464
www.rackspace.com.hk

Australia Office

Rackspace Hosting Australia PTY LTD
Level 1
37 Pitt Street
Sydney, NSW 2000
Australia

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