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Can private cloud be cheaper than public cloud?

41% said yes, and the survey reveals how.

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NEW YORK

1411 Broadway
New York, NY 10018
+1 212 505 3030

SAN FRANCISCO

140 Geary Street
San Francisco, CA 94108
+1 415 989 1555

LONDON

Paxton House
30, Artillery Lane
London, E1 7LS, UK
+44 207 426 1050

BOSTON

75-101 Federal Street
Boston, MA 02110
+1 617 598 7200

Executive Summary

Private cloud can be a less expensive option for enterprises than public cloud. Forty-one percent of 150 IT decision-makers surveyed in February 2017 claimed to be operating their own private clouds at lower unit costs than public cloud. An additional 24% of those surveyed said that they are paying less than a 10% premium for their private cloud.

Cost reduction against public cloud is not the primary driving force behind private cloud adoption. Protection of data was the most popular benefit of a private cloud, with asset ownership and integration with business processes also ranked highly. However, cost benefits do still matter: more than half of respondents rated cost-efficiency as a key driver of the decision to use a private cloud.

According to respondents, automation and capacity-planning tools were the biggest drivers of private cloud cost-efficiencies. Other drivers were flexible licensing arrangements, and cost and budgetary management tools. Enterprises that want to achieve cost-efficiencies through a private approach appear to be investing in suitable tools.

Public cloud is perceived by many as having too many risks related to data security, performance, availability and cost. Nearly four in five respondents considered data security to be problematic in the public cloud.

Even if public cloud were to cost half as much as private cloud, respondents said they would migrate only 50% of workloads. Clearly, enterprises see value in private cloud for reasons beyond cost-effectiveness.

Private cloud can be cheaper, but in all cases, end users can appreciate the benefit of having full control and ownership over their infrastructure, data and applications. Many respondents cited broader economic benefits resulting from better security, SLAs, compliance and performance as being key to their decision to use a private cloud.

Introduction

Private cloud has long been touted as the premium choice – an ‘enterprise grade’ cloud for mission-critical requirements, but at a premium price. Data protection, ownership and control are the typical arguments for going private touted in the media and by those advocating its underlying technologies. When it comes to total cost of ownership (TCO), public cloud is considered by many to be the standard choice for the cost-conscious CIO – no surprise considering the frequent price cuts announced by the hyperscalers and the resultant press attention they draw.

But is this a fair summary? 451 Research’s Cloud Price Index (CPI) has repeatedly found that private cloud can beat public cloud on TCO, as long as certain thresholds of labor efficiency and utilization can be met. In fact, private cloud can break even at as little as 400 virtual machines per administrator and 50% utilization based on quotations from the CPI’s annual survey. These thresholds are not unreasonable for an appropriately tooled enterprise to achieve.

With this in mind, perhaps many enterprises are saving money by using private cloud over public cloud but simply aren’t being heard above the marketing hype from public cloud providers. In a study commissioned by VMware and performed by 451 Research, this issue was investigated: how many enterprises are running private clouds at a lower cost than the public cloud alternative, and how are they doing it?

In early 2017, 451 Research surveyed 150 IT decision-makers in the US who were using private and public clouds. This analysis focuses on the results of that survey. We also arranged in-depth discussions with five IT decision-makers with a view to understanding their economic and cost-saving experiences. This paper focuses on the results of the decision-maker survey, with quotations from our discussions providing context to our data. A companion paper – *Can private cloud be cheaper than public cloud? Real stories about how companies run their private cloud cheaper* – provides further insight on our interviewees’ experiences with regard to private cloud economics.

[CLICK HERE TO READ THE COMPANION PAPER](#)

Can private cloud be cheaper than public cloud? Real stories about how companies run their private cloud cheaper

Private Cloud Can be Cheaper, But Not for Everyone

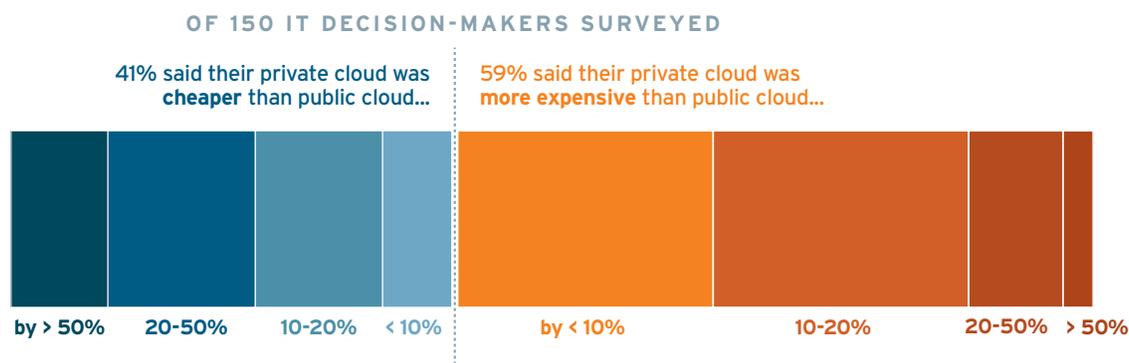
Of the 150 decision-makers surveyed, 41% indicated that their private cloud infrastructure was cheaper than public cloud options on a per-VM basis (see Figure 1). This is a striking result, especially considering these are senior management individuals that typically own the budget, or at least have responsibility for it. This statistic suggests that the argument that 'public cloud is always the cheapest' is a myth. In fact, 9% of the sample stated they were saving at least 50% on TCO by using private cloud instead of public cloud.

While about two in five survey respondents are paying less for their private cloud than the comparable public cloud alternative, the majority of respondents surveyed are paying more for their private cloud compared to public cloud, so there must be value in private cloud beyond price. After all, if private cloud had no benefits over public cloud, why would the majority choose them for their workloads? Of those paying more for their private cloud, a considerable 24% of total respondents stated they were paying less than a 10% premium for private cloud; only 3% of all respondents said they were paying more than a 50% premium for private cloud.

Is a premium for private cloud justified? Respondents' reasons for choosing a private cloud are discussed later in this report, but given the potentially high cost to re-architect and recode some applications in order to move them to the public cloud, the relatively minor premium incurred to maintain a private cloud might easily be justified when compared to the total cost of moving and then running these same workloads on a public cloud.

Figure 1: Respondents' estimates of private vs. public cloud cost efficiencies

Source: 451 Research



Effective Management is the Key to Lower Costs

The sample were asked to choose the **single** most important factor that contributed to their savings using private cloud (see Figure 2).

Capacity-planning tools were cited by 18% of respondents as being the most important contributor to cost savings, and another 17% cited automation tools. These responses resonated with 451 Research's Digital Economics Unit. Last year in the Private Cloud Price Index, the unit showed how the TCO of a private cloud is directly proportional to its labor efficiency and utilization, which are primarily driven by automation and capacity-planning tools. It's really common sense: automation reduces manual tasks, allowing administrators to spend their time on other tasks; capacity planning reduces sunk costs by ensuring the hardware is being utilized with as little waste as possible. Expenditure on such tools can provide net TCO benefits.

CAN PRIVATE CLOUD BE CHEAPER THAN PUBLIC CLOUD? 41% SAID YES, AND THE SURVEY REVEALS HOW.

In fact, many of our interviewees were able to put the benefits of automation into quantitative terms, and a 20-30% improvement in efficiency was common:

"I would say that we have achieved 25% more productivity from our resources through automation and capacity planning as they go hand in hand."

– IT Director, IT Industry

"We automated repetitive maintenance tasks and freed our FTEs and saved costs. This led to 80% FTE cost savings on repetitive tasks."

– IT Director, Financial Services

"We have achieved 30% efficiency in our incidents and problem management. I believe we can add 5-10% more."

– IT Director, IT Industry

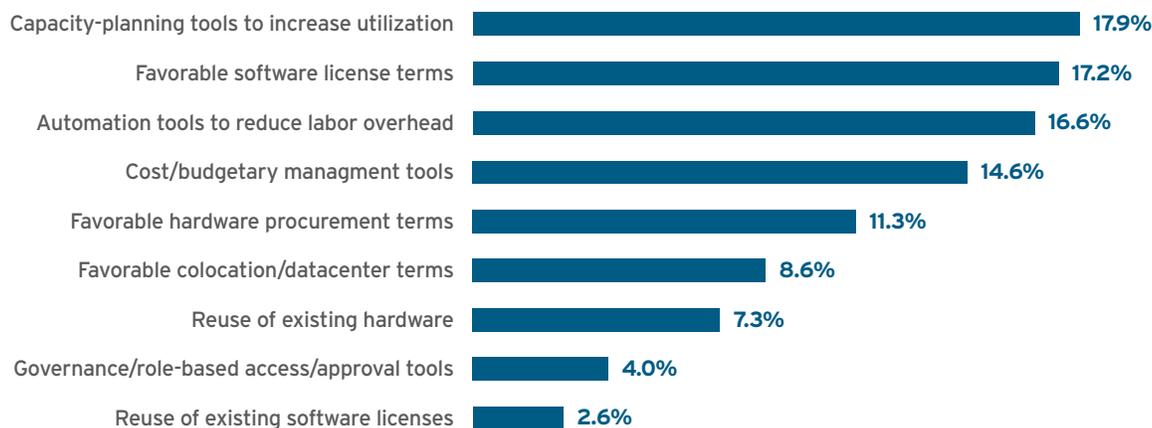
In a similar vein, cost and budgetary management tools were cited as the primary driver of savings by 15% of respondents. Such tools enable consumption and expenditures to be tracked, optimized and allocated to departments, with the goal of reducing waste and optimizing spending. Similarly, 4% of respondents said they are using governance and approval tools to prevent VM sprawl and, thereby, save money.

Another highly rated benefit was the ability to maximize software license use. Many software vendors are more generous with regard to licensing when it comes to private cloud than public cloud. Where a vendor licenses based on CPUs, an administrator can gain better license utilization by hosting a large number of virtual machines per CPU in a private cloud. But on a public cloud, each virtual machine must be licensed separately because the software vendor has no visibility of the underlying hardware, which can increase costs relative to the private option.

In fact, many cost-saving opportunities were related to the overall control and ownership of the private cloud: being able to negotiate with software and hardware vendors and datacenter providers, and being able to reuse existing hardware and licenses. This suggests that enterprises that already have technology and relationships in place find less value in moving to a public cloud.

Figure 2: Top factors contributing to private cloud cost efficiencies

Source: 451 Research



Private Cloud is Driven by Control and Ownership, but Cost Plays a Part, Too

It appears that the most hyped reasons for choosing a private cloud were also the ones that appealed to the respondents. Control of data, ownership and integration with business processes all stood out, cited by 71%, 43% and 42% of respondents, respectively (see Figure 3). However, it is interesting that cost-efficiency was the second most popular reason to choose a private cloud, cited by more than half of respondents.

Although private cloud is widely believed to carry a cost premium, this result suggests that end users don't necessarily see this as the case, and that, in fact, lower cost is a driving factor for choosing private cloud, alongside data protection and ownership. Similarly, financial and cash-flow advantages also appealed to the respondents, cited by 27%. Resale value was cited by 8%, a benefit that is obviously not available when using the public cloud. Legal requirements, such as compliance, and the reassurance of using in-house support were also rated highly.

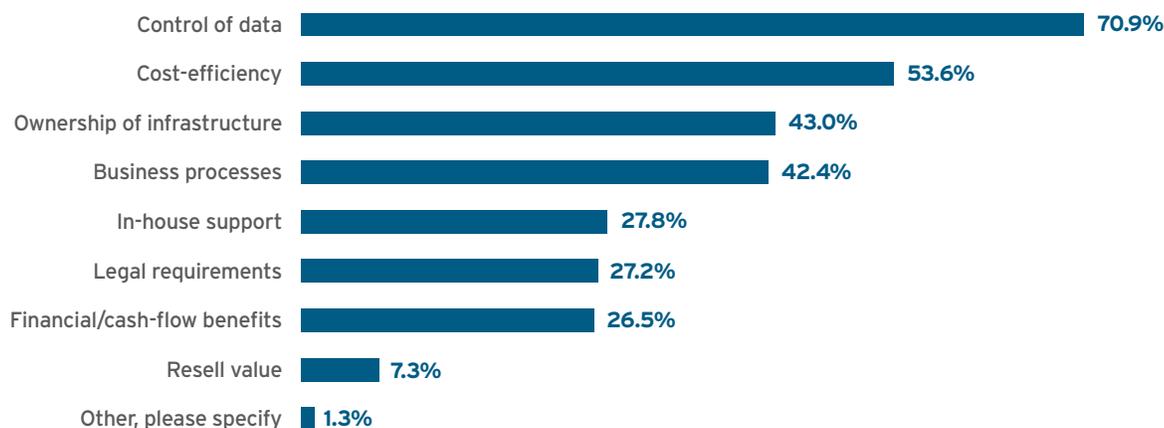
For some respondents, the combination of ownership, control and performance drove economic benefits:

"Private cloud allows a large number of users to share resources without any performance issues; thus, it contributes to the cost savings as users become more efficient in their work. This impact is the most valuable because it is a continuous saving."

– IT Director, IT Industry

Figure 3: Reasons respondents chose private cloud

Source: 451 Research



Others saw major economic benefits beyond what is easily quantifiable:

"Security in private cloud is much better and robust, therefore, preventing any damages or cyberattacks on our network, for example, DDoS, phishing, etc."

– IT Director, IT Industry

"We save a lot of money because we get a lot of application stability making our SLAs on point."

– IT Director, Automotive Manufacturing

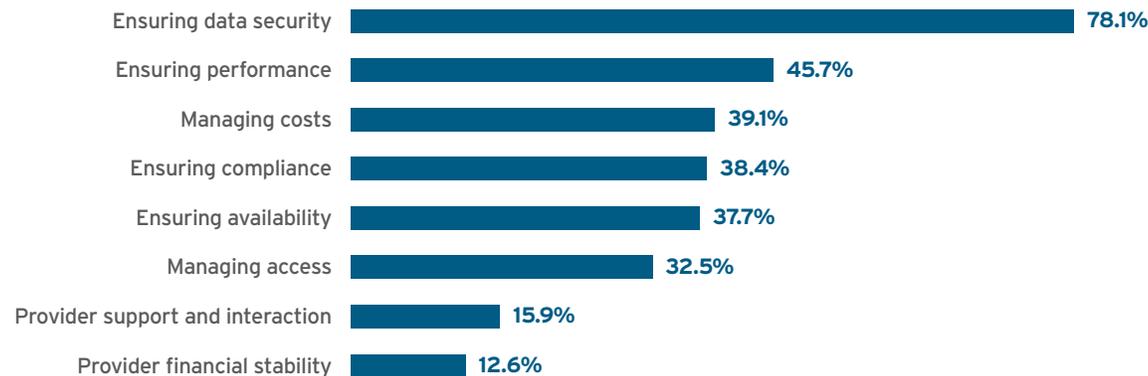
Conversely, respondents were also asked why they decided against public cloud (see Figure 4). The majority of concerns were related to managing risk: ensuring data security, performance, availability and compliance were all highly rated. The decision-makers surveyed simply have too much to lose by putting these mission-critical factors in the hands of a third party. Data security was the standout biggest risk, cited by nearly four in five respondents.

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Managing costs also rated highly as an issue unfavorable to public cloud, cited by nearly 40% of respondents. A common term used within the industry today is 'bill shock' – for example, when the service owner reviews the public cloud statement at the end of the month and finds that an errant API or inconsiderate user has ramped up a huge bill. Almost 40% of the sample shared this concern. Ironically, the flexibility of being able to consume 'on demand' is one of the key reasons 451 Research hears in favor of public cloud.

Figure 4: Concerns felt by respondents with regard to public cloud

Source: 451 Research



For those respondents where public cloud is cheaper, do users feel they are getting value from their private cloud? Is it meeting expectations?

"Yes, it has definitely met our expectations. We needed to scale our infrastructure and create a private cloud for ourselves. The private cloud since then has offered us cost reductions in running our IT infrastructure as the physical machine costs have gone down and has helped run our mission-critical systems with higher availability and serviceability."

– IT Director, IT Industry

"Yes, our private cloud has met our expectations because it has significantly increased our agility as we were able to shift our workloads in between our cloud, making it very easy for us to get the performance benefits of our private cloud whenever we desire. We were also able to save a lot of money on our IT staff costs."

– Systems Administrator, Fashion Manufacturing

Similar feelings were reflected by all of our IT interviewees, and we follow up on this topic in a companion report.

Price Sensitivity

The Cloud Price Index large 'basket of goods' has come down just 4% between October 2015 and March 2017. How can this be, considering the regular announcements of double-digit price cuts from the hyperscalers? Cuts are typically levied on just a single service, usually virtual machines, while other costs such as bandwidth, storage and management stay the same. But an end user doesn't consume virtual machines in isolation; an app consists of far more than just compute, and in public cloud, these items are charged separately. On a private cloud, storage, network and compute are intrinsically aggregated as part of the same platform, and the same investment. The CPI basket-of-goods methodology captures changes based on an application's use rather than that of an individual service, and shows the market is still a long way from commodification.

But, obviously, price is relevant to a buyer's decision; decision-makers don't have unlimited budgets. If public cloud gets cheaper at a faster rate than private cloud, then public cloud is likely to be seen as having a greater value. This price sensitivity can be measured by asking end users: how many of your private cloud workloads would you move to the public cloud if a certain TCO saving were guaranteed? (see Figure 5)

Figure 5: Price sensitivity of private cloud



It appears some private cloud workloads are under threat if public cloud pricing gets more competitive. A 10% price reduction would cause enterprises to migrate one-quarter of workloads to public cloud. But remember, in the past 18 months, cloud has only come down 4%, so we are a long way from such a competitive market. And, of course, private cloud is likely to come down in price, too, as a result of greater hardware density and improvements in software automation and capacity planning.

Even if public cloud providers slashed prices by half (which is highly unlikely), respondents would migrate only half of private cloud workloads to public cloud. In other words, enterprises see so much benefit in using private cloud for some workloads that even a 50% drop in public cloud costs wouldn't motivate them to shift away from private cloud.

Conclusions

All the results lead to one conclusion: buyers should be careful making assumptions around common myths when choosing a cloud. Marketing hype suggests that the great 'public vs. private cloud debate' is a black-and-white decision: premium vs. cheap. This analysis suggests otherwise.

Forty-one percent of respondents stated they are saving money using a private cloud instead of a public cloud – and remember, that is in addition to the other perceived benefits in terms of ownership, control and security. Nine percent claim to be saving more than 50% compared to public cloud. Even if users are paying more for private cloud, the premium is typically less than 10% – not unreasonable considering the costs associated with migrating to the public cloud.

To achieve those cost savings, respondents are making use of tools for capacity planning, automation, cost management and licensing. They are reusing technology where possible and negotiating to win favorable terms. This isn't rocket science.

Control and ownership of data is the big draw for private cloud, but cost-efficiency (in well managed and instrumented private clouds) also ranks highly. These benefits are associated with a reduction of risk: CIOs don't want to open themselves up to data breaches, spiraling costs or poor availability.

But not all workloads demand such controls, and a 10% public cloud cost advantage would drive 25% of workloads away from private cloud. It is unlikely these workloads would have high security or performance requirements, hence the reason public cloud is seen as a feasible option for migrating from private cloud. However, public cloud pricing has only come down 4% in the past 18 months – prices aren't coming down as much as many believe. Even with a 50% reduction in prices, only half of private cloud workloads would be considered for migration. This suggests that no matter how cheap public cloud becomes, buyers will still have compelling reasons for using private cloud. In some cases, private cloud can be cheaper, but in all cases, end users can appreciate the benefit of having full control and ownership over their infrastructure, data and applications.

So private cloud can be cheaper than public cloud while providing benefits beyond price. But how are enterprises creating cost-efficiencies, and what lessons can be learned from their experiences? In our follow-up companion report, we reveal the experiences of five senior IT decision-makers at large enterprises as we seek to further understand the economic business case for private cloud.