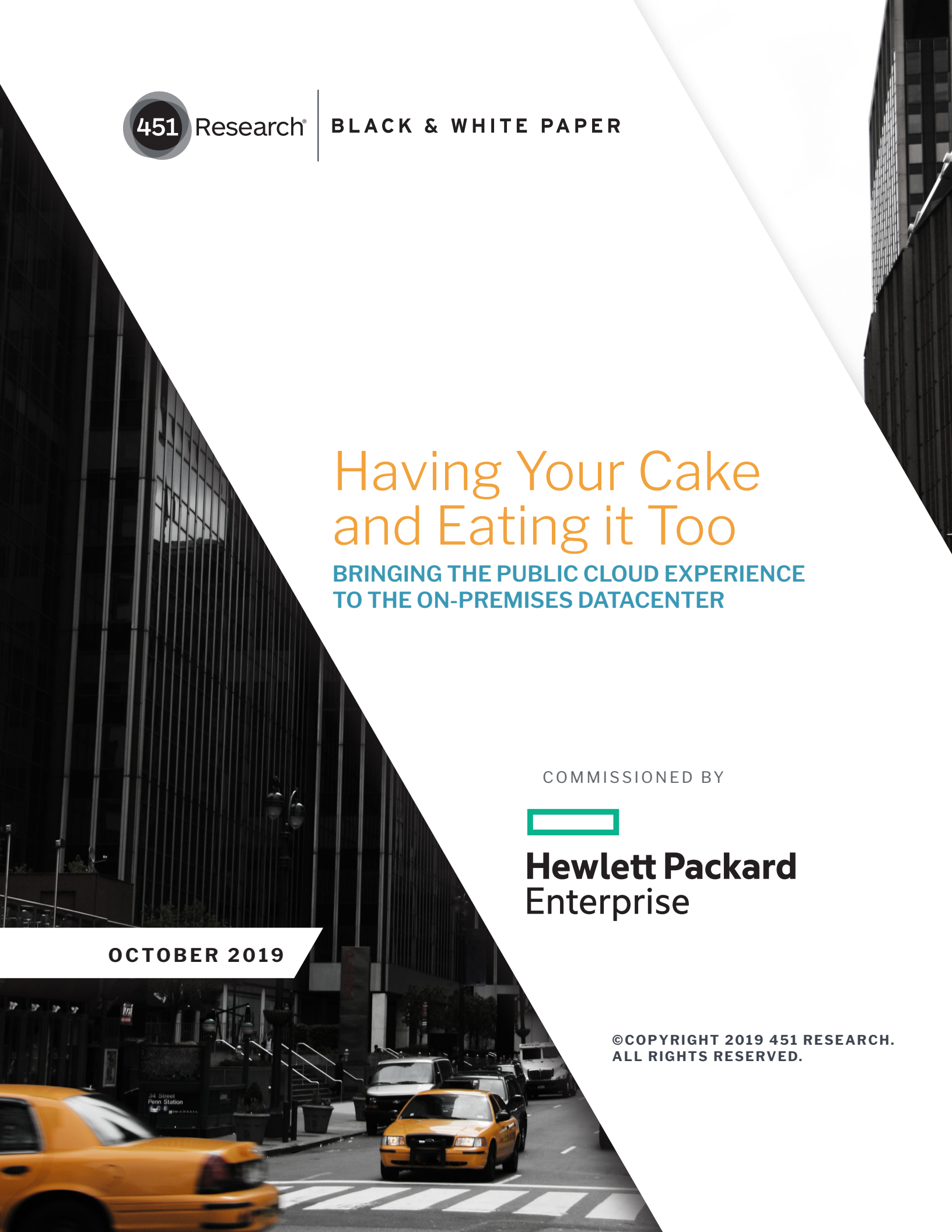
451 Research | BLACK & WHITE PAPER



Having Your Cake and Eating it Too

BRINGING THE PUBLIC CLOUD EXPERIENCE TO THE ON-PREMISES DATACENTER

COMMISSIONED BY

Hewlett Packard Enterprise

OCTOBER 2019

About this paper

A Black & White paper is a study based on primary research survey data that assesses the market dynamics of a key enterprise technology segment through the lens of the "on the ground" experience and opinions of real practitioners — what they are doing, and why they are doing it.

ABOUT THE AUTHOR

OWEN ROGERS

RESEARCH VICE PRESIDENT, CLOUD TRANSFORMATION

As Research Vice President, Owen Rogers leads the firm's Digital Economics Unit, which serves to help customers understand the economics behind digital and cloud technologies so they can make informed choices when costing and pricing their own products and services, as well as those from their vendors, suppliers and competitors. Owen is the architect of the Cloud Price Index, 451 Research's benchmark indicator of the costs of public, private and managed clouds, and the Cloud Price Codex, our global survey of cloud pricing methods and mechanisms. Owen is also head of 451 Research's Center of Excellence for Quantum Technologies.

JEAN ATELSEK

ANALYST, CLOUD TRANSFORMATION AND DIGITAL ECONOMICS UNIT

Jean is an analyst working across 451 Research's Cloud Transformation team and Digital Economics Unit. In addition to producing the quarterly Cloud Price Index deliverables, Jean covers vendors and cloud providers that offer technology or services to manage or improve public and private cloud TCO, performance or consumption. She has developed a niche in new private-cloud pricing models, including pay-as-you-go and build-operate-transfer.

Introduction

Once upon a time, the term *cloud* meant public cloud, and many commentators thought it would remove the need for enterprises to run their own servers or locate infrastructure in their own choice of datacenter. But over the past few years, the word *hybrid* has emerged not just as an aspiration, but as the model of choice for most enterprises.

Although public cloud offers great scalability and flexibility, the fact is that in this model, the service provider makes many decisions on the customer's behalf; for enterprises that need to know how and where their data is being located, hosting on-premises is still a desirable option. Hybrid cloud gives enterprises the flexibility to choose where to place each workload depending on that individual workload's requirements.

But how unified are these different venues today? Public cloud is by its very nature consumed in an on-demand manner, giving it a reputation for scalability and flexibility. On-premises infrastructure has traditionally been procured in a fixed capacity for a fixed price, which is inflexible compared with public cloud but does give reassurance of data security.

In this report, we examine the typical enterprise experience of cloud based on a survey of 1,001 enterprise IT decision-makers and find that on-premises deployments must be more flexible and pay-as-you-go than they once were to really let enterprises have their cake and eat it too.

Key Findings

- Multi-cloud is a mainstream strategy being adopted by 57% of enterprises today, but public cloud and private are still different beasts, especially regarding scalability, cost optimization and agility.
- Public cloud is a positive experience for 97% of the 1,001 IT decision-makers surveyed globally in a range of industries for this study.
- Despite the positive public cloud experience, on-prem deployments continue to be desired for reasons of security, data protection and compliance; 68% of our respondents said security was the biggest challenge in using public cloud.
- Many enterprises struggle with on-premises capacity planning and take a 'better safe than sorry' approach. Most are wasting 40-50% of server capacity, probably because 92% of enterprises have to wait a month or longer for new capacity to be installed. Considering that 83% of enterprises are still using fixed-capital models for on-premises capacity, wastage is difficult to prevent.
- For on-premises deployments, challenges related to scalability and agility are our respondents' biggest worries: 80% said provisioning times were poor, 70% said developers complained of poor agility, and 70% said capacity planning was a headache. The traditionally fixed nature of on-prem deployments, plus the need to administrate and manage the infrastructure, impacts the ability to consume rapidly and to scale when needed.
- Although public cloud does go some way to aid capacity planning, there are still difficulties in buying the most cost-efficient instances; 71% claim administering public cloud reserved instances is a bigger challenge than expected.

- Decision-makers are between a rock and a hard place – they need to keep resources secure and compliant for which on-prem deployments can provide a partial solution, but they also need to allow scalability, which is constrained by the fixed-capacity model, while reducing waste.
- Consumption-based pricing for on-prem deployments can provide the flexibility of public cloud with the reassurance of data control. In a hybrid cloud model, this gives enterprises a choice of venue for each workload, with the ability to scale on demand.

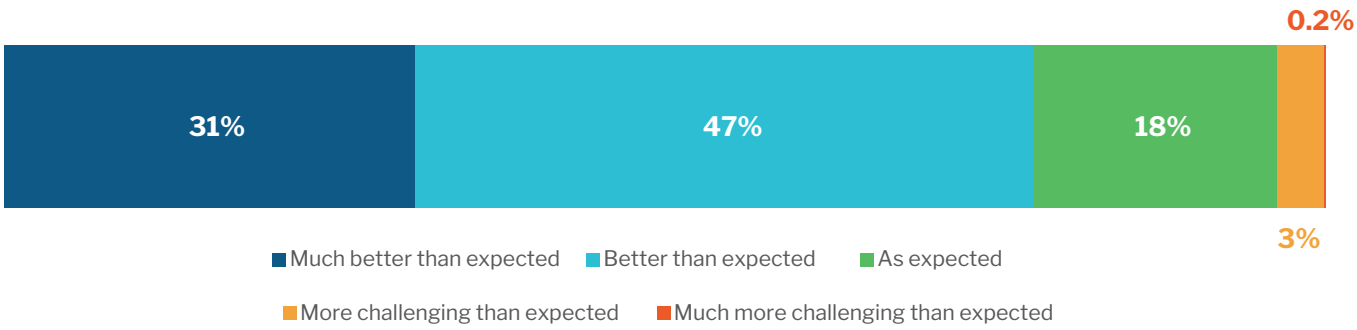
The Need for a Public Cloud Experience in the On-Prem Datacenter

Public Cloud Experiences are Remarkably Positive

Public cloud experiences are overwhelmingly positive. Of the 1,001 respondents surveyed, a whopping 97% said their experience was good or better than expected; 64% said public cloud had surpassed their expectations. This is quite remarkable considering that just a few years ago, public cloud was being talked about as a new and perhaps immature technology.

Figure 1: Public cloud experiences are remarkably positive

Source: 451 Research custom survey
Q: Overall, how would you rate your experience in using public cloud compared to expectations?

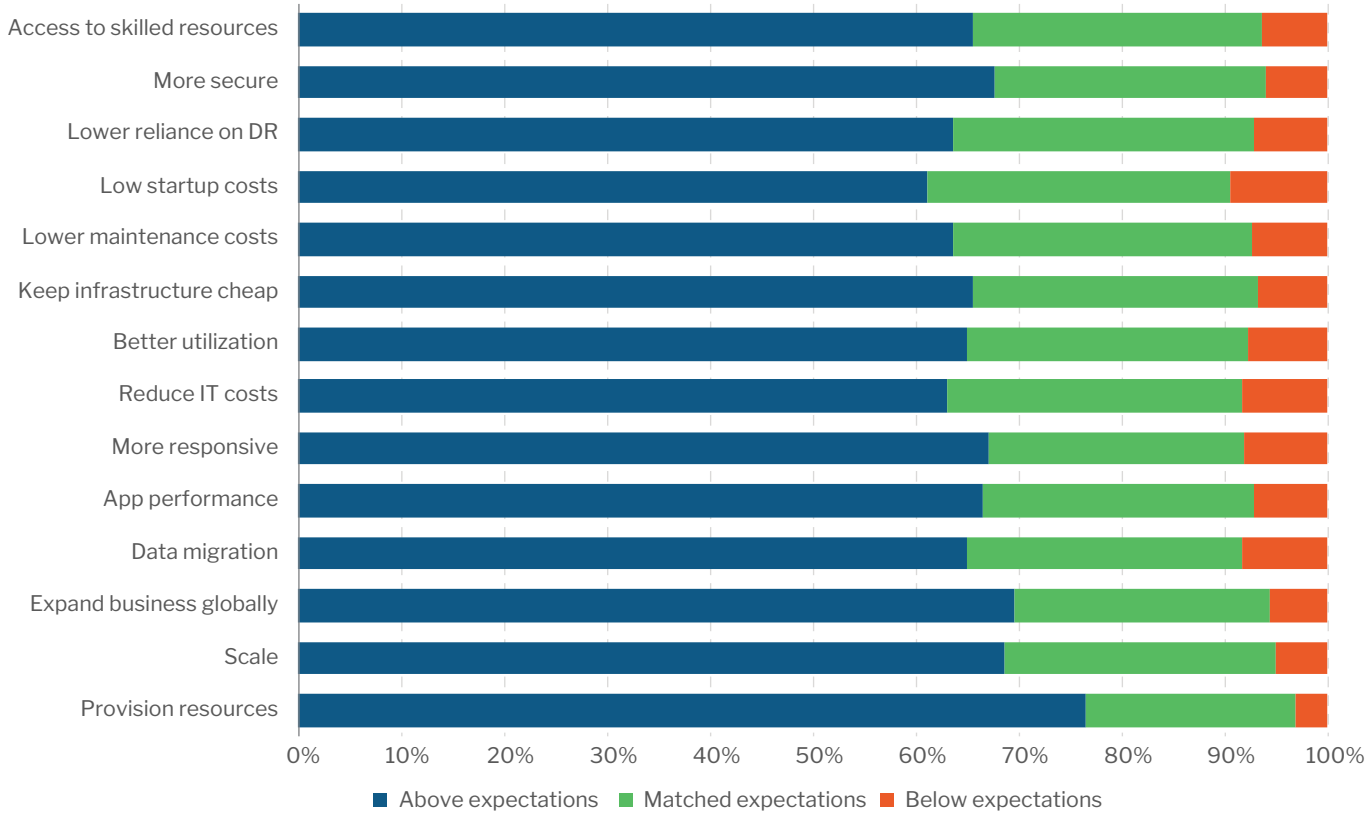


It appears our respondents' hopes were raised even before they started using cloud. For every potential improvement, the majority of respondents expected public cloud to bring some benefits, varying from 85% expecting improvements in resource provisioning to 65% expecting some benefit in reducing startup costs.

Generally, the reality met expectations. When asked if each potential improvement had taken place, only a small minority reported being disappointed. Public cloud scalability and provisioning were seen as particularly satisfactory, with only 3% and 5%, respectively, being disappointed. Startup costs, utilization and reducing costs were less satisfactory, but still only seen as not meeting expectations by a paltry 8-10%.

Figure 2: Public cloud expectations vs. reality

Source: 451 Research custom survey



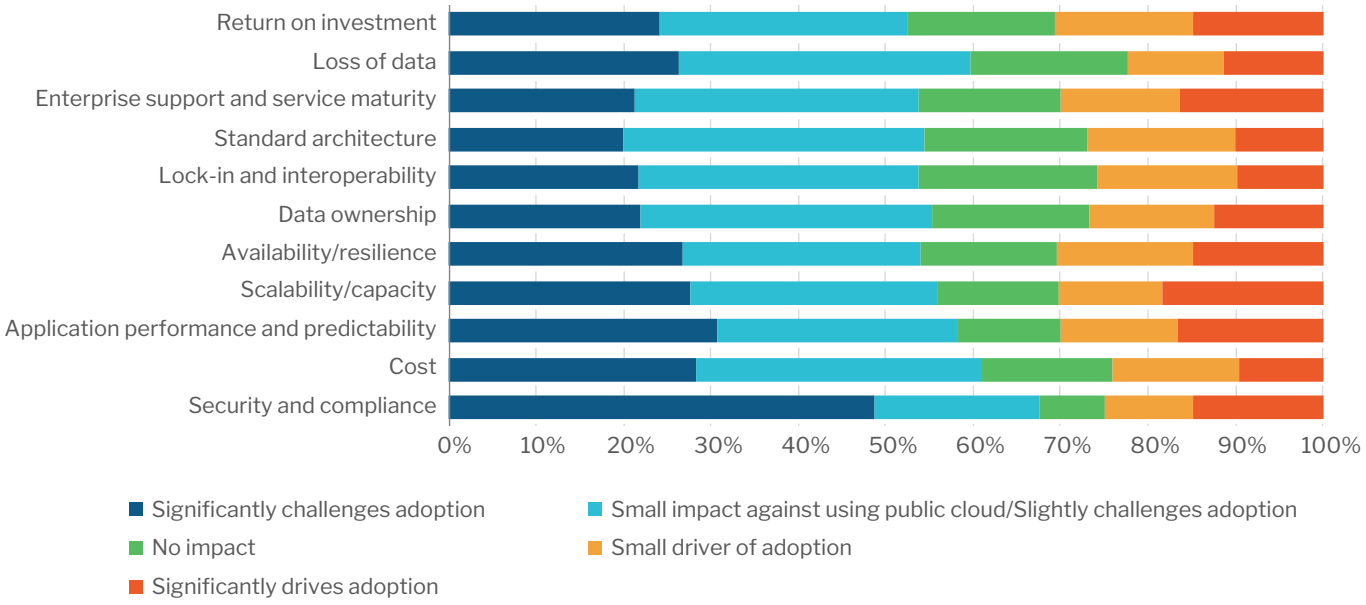
The Private Experience is Still Desired

But despite public cloud experiences being so positive, there are no signs that private cloud or on-prem deployments are going anywhere any time soon – two-thirds of workloads operated by our decision-makers are located on-premises. In 451 Research's 2019 Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads and Key Projects study, we found the number of enterprises choosing private cloud as a preferred venue for core business functions was likely to grow from 19% to 27% over the next two years. Our Market Monitor service predicts a CAGR of 15% for public cloud revenue globally from 2018-2023, with private cloud-enabling technologies just behind at 12%.

Many drivers for on-prem deployments result from public cloud's intrinsic qualities of being centralized, multi-tenanted and managed by a third party. No matter how great the public cloud experience, some enterprises just want to know where their data is, how it is being managed, and maintain responsibility for all elements of its protection. This explains why data security and privacy rank high on the list of decision-maker concerns: 68% see security and compliance as a barrier to public cloud adoption, and 60% rate loss of data. In fact, across all the potential benefit/challenges we asked about, all were seen as net challenges for adoption.

Figure 3: The impact that various factors have on use of public cloud

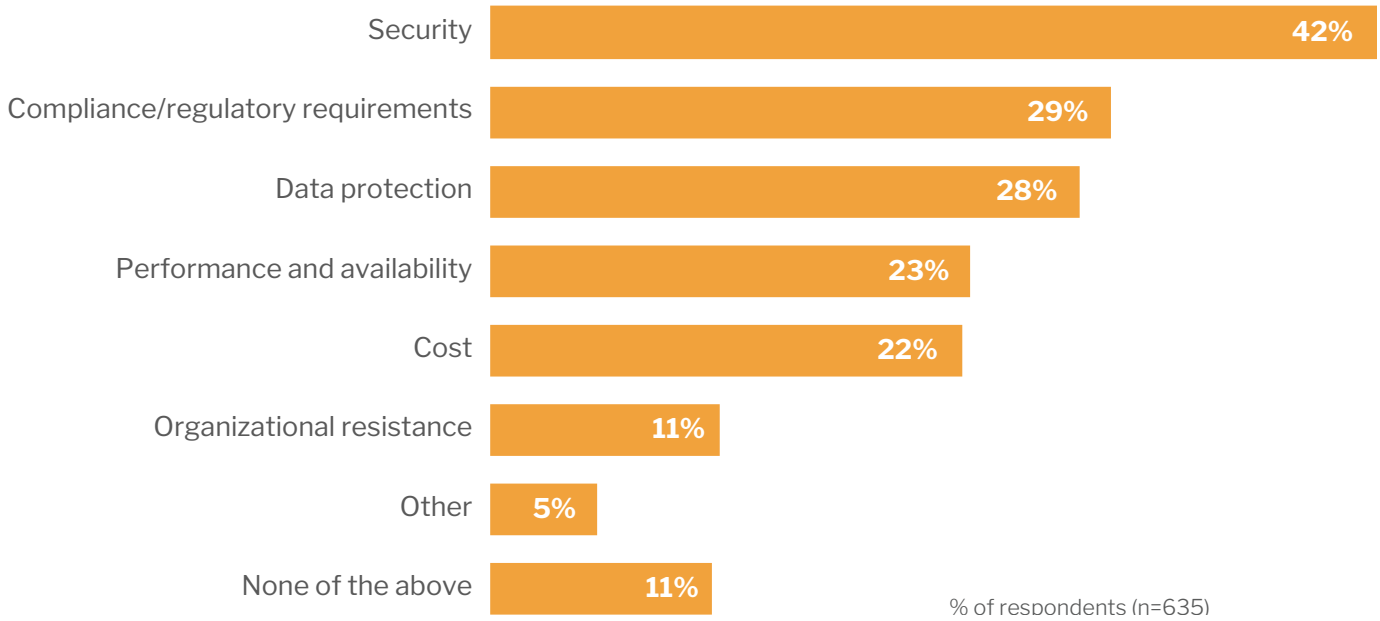
Source: 451 Research custom survey



In a similar 451 Research Voice of the Enterprise study, respondents felt that specific security requirements, compliance and data protection concerns rendered some workloads unsuitable to be hosted in public cloud. The control aspect, too, was high on the agenda, with 23% of enterprises avoiding public cloud due to performance and availability concerns. Cost was also high on the list of worries, perhaps because of the issue of scale – bandwidth, storage and other variable public cloud costs can rapidly spiral as data gravity brings more data on cloud.

Figure 4: Factors contributing to workloads being considered unsuitable for public cloud

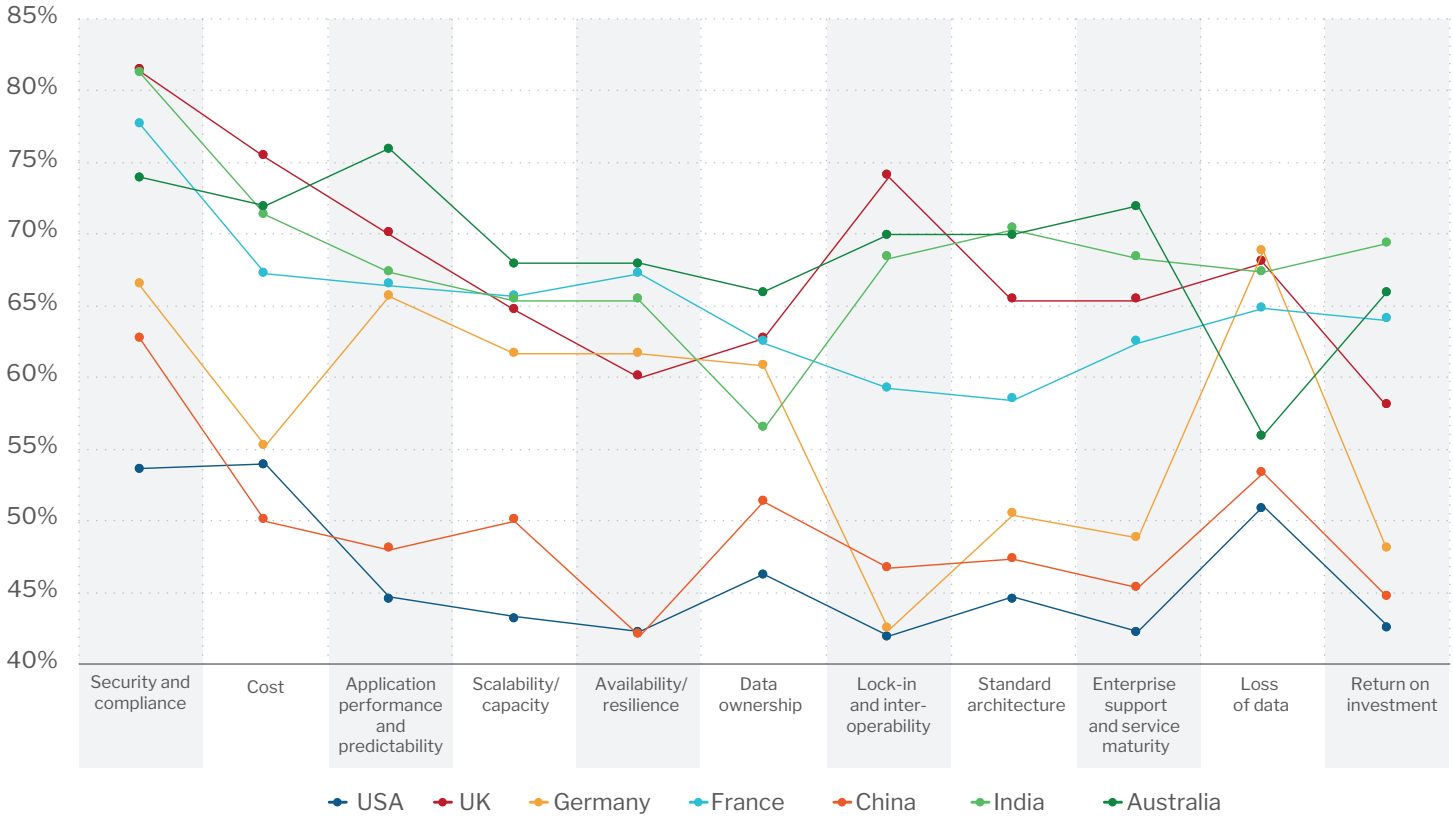
Source: 451 Research's Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads and Key Projects 2018



Interestingly enough, US and Chinese respondents in our study were most laid back about barriers to public cloud adoption. Australia, the UK, France, Germany and India were far more concerned about data locality, perhaps reflecting tighter regulations regarding data protection.

Figure 5: Percentage of enterprises in each country raising various characteristics as a challenge to public cloud adoption

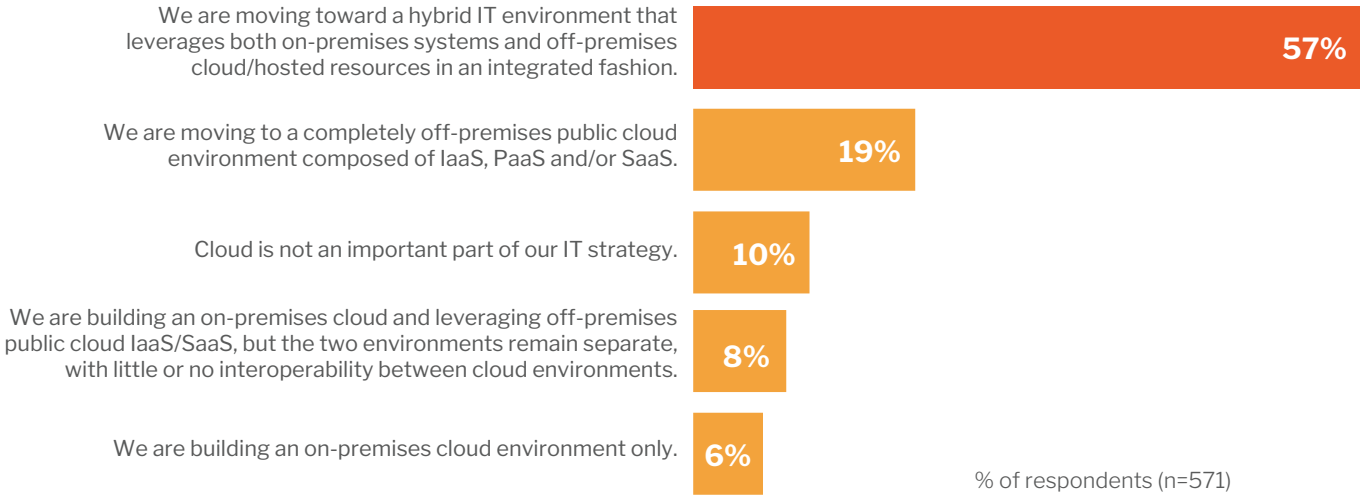
Source: 451 Research custom survey



Considering the public cloud is seen as a positive experience and private cloud is seen as secure and compliant, it makes sense that the vast majority of enterprises today are taking a hybrid approach of using both public and on-premises deployments, with the choice of venue depending on each workload's specific requirements. 451 Research's Voice of the Enterprise finds that 57% of enterprises are adopting a hybrid model.

Figure 6: Many enterprises are taking a hybrid approach

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads and Key Projects 2019

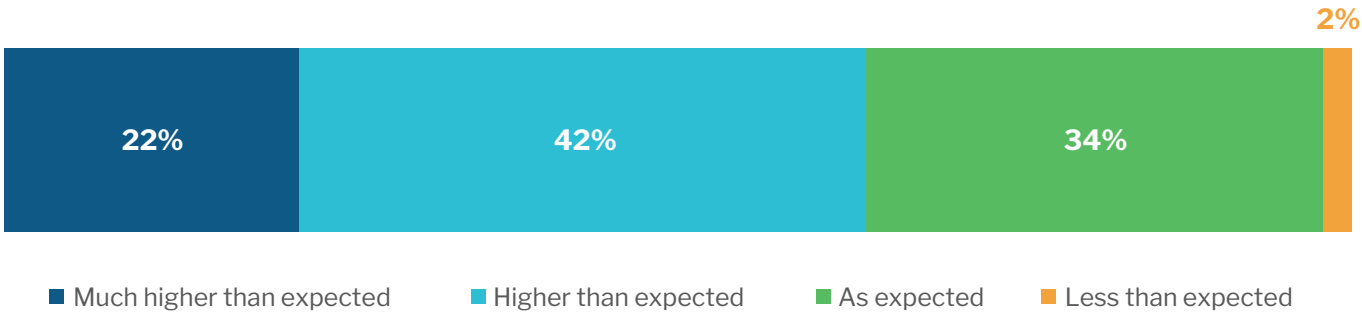


Unfortunately, the private cloud experience doesn't appear to be as slick as the public cloud. Well over three-quarters (83%) of enterprises are operating their on-prem deployment as a fixed capital investment, which means the enterprise must plan for and and buy enough capacity in advance to maintain service levels during periods of peak demand, but not so much that they are paying for servers that remain unused. It appears few decision-makers we surveyed have managed this balance: most are wasting 40-50% of their server capacity, probably because they must have capacity available just in case it is needed. Considering that 92% of our respondents have to wait longer than a month for new capacity, it's clear why enterprises would rather play it safe and buy more. Just over two-fifths (41%) have to wait three months or longer – this is a significant problem because if new projects or apps have to be launched, a delay of three months could seriously impact a first-to-market advantage.

Administration of the on-prem experience can be another challenge: 68% of enterprises found management overhead for their on-premises environment to be greater than expected. The IT department has to install and manage the experience, including hardware replacements, monitoring, patching, upgrading and capacity management. In public cloud, these aspects are all managed by the provider; in private cloud, the IT department is fully responsible. To meet internal service level agreements on availability and performance, the IT department needs people, processes and tools, which can divert resources from adding value to just 'keeping the lights on.'

Figure 7: Datacenter management overhead – expectations vs. reality

Source: 451 Research custom survey

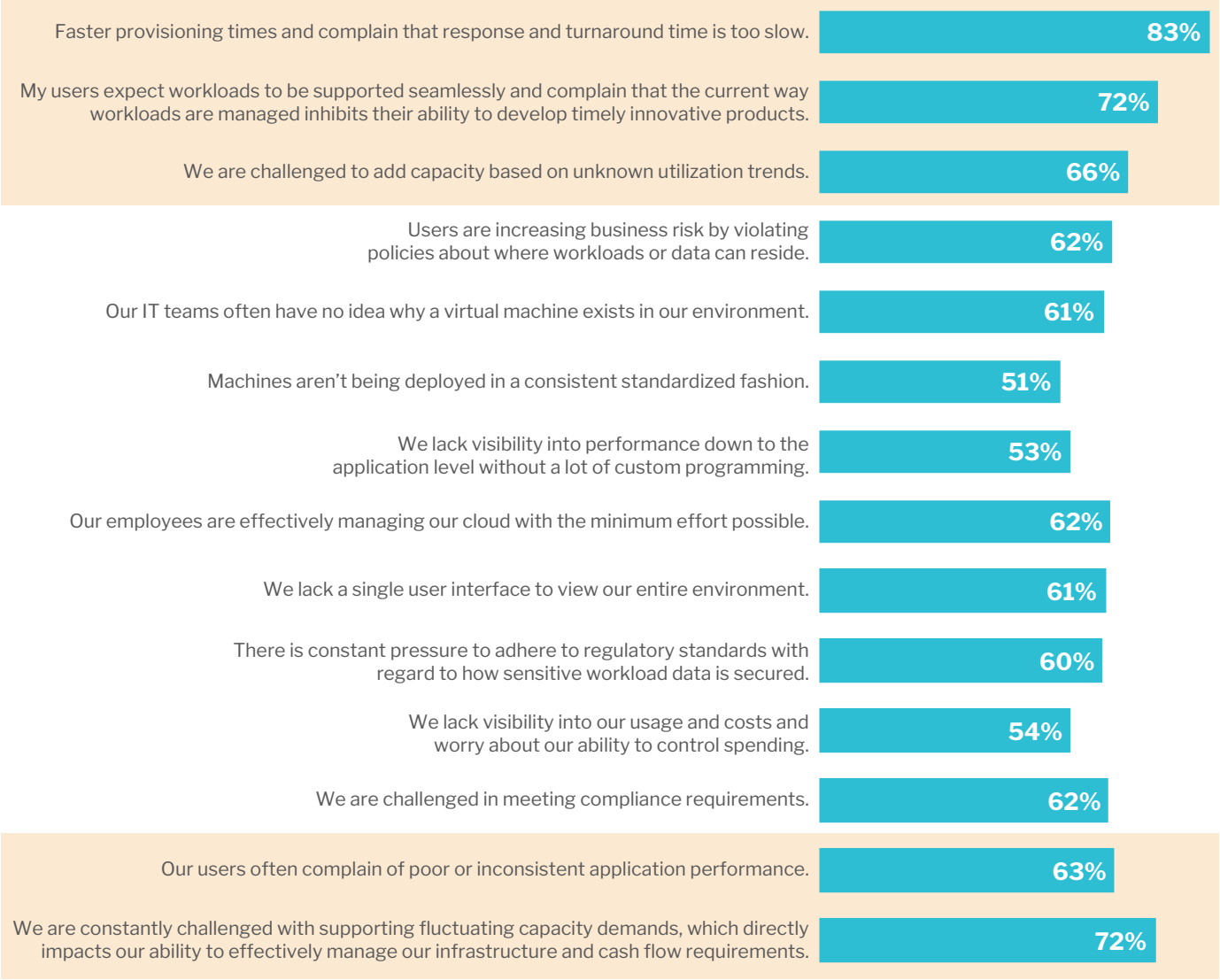


On-Demand Scalability Drives business Value

When we asked enterprises about the challenges, most of their issues arose because of poor scalability: 80% complained provisioning times were slow, 70% said utilization and capacity planning were major headaches, and 67% said supporting fluctuating capacity demands was impacting infrastructure and cash flow management. But also high on the agenda were the pressure to secure sensitive data, to meet compliance standards, and to reduce business risk brought about by user policy violations. It appears CIOs are between a rock and a hard place – they are under pressure to enable flexibility, scalability and agility to improve provisioning times, performance and innovation, but they are also on the hook to secure and protect data. Public cloud can deliver the former, while private is perhaps best for delivering the latter – but enterprises are demanding both.

Figure 8: Most challenges have to do with scalability

Source: 451 Research custom survey



Ironically, public cloud deployments don't necessarily resolve the capacity planning burden either. A range of hyperscalers offer reserved instances, which allows buyers to commit to or pay up front for a resource to obtain a cheaper consumption-based price. Nearly three-quarters (71%) of enterprises find that the time required to administer these reserved instances is greater than expected, which perhaps explains why just 1 in 4 claims to be buying the right proportion of reserved instances to optimize cost. Nearly a quarter (24%) don't bother using reserved instances whatsoever.

Figure 9: Reserved instances more difficult to manage than expected

Source: 451 Research custom survey
Q: Is the time required to administer reserved instances greater or less than you expected?

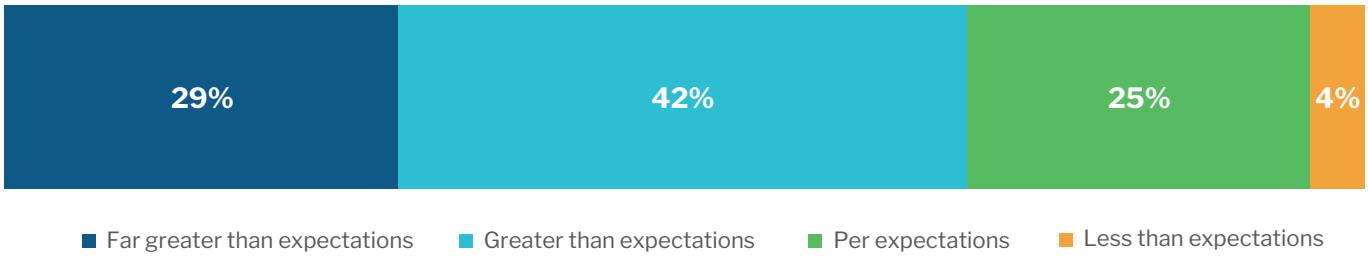
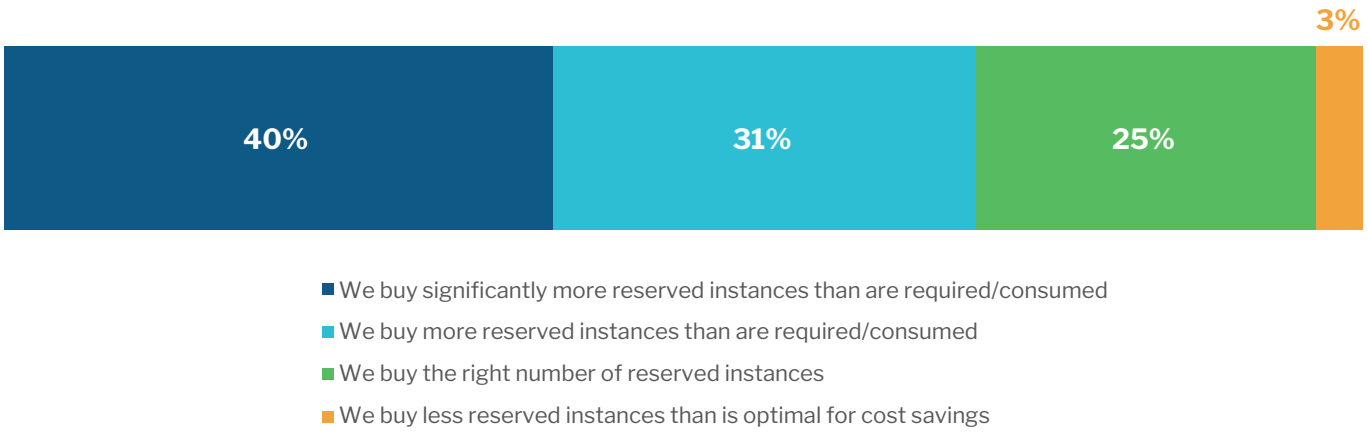


Figure 10: Purchasing the correct quantity of reserved instances proving difficult

Source: 451 Research custom survey



Overcoming the Rock vs. Hard Place Conundrum

In an ideal world, enterprises want to choose their preferred venue for each workload and consume resources in the way that best suits them. They want to be able to grow and shrink capacity while still catering to each workload's specific needs regarding security, compliance and performance. This freedom means the most cost appropriate venue can be chosen for the specific needs of the workload. Hybrid cloud is the first step, but that just enables a choice of venue. The next evolution in cloud is to enable enterprises to choose a venue and consume services in a way that offers best overall value. Much of this value comes from on-demand scalability, which public cloud has in spades, but private cloud traditionally has struggled with. One solution is pay-as-you-go on-premises private cloud deployments that can give the best of both worlds – they enable scalability and agility through on-demand pricing but give enterprises reassurance through choice of location and control of the whole stack. When used in conjunction with a public cloud, enterprises gain access to on-demand hybrid cloud, letting them choose the right venue for the job, with the ability to scale on demand when needed.

Conclusions and Recommendations

Enterprises should embrace public cloud where they can – it is widely adopted, and reality usually meets or exceeds expectations. But don't feel the need to shy away from on-premises deployments if you have concerns regarding data locality, legal jurisdiction, compliance standards or data protection. Regulation and security are ongoing challenges for most of our survey respondents, which is understandable given the devastating impact security breaches can have in terms of fines, lawsuits and damaged reputation. Most enterprises today are pursuing a hybrid strategy, mixing and matching public and on-prem venues depending on each workload's requirements. We predict that adoption of both public and private cloud technologies will increase; the market is not a zero-sum game where one is being positioned to trump another.

One of the issues facing enterprises with hybrid today is the difference in pricing and procurement models. For public cloud, on-demand 'opex' pricing is pretty mainstream, and this on-demand access to huge capacity is one of the key drivers behind public cloud adoption, driving more rapid instantiation of resources, allowing the scaling of applications to suit changing demands, making innovation easier and simplifying entry into new markets. But this is no good for those workloads deemed too sensitive to place on public cloud.

On the other side of the coin, the majority of on-premises deployments today are purchased at a fixed cost, with a generally fixed capacity. There is the opportunity to scale and consume new resources on an ad hoc basis, but this means the capacity has to be pre-provisioned and sit idle in the datacenter. The admin has to make a bet on how much capacity will be needed. Too little and there won't be enough for demand, which will impact performance. Too much and there is a lot of wasted capacity and sunk cost.

Most respondents are struggling to fulfill either requirement. Utilization is poor, but it has to be because timelines for ordering new capacity are so long. But on top of that, most enterprises see capacity planning, meeting performance requirements and delays in spinning up resources as ongoing challenges. Decision-makers are between a rock and a hard place – they need to keep resources secure and compliant, for which on-prem deployments can provide a partial solution, but they also need to allow scalability, which is constrained by the fixed-capacity model, while reducing waste. And part of the excitement about public cloud is the outsourcing of day-to-day management, so IT departments can focus on their primary objective of adding value to the business. On-premises deployments need people, processes and tools to make them suitable for enterprise applications.

One solution is to move on-premises or private cloud capacity to a variable, on-demand model. This essentially reduces the capacity-planning burden on the enterprise by building some flexibility into the consumption of resources. Users can consume resources in their choice of venue, be it public or private cloud, in an on-demand fashion, allowing scalability and agility, with fewer constraints related to fixed capacity. Furthermore, by offloading some of the administrive burden to a third party, the IT department can focus on meeting the objectives of the business instead of spending time and resources on keeping the infrastructure operational. Enterprises should aspire to the private cloud with a public cloud experience.

Methodology

In 2019, 451 Research surveyed 1,001 enterprise IT decision-makers on their public and private cloud experiences. Respondents to the survey did not know 451 Research was conducting the survey, nor that HPE was the sponsor of the study: 42% of respondents were C-level executives, 33% were IT managers, and 79% of respondents had direct management responsibility for cloud as opposed to just familiarity. Also, 30% of the respondents were from the US, and 5-15% of respondents were from each of the UK, Germany, France, China, India and Australia. Enterprises that responded to the survey ranged from 500 employees to over 100,000 – most had 2,000-5,000 employees. The survey also covered a range of industries, including financial services, manufacturing, technology, professional services, retail, media and healthcare.

Hewlett Packard Enterprise provides a suite of services and solutions to help customers maximize the value of their cloud programs. We agree that the cloud experience is the experience that our customers are looking for, and our approach is to bring that experience to our customers' apps and data, wherever they are. Starting with *HPE Right MIX Advisor*, determine the right environment for each workload. *HPE GreenLake* can help manage your clouds with one experience across multiple clouds, with HPE GreenLake Central. On premises we provide a true IT consumption model, with cloud economics, capacity ahead of demand and simplified IT operations. HPE's CEO announced in June of 2019 that HPE will become an "as a Service" company by 2022, and we are greatly accelerating our investment in making that commitment a reality.

CONTENT PROVIDED BY:

Hewlett Packard Enterprise

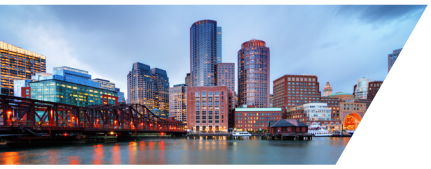
About 451 Research

451 Research is a leading information technology research and advisory company focusing on technology innovation and market disruption. More than 100 analysts and consultants provide essential insight to more than 1,000 client organizations globally through a combination of syndicated research and data, advisory and go-to-market services, and live events. Founded in 2000 and headquartered in New York, 451 Research is a division of The 451 Group.

NEW YORK
Chrysler Building
405 Lexington Avenue, 9th Floor
New York, NY 10174
+1 212 505 3030

SAN FRANCISCO
505 Montgomery Street,
Suite 1052
San Francisco, CA 94111
+1 212 505 3030

LONDON
Paxton House
30, Artillery Lane
London, E1 7LS, UK
+44 (0) 203 929 5700



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

451 Research®