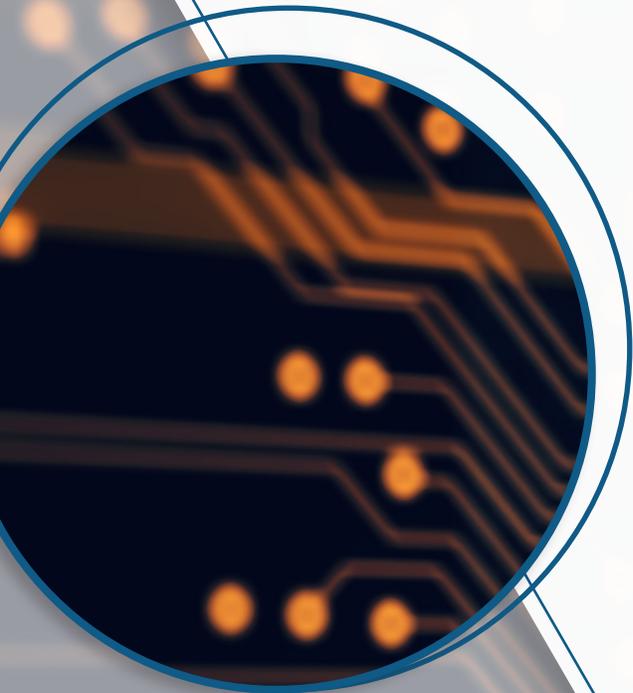




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PATHFINDER REPORT

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# Beyond the Datacenter

Greater Than the Sum of Its Parts

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# About this paper

A Pathfinder paper navigates decision-makers through the issues surrounding a specific technology or business case, explores the business value of adoption, and recommends the range of considerations and concrete next steps in the decision-making process.

## ABOUT THE AUTHOR



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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.

## Key Findings

- Extending the datacenter into public cloud gives enterprises the opportunity to maximize the efficiency and utilization of their IT estates to optimize costs with the reassurance of full stack control, while having the flexibility to scale instantly due to unexpected spikes in demand.
- Through hybrid cloud, new markets, regions and customers can be rapidly accessed during times of growth, while efficiency gains can be unlocked during more challenging periods.
- Most enterprises today are choosing to use public cloud infrastructure alongside on-premises resources, to enable workload flexibility. Scalability is a primary driver of public cloud, but concerns about security and spiraling costs affect its adoption.
- On-premises cloud implementation can be cheaper than public cloud, but it must be operated efficiently and at a high level of utilization. Taking advantage of both on-premises and public cloud environments can help drive costs lower.
- A unified experience – from datacenter to cloud – is vital for timely management of changing business requirements. The value of a unified experience is greater than the sum of the clouds it supports.

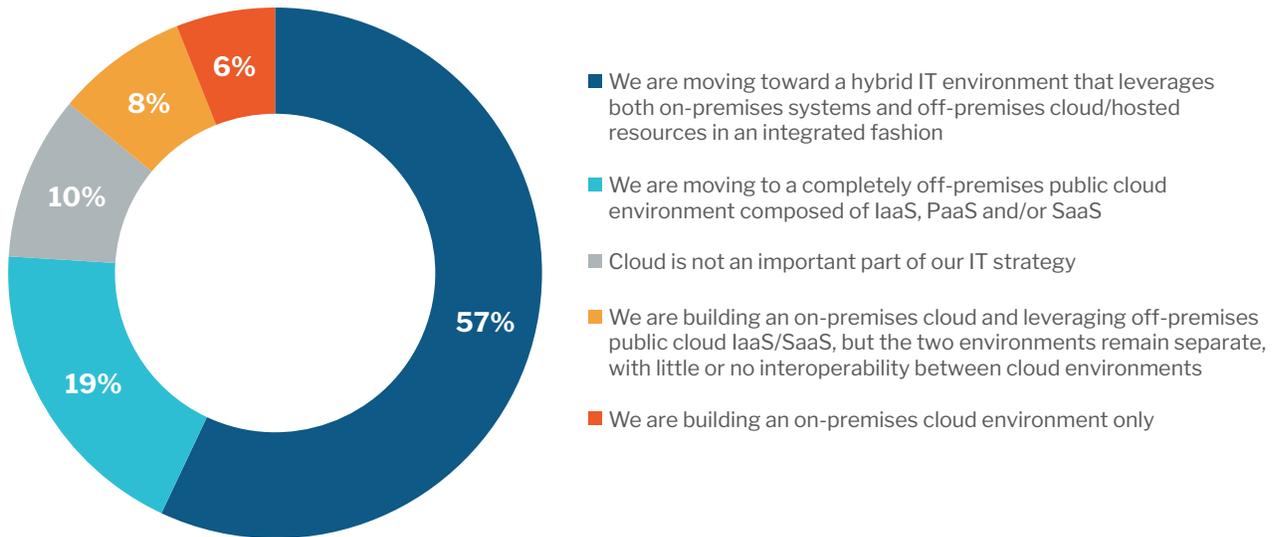
## Not the Ultimate Destination

A decade ago, public cloud was being touted as the ultimate destination for workloads. Cloud providers, commentators and the media were claiming that public cloud would become the de facto standard infrastructure. Yet 10 years later, things are far from that simple. In fact very few enterprises today are choosing to use only a public cloud environment – just 19%, according to a survey of 451 Research’s Voice of the Enterprise (VotE) commentator network (see Figure 1).

But the public cloud idealists weren’t totally wrong – most enterprises today are choosing to mix and match public and on-premises environments, picking the best environment for every workload. Furthermore, many enterprises are opting to use public cloud as an extension to their own datacenters, so the mainstay of dedicated servers and resources can be supplemented with external third-party providers when they are needed.

## Figure 1: Overall IT Strategy

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting and Managed Services, Workloads and Key Projects 2019  
Q. Which of the following best describes your organization's overall IT approach and strategy? (n=595)



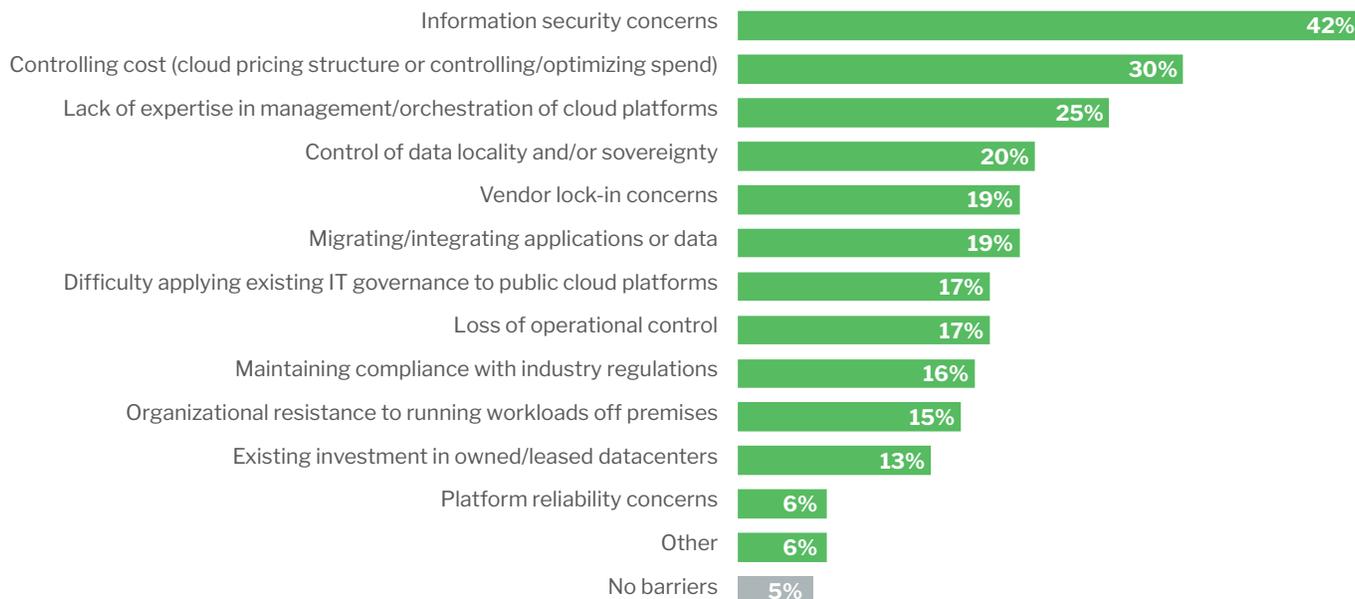
So why didn't the mass exodus to public cloud take place? In a nutshell, people like to know where their applications and data are, so they are fully in control of their operation, security and performance. Public cloud has many benefits in terms of scalability and outsourcing of infrastructure management, but the downside is that the enterprise no longer has control or access to the datacenter – specifically the physical infrastructure, operating systems or middleware.

When it comes to their applications, CIOs are often concerned about security, data regulation and compliance, and many feel they can't afford to be in the dark about any aspect of their IT estate. In fact, 42% of 451 Research VotE commentators rate information security as their top barrier to cloud adoption, with control of data locality and compliance also ranking highly, identified as a barrier by 20% and 16%, respectively (see Figure 2). With dedicated on-premises infrastructure, the CISO and CIO have full control of and responsibility for the entire stack. And while the skills to manage on-premises infrastructure are often already in-house, many enterprises are struggling to find effective public cloud management skills – 25% of enterprise decision-makers see this lack of expertise as a barrier to adoption.

But it's not just control of the IT estate that is on the minds of CIOs. Although the public cloud is highly flexible and scalable, the downside is that consumption can rapidly get out of control – with few upper limits on consumption, it's easy for spending to go unchecked or be mismanaged. With public cloud, consumption is billed in arrears – many enterprises don't know they have a huge bill to pay until the invoice arrives, at which point it's too late. When the enterprise owns the infrastructure, there is a fixed limit to how much can be consumed, and the enterprise is in a better position to prioritize and optimize capacity requirements to prevent spiraling costs.

## Figure 2: Barriers to Broader Public Cloud Adoption

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting and Managed Services, Workloads and Key Projects 2019  
 Q. Which of the following challenges – if any – are the greatest barriers to broader implementation of IaaS/public cloud for production applications at your organization? (n=379)



451 Research's Cloud Price Index shows that on-premises infrastructure can be a cost-effective option compared with public cloud, but it comes down to two key factors. First, how well utilized is the datacenter? A datacenter that is being used all the time across the business has lower unit costs than one that is barely used, simply because there is less waste. Second, how well managed is the datacenter? If it's well managed with automation to reduce labor intensity, then it makes sense that unit costs for resources will be lower.

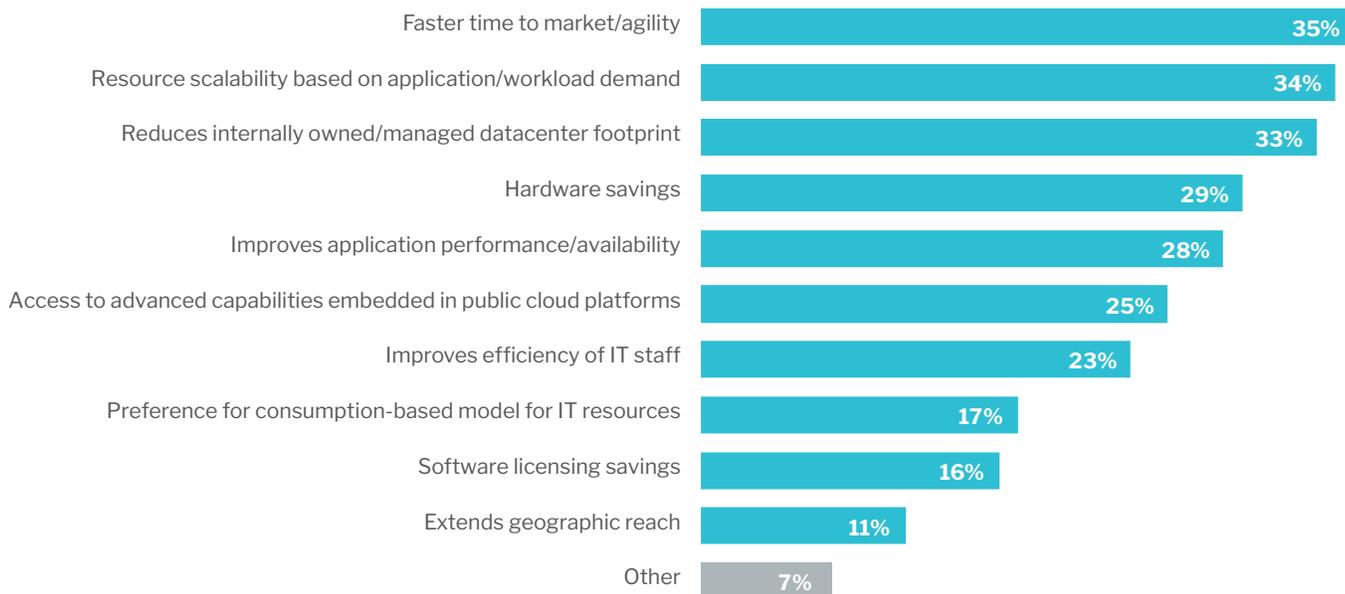
As you can see, there are a lot of reasons why enterprises might choose to keep their workloads in their own datacenters. But public cloud is still a crucial part of most enterprises' IT strategy. So why do enterprises use public cloud at all? The biggest driver is the ability to scale as and when required – cloud elasticity. Datacenters must be capacity-planned and managed. Enterprises need to build out capacity based on their expected future requirements. But the reality is that no one knows what the future will bring. In 2019, who would have predicted that in a few short months, much of the world would be in lockdown? And who, then, would have guessed that demand for computing resources would explode as a result of the global pandemic?

Public cloud enables rapid scalability far beyond what an enterprise could reasonably predict or plan for. Indeed, 35% of enterprises see faster time to market as the key benefit of public cloud, as a result of being able to consume resources without needing to procure, deliver and install capacity. In a similar vein, 34% of enterprises see scaling to address demand requirements as a key benefit for public cloud adoption, while 11% see this rapid scalability as enabling a greater geographic reach.

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### Figure 3: Business Drivers for Public Cloud

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting and Managed Services, Workloads and Key Projects 2019  
Q. What are the key factors needed to build a business case for IaaS/public cloud investments at your organization? (n=364)



This rapid scalability is tough to emulate efficiently in the on-premises world. Yes, enterprises can have an abundance of spare capacity, but when this capacity isn't used, it's effectively a wasted resource. Meanwhile, too little capacity can be extremely detrimental, especially when experiencing demand spikes from a growing application.

# Expanding Beyond Four Walls

To increase both utilization and labor efficiency, many enterprises opt to use their own datacenter as their first-choice location for workloads. This means the IT department can focus on capacity planning for all the needs of the business, and can automate and effectively manage resources. And the CISO can ensure information security and compliance across the whole stack.

The public cloud can then be used to extend the datacenter and access capacity on-demand when needs arise: for example, to scale an application due to unprecedented demand, to rapidly expand into a new geography, to acquire new capacity due to hardware shortages or delays, to aid datacenter relocation, or to provide resiliency or business continuity in the event of an unexpected event. These benefits aren't just resolutions for technical challenges – they can actively grow and protect the business. Rapid access to resources can help projects meet deadlines, can support revenue growth by providing a better application experience, can allow faster entry into markets to derive quicker time to value from new opportunities, and can keep operations running during local or global emergencies. The ability to seize opportunities and protect against threats as they arise is the big advantage of hybrid cloud.

Figure 4: Hybrid Cloud: Addressing Technical and Business Challenges

Source: 451 Research

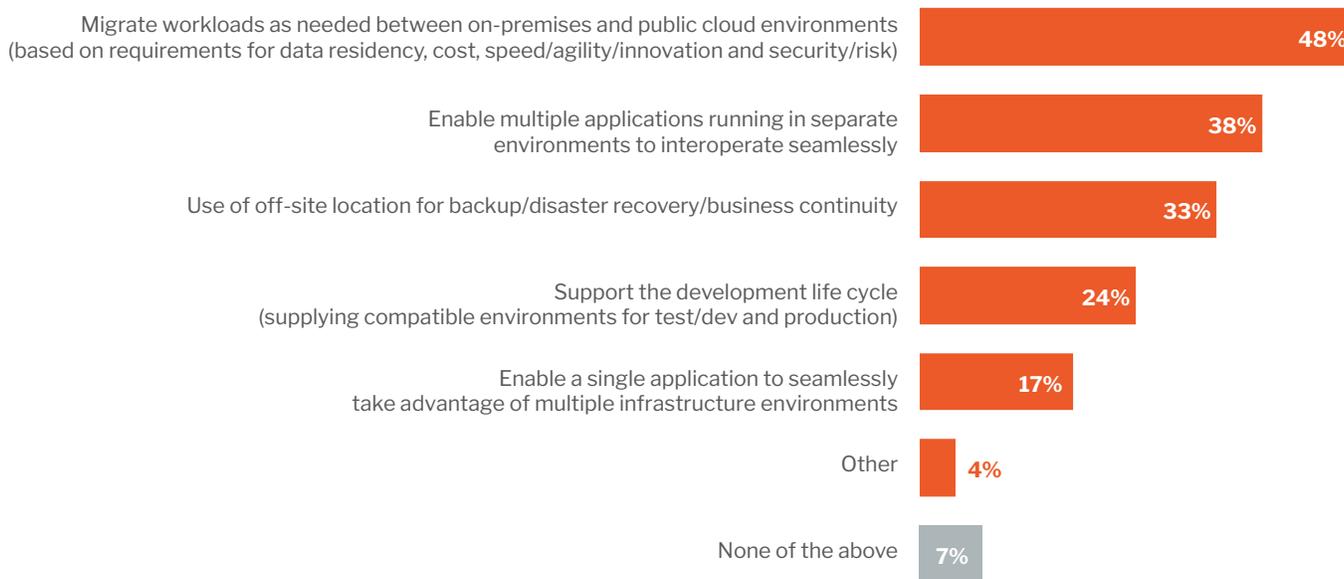
CHALLENGE	TECHNICAL ADVANTAGE	POTENTIAL BUSINESS ADVANTAGE
Poor application performance	Dynamically provide applications with more resources	Revenue growth, better productivity
Addressing new regional opportunity	Rapidly deploy applications in new regions	Quicker time to value, first-to-market advantage
Disaster recovery, business continuity, restricted working conditions	Scale applications to handle unexpected demands	Better productivity, continued remote operations
Lack of resources to meet project deadline	Provide more resources to facilitate deadline	Quicker time to value
Post-M&A integration	Share capabilities across organizations, provide rapid access to resources	Better productivity, quicker time to value
Seasonal demand for capacity	Scale applications up and down to meet demand	Revenue growth, reduced sunk costs/ unused capacity
Need for test/dev/UAT/training environments	Scale resources to meet demand, test environment protected from production environment	Revenue growth, higher productivity, quicker time to value, better security

In 451 Research's *VotE: Digital Pulse, Coronavirus Flash Survey* in March 2020, 38% of respondents stated that remote working policies would likely remain in place after the pandemic, with 18% stating that cloud expenditure had already increased as a result of the outbreak. Few would argue that more flexible access to cloud-based resources from home hasn't lessened the impact of restrictions to businesses around the world. Organizations that are able to seamlessly and rapidly integrate their datacenter with the public cloud are better positioned to immediately respond to situations like COVID-19 and realign their infrastructure needs once the emergency subsides.

Our VotE research has found that 48% of enterprise decision-makers value using multiple clouds because of the flexibility it affords them in being able to choose which venue is most appropriate for specific requirements. For example, 33% of enterprises are using public cloud in their disaster recovery plans, as an off-site location for backup and recovery. Again, in the post-COVID-19 era, enterprises will increasingly want to be reassured they are protected in the event of the unexpected.

### Figure 5: Top Use Cases for Hybrid Cloud/Multicloud Environments

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting and Managed Services, Workloads and Key Projects 2019  
 Q. Which of the following use cases are most important to your organization's use of hybrid/multicloud environments?  
 (n=336)



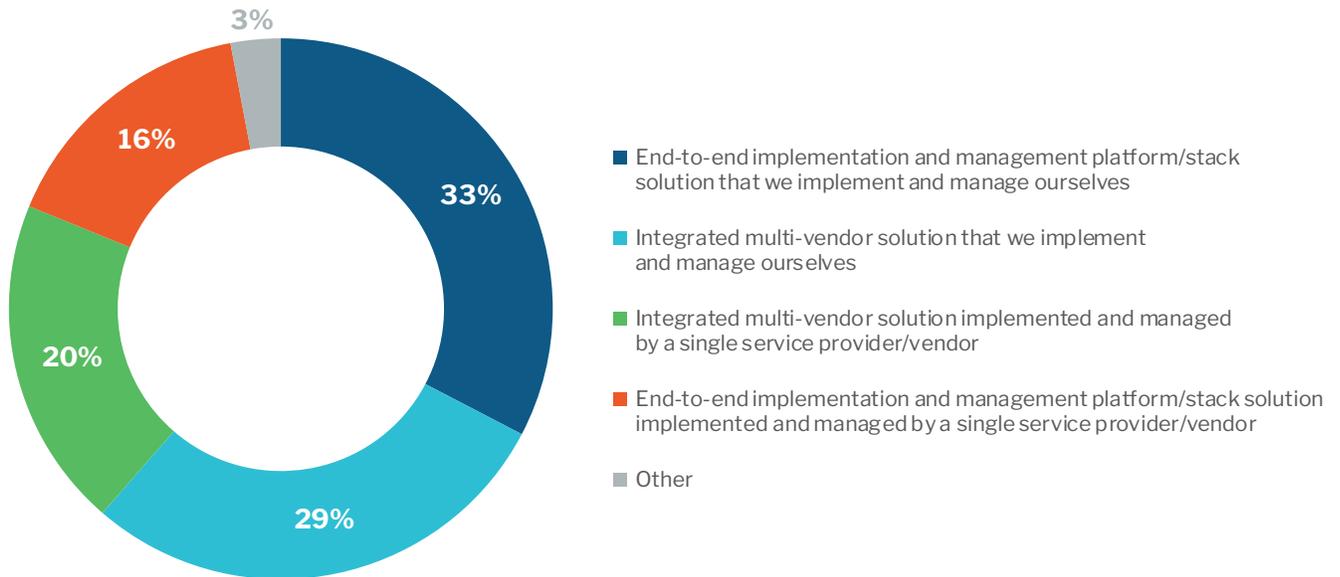
Of course interoperability is a key requirement in being able to take advantage of multiple cloud environments. Having access to both private and public resources is a first step in achieving flexibility, but if workloads aren't able to move back and forth or scale across these different venues, then it might be more hassle than it's worth.

Enterprises need a single experience so they can use one common interface to manage their own datacenter resources, but also to expand into the public cloud quickly and easily when required. This is the benefit of convenience here, but this convenience translates into a quicker response to changes, a reduced chance of mistakes, and time saved in manually configuring and moving workloads across venues. With a single user interface, operators don't need multiple skillsets and can leverage existing skills. In fact a 2019 451 Research Cloud Price Index hybrid cloud study found that enterprises that were using a unified hybrid approach reported lower costs and a better overall experience for employees and customers.

This explains why many enterprises – 33% in our research – say they would prefer to manage a unified end-to-end platform implementation across their hybrid and multicloud environments. The unified experience elevates the IT estate from just being disparate clouds. The unified cloud is greater than the sum of its parts.

### Figure 6: Top Sourcing Options for Hybrid Cloud/Multicloud

Source: 451 Research's Voice of the Enterprise: Cloud, Hosting and Managed Services, Workloads and Key Projects 2019  
Q. Which of the following best describes how your organization would prefer to source hybrid/multi-cloud implementation and management solutions? (n=138)



# Conclusions

On-premises cloud resources give enterprises control of the whole stack, which translates into reassurance that data and applications are secure, compliant, performant and available. Furthermore, when datacenters are efficiently managed and capacity-planned, cost-savings over public cloud can be achieved. As a result, it makes sense for many enterprises to focus on an on-premises strategy as their primary environment. But the public cloud provides huge flexibility and scalability, which is tough to achieve in a dedicated, physical environment. Even with the best planning, the unexpected can – and does – happen, and those in a datacenter may not be as agile as they hope.

Extending the datacenter into public cloud provides enterprises with capacity when they need it. When times are good, this allows enterprises to better (and more quickly) capture revenue from new product launches, win new customers through a better user experience, and ease expansion into new geographies. When times are challenging, the cloud allows businesses to continue to operate through application resiliency and rapid provisioning for remote working. But to really take advantage of multiple environments, enterprises need a single experience that allows engineers to quickly and reliably respond to changing business objectives using an interface they are comfortable and confident with.



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