



2019 Edition

NUTANIX ENTERPRISE CLOUD INDEX

Application Requirements to Drive
Hybrid Cloud Growth

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The Nutanix Enterprise Cloud Index 2019



of enterprises continue to rank **hybrid cloud** as the "ideal" IT operating model



of respondents are migrating applications away from the public cloud back to **on-premises infrastructures**

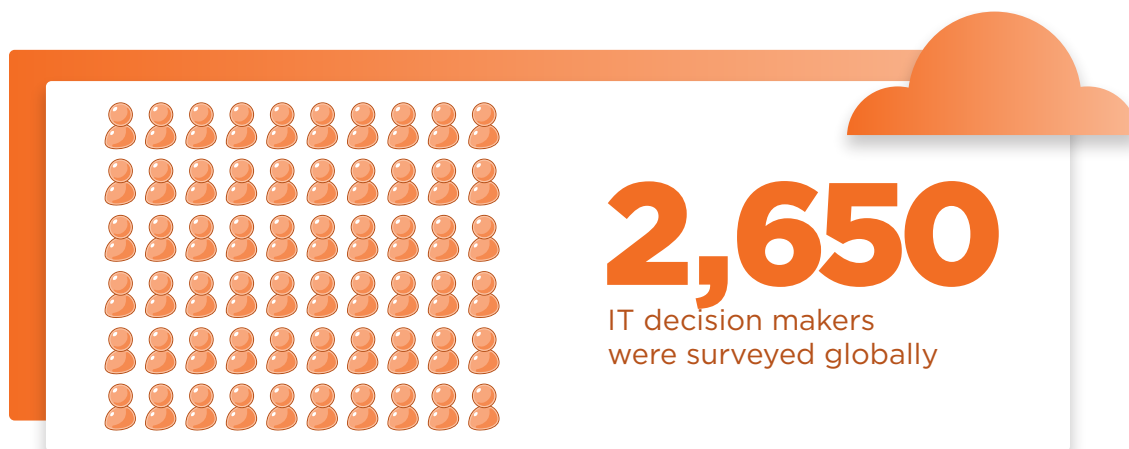


of respondents said **security** is the biggest factor impacting enterprises' future cloud strategies

Background and Research Goals

For the second consecutive year, Vanson Bourne has conducted research on behalf of Nutanix to learn about the state of global enterprise cloud deployments and adoption plans. In mid-2019, the researcher surveyed **2,650** IT decision makers around the world about where they're running their business applications today, where they plan to run them in the future, what their cloud challenges are, and how their cloud initiatives stack up against other IT projects and priorities.

The 2019 respondent base spanned multiple industries, business sizes, and the following geographies: the Americas; Europe, the Middle East, and Africa (EMEA); and the Asia-Pacific (APJ) region.



Cloud Terminology

This report refers to several different types of cloud environments. Below are the definitions of these cloud types as expressed to respondents during the data-gathering phase of this research and as used throughout this report.

- **PRIVATE CLOUD:** A cloud-enabled IT infrastructure running in a corporate datacenter or privately hosted by a third-party service provider.
- **PUBLIC CLOUD:** Infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS) offerings from third-party cloud service providers. Examples of these offerings are Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform.
- **HYBRID CLOUD:** A combination of private and public cloud environments, with some level of interoperability between them.
- **MULTICLOUD:** An IT environment that uses multiple public cloud services, with some level of interoperability between them.
- **TRADITIONAL DATACENTER:** Centralized location housing computing, storage, and networking equipment for the purpose of running applications and for collecting, storing, and processing large amounts of data, without the benefit of cloud technology.



The ‘pro’ of the public cloud is that we don’t have to worry about upgrades. The ‘con’ is that when new versions come out, we have to train people on new versions ourselves.

– Faisal Jawaid, IT Manager, Telus Spark, Calgary, Alberta, Canada

'Cloud First' Rules: But Which Cloud?

Summary: Hybrid Cloud Remains the IT Operating Model Frontrunner

Enterprises plan to aggressively shift investment to hybrid cloud architectures, though their short-term cloud deployment plans have hit a significant speed bump during the past year. Nearly three-fourths of 2019 respondents reported that they're moving some number of applications from the public cloud back on-premises, and, correspondingly, the use of traditional, non-cloud-enabled datacenters actually increased slightly instead of dropping by more than 20%, as expected.

Still, 2019 survey respondents reported steady and substantial hybrid deployment plans over the next five years. In addition, the vast majority of 2019 survey respondents **(85%)** selected hybrid cloud as their ideal IT operating model, and the largest percentage of respondents **(49%)** cited hybrid cloud as the IT operating meeting all of their needs.

Hybrid clouds will see the most growth in a 5 year timeframe



selected
hybrid cloud
as their **ideal**
IT operating
model



cited hybrid
cloud as the
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meeting all
their needs

Why the persistent preference for the hybrid option? The research indicates a few reasons.



SECURITY

Security is driving deployment decisions, according to research findings, and respondents overwhelmingly chose the hybrid cloud model as the one they believe to be the most secure—even over private clouds and traditional datacenters (see **Key Findings 3 and 4** in the next section).



FLEXIBILITY

The findings also make it clear that enterprise IT teams highly value having the flexibility to choose the optimum IT infrastructure for each of their business applications on a dynamic basis, with **61%** of respondents saying that application mobility across clouds and cloud types is “essential.” Cherry-picking infrastructure in this way to match the right resources to each workload as needs change results in a growing mixture of on- and off-prem cloud resources, a.k.a. the hybrid cloud.



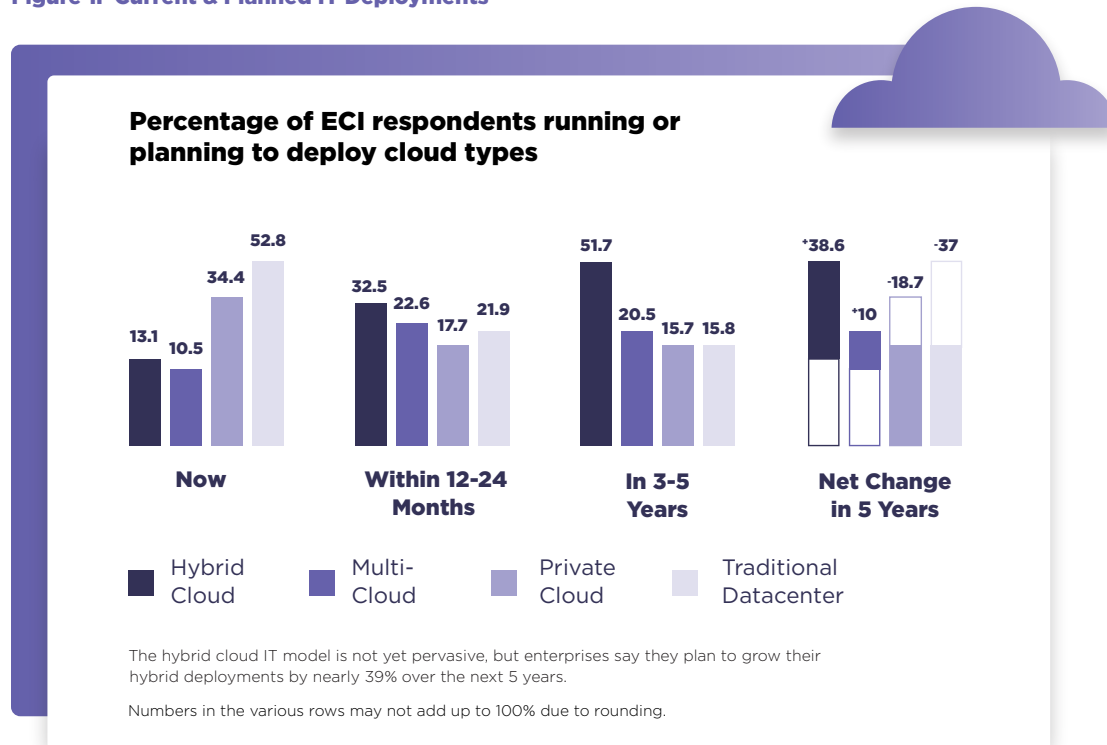
EXPANDING CLOUD OPTIONS

The proverbial “cloud” is no longer the simple notion it once was. There was a time when IT made a fairly straightforward decision whether to run an application in its on-premises datacenter or in the public cloud. However, with the growth of additional cloud options, such as managed on premises private cloud services, decision-making has become much more nuanced. Instead of facing a binary cloud-or-no-cloud situation, IT departments today more often are deciding on which cloud(s) to use, often on an application-by-application basis.

These are among the reasons that the five-year outlook shows the hybrid cloud IT model flourishing while legacy datacenters begin to disappear and the exclusive use of private and public clouds wanes over time, too (**Figure 1**).



Figure 1. Current & Planned IT Deployments



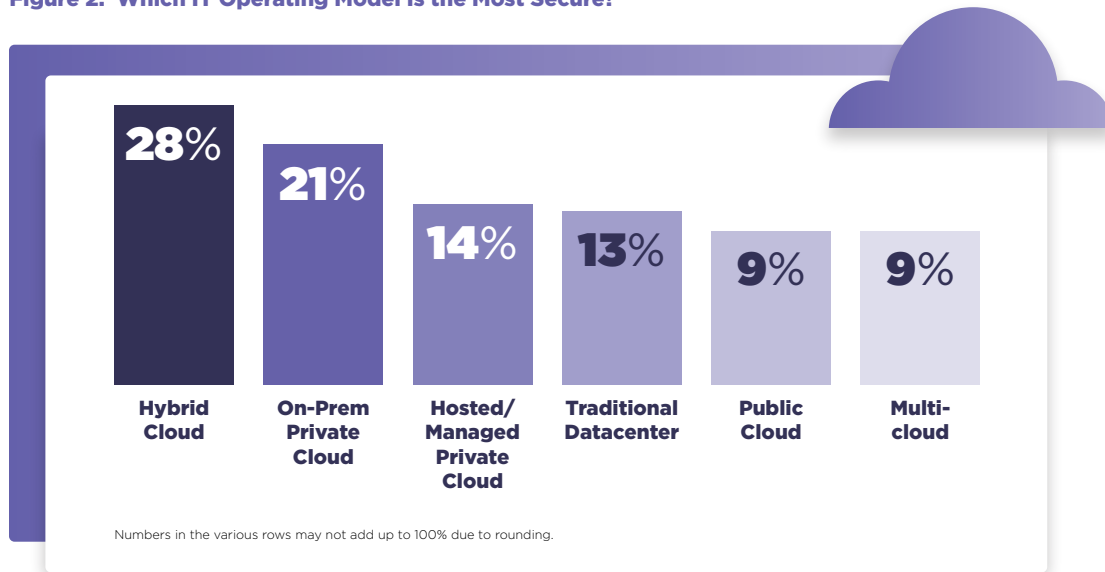
Key Findings

The research illustrates the following key findings:

- 1 Enterprises continue to rank hybrid cloud as the “ideal” IT operating model.** About **85%** of respondents agreed or strongly agreed with the statement that “hybrid cloud is the ideal IT model for my organization.” Among the reasons indicated are having the flexibility to match the right cloud to each application and use case (cited by **62%** as a primary benefit of hybrid cloud) and perceived high levels of security associated with this model (see finding #4). The **85%** number is down from 91% last year, though hybrid remains far and away the top contender as the ideal model. One reason for the slight dip could be the nascent state of tools for managing hybrid environments: more than two-thirds (**69%**) of respondents agreed or strongly agreed that while their organizations would benefit from a hybrid cloud, their current IT vendors didn’t provide the right solutions for building and managing a hybrid environment.
- 2 Some apps are migrating away from the public cloud back to on-premises infrastructures.** Nearly three-fourths (**73%**) of respondents reported that they are moving some applications off the public cloud and back on prem, and **22%** of those users are moving five or more applications. These moves underscore, in part, enterprises’ need for hybrid cloud’s flexibility in allowing them to adapt their infrastructures based on a number of variables—including cost, performance, and security/compliance—that can change over time.
- 3 Security is the biggest factor impacting enterprises’ future cloud strategies.** Well over half of 2019 respondents (**60%**) said that the state of intercloud security would have the biggest influence on their cloud deployment plans going forward. Similarly, data security and compliance represented the top variable in determining where an enterprise runs a given workload (**26%**), followed by cost, which placed a distant second with **14%** of respondents citing it as the top factor.
- 4 IT professionals deem the hybrid cloud to be the most secure of all the IT operating models.** More than a quarter of respondents (**28%**) picked the hybrid model as the most secure—substantially surpassing those who chose a fully private cloud/on-prem model and more than twice as many as those who chose traditional (non-cloud-enabled) private datacenters (**Figure 2**).



Figure 2. Which IT Operating Model Is the Most Secure?



- 5 Enterprises' anticipated short-term cloud deployment trajectory for the past year fell short.** *2018 Enterprise Cloud Index* respondents predicted that their hybrid and multicloud use would each increase by about 8% during the past year. However, overall cloud usage actually dropped slightly. At the same time, use of traditional datacenters gained ground in 2019, increasing by **12.5%** overall, despite respondent predictions a year ago that usage would actually drop by 20.5% in 12 months' time.
- 6 Nearly a quarter (23.5%) of respondents currently aren't running any cloud technology today.** However, respondents' reported plans indicate that in one year's time, the number of enterprises with no cloud deployments will plummet to **6.5%** and in two years' time will drop by more than half to **3%**. Regionally, the Americas reported a slightly lower incidence of non-cloud use (**21%**) compared to EMEA (**25%**) and APJ (**24%**).

There's a need for both public and private clouds. Some industries' security regulations require on-premises operations, so you have to have a private option.

- Ryan Arnold, IT Director, Acumen, LLC, Mesa, AZ

One Size Cloud Doesn't Fit All

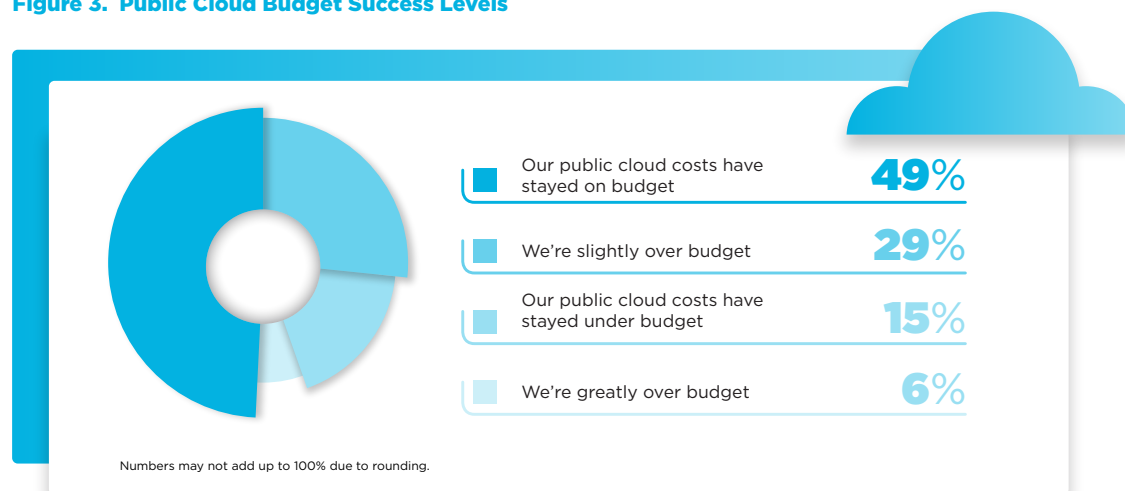
As indicated in the Summary, creating and executing a cloud strategy has become a far more nuanced job than it once was. At one time, the primary value proposition associated with the cloud was substantial cost savings, derived from pushing apps into the cloud and avoiding upfront capex and internal opex. It was the promise of those savings that initially drove IT teams toward public cloud computing.

With a few years of cloud experience under their belts, however, enterprises seem to be discovering that while there are many good reasons for using public cloud services, saving money alone may not be the most important one or even a guaranteed one. And they're learning that one size cloud doesn't fit all use cases. Current thinking based on years of cloud experience concludes that applications with unpredictable usage are best suited to the public cloud, while more predictable workloads can run on-premises at a lower cost than a public cloud solution¹. Savings are also incumbent on businesses' ability to match each application to the appropriate cloud service and pricing tier and to remain diligent about regularly reviewing service plans and fees, which change frequently, and adjusting plans and pricing tiers accordingly.

That diligence may have been a bit more than most enterprises initially bargained for: while nearly two thirds of respondents (**64%**) report staying on or under budget with their public cloud services, more than a third (**35%**) reported being slightly or significantly over budget (**Figure 3**). This figure is line with budget data gathered for the *2018 Enterprise Cloud Index*, as well as with research data calculated by other sources over the past several years. As such, it remains a cause for concern that is likely driving reevaluation of workload distribution.



Figure 3. Public Cloud Budget Success Levels



Budgets and benefits



reported staying **on or under** budget with their public cloud services



said the primary benefit of the hybrid cloud was **Interoperability** between cloud types

¹*The ROI Story: A Guide for IT Leaders*

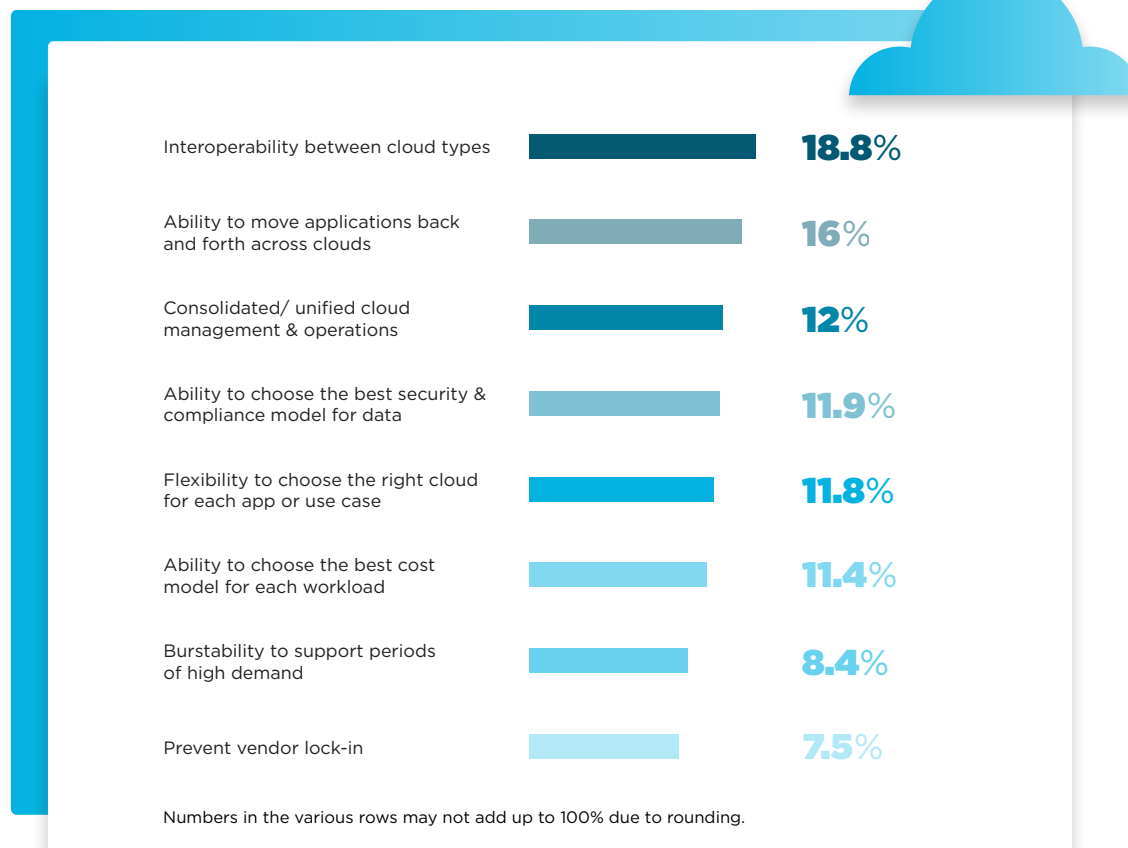
Public cloud seems most the cost-effective for DevOps and testing. But the biggest problem there is that developers might spin up a cloud server, then abandon it and leave it up, and it remains a hidden cost.

- Brad Meyer, Systems Administrator, Middle Tennessee State University, Murfreesboro, TN

Those reevaluations are likely to indicate, for example, that new or untested applications often do better initially by taking advantage of the public cloud's resource elasticity to shrink or expand as the application's behavior and usage requirements unfold. But over time, those new and unpredictable workloads can become more stable, meriting a shift back on prem or to an alternate cloud service with different pricing, egress fees, and subscription terms. It follows, then, that *Enterprise Cloud Index* respondents continue to rank application mobility, cloud interoperability, and the unification of cloud management and operations across disparate cloud environments as highly desirable. Nearly a fifth chose "interoperability between cloud types," for example, as the top benefit of using a hybrid cloud. Application mobility and unified management/operations ranked second and third, respectively (**Figure 4**). By contrast, the public cloud still seems to be largely a cost-savings play. Lower total cost of ownership came out on top as the primary benefit of the public cloud option.



Figure 4. Primary Benefits of the Hybrid Cloud

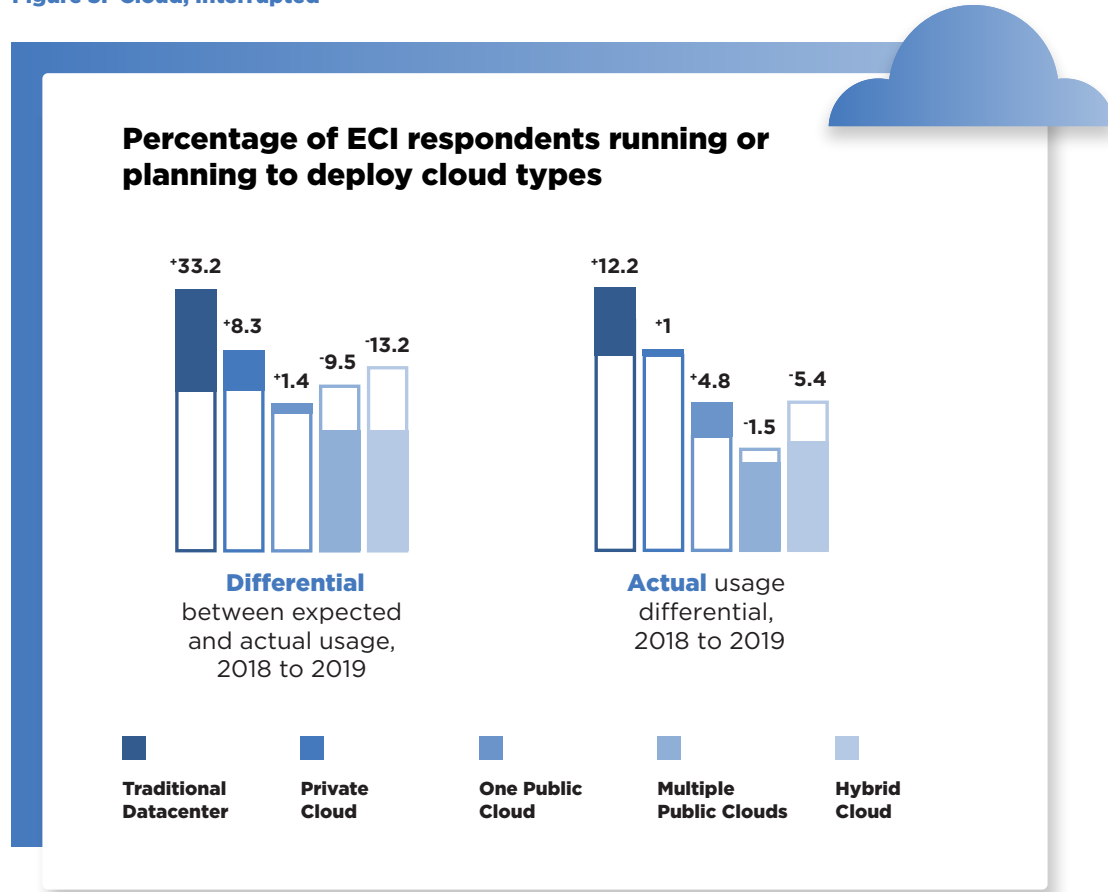


Trough of Disillusionment?

The flexibility and fluidity that respondents cite as the key benefits they hope for with hybrid cloud are in a fairly nascent stage today. This state of affairs, along with nearly a third of respondents (**32%**) saying they lack in-house hybrid cloud skills, could have thwarted some 2018 hybrid plans. The discovery that these hoped-for advantages weren't fully available could account for the discrepancy between 2018 respondents' stated cloud plans for the coming year and 2019 respondents' reported deployments, as discussed in key finding #4. Enterprise IT professionals surveyed in 2018 saw themselves reducing traditional datacenter use by half in favor of, largely, hybrid cloud and multicloud deployments in the 2018-2019 timeframe. However, as **Figure 5** shows, datacenter use actually increased by **12.2%**, while hybrid cloud use, rather than increasing, fell by about **5.4%** during the past year.



Figure 5. Cloud, Interrupted



While longer-term plans for hybrid cloud deployments overall remain aggressive, there appears to have been a short-term regrouping effort on the part of enterprises. Surprisingly, the IT model that saw the most action during the past year was the traditional, non-cloud-enabled datacenter. Respondents had predicted that their datacenter usage would drop this past year by about 20.5% while their use of hybrid and multiple public clouds would accelerate. Instead, datacenter use actually increased by 12.2%. 2018 respondents also predicted their hybrid cloud use would increase by about 7.5%; instead, it fell by 5.4%.

The State of Affairs



reported a
lack of **in-
house** hybrid
cloud skills



reported
increasing
datacenter
deployments

Enterprise IT has likely entered the “trough of disillusionment” phase with cloud computing. While more than a third of respondents (**37%**) using cloud computing said the services they use are meeting all their expectations (a number that’s significantly higher in the Americas at **45%**), initial high hopes for the public cloud as solving all their IT requirements have been tempered. Most have evolved into the realization that the hybrid model, by allowing the flexibility to match workloads to the best resources and being perceived as the most secure option, is theoretically the right model, but choosing among various cloud types and services and managing them has proven more difficult than expected. As such, companies have likely found themselves ensconced in the so-called “messy middle,” whereby they have needed to punt and find workarounds for the immaturity of cloud interoperability and mobility. As a result, the “devil you know” – in this case, the on-prem, non-cloud-enabled datacenter—appears to have gained favor as at least a short-term solution to these issues.

There’s evidence that turning to the traditional datacenter is a temporary phenomenon. Nearly half (**49%**) of 2019 respondents said that hybrid cloud was meeting all their needs, compared to just **35%** who said the traditional datacenter fully meets their needs. In addition, enterprises’ 2019 medium-term plans indicate a continued bullishness on cloud adoption: nearly three-quarters of respondents (**71%**) said they’re planning to move both new and existing applications onto a cloud platform in the next three years.

Given the shortage of cybersecurity talent, a public cloud provider that’s likely to have more of those resources on staff might be able to do a better job than an in-house team.

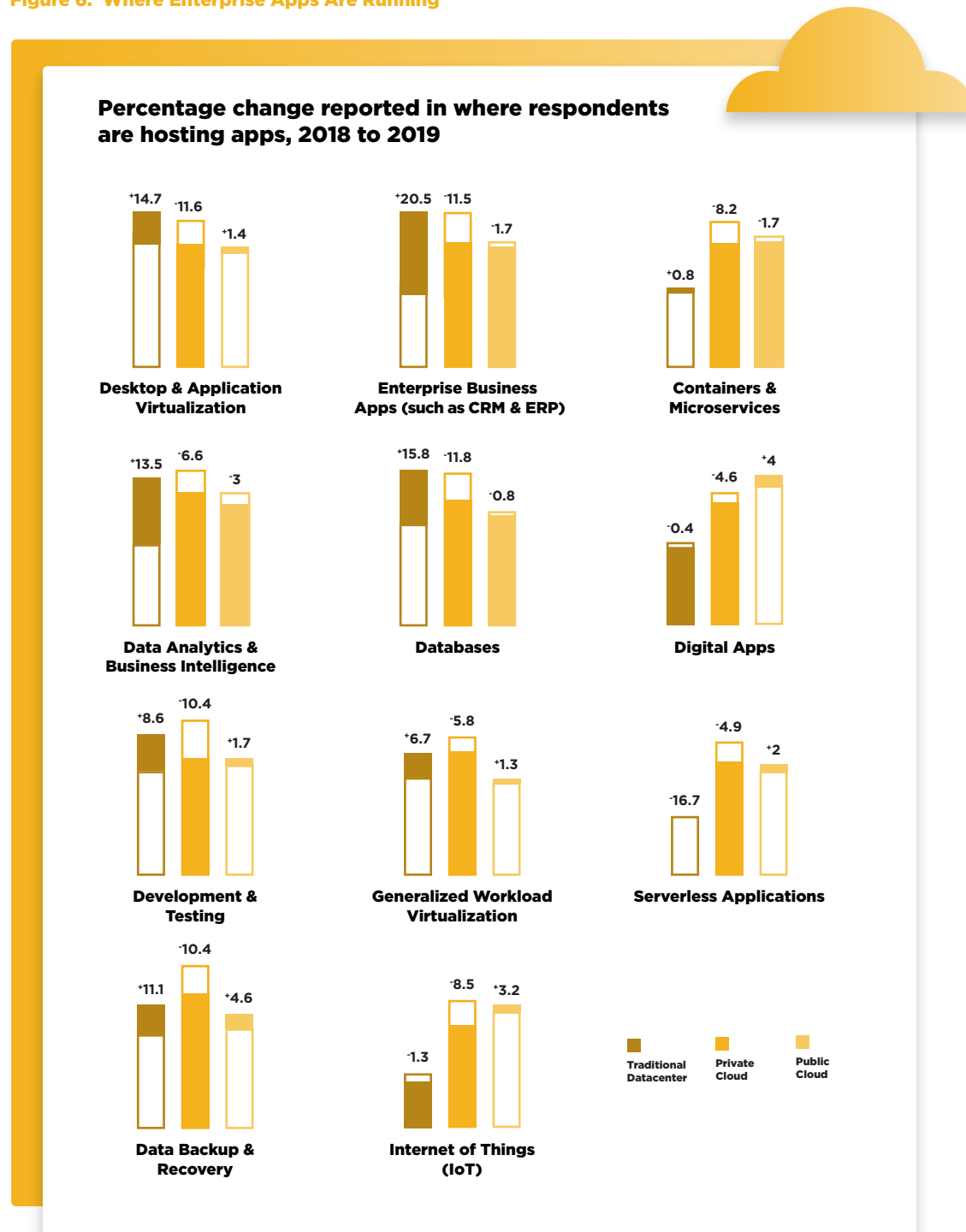
– Ryan Arnold, IT Director, Acumen, LLC, Mesa, AZ

App Trends: What's Running Where?

The surprising short-term shift back to traditional IT infrastructure resources begs a look at just what applications were running where in IT shops in mid-2019 compared with mid-2018. While **37%** of enterprise workloads are running in some type of cloud today (about even with 2018's 36%), 2019 respondents cited fairly large increases in traditional datacenter use. In particular, datacenter usage grew over the past year for the following applications: desktop and application virtualization; traditional run-the-business applications such as customer relationship management (CRM) and enterprise resource planning (ERP); data analytics and business intelligence (BI); databases; development and testing; and data backup and recovery (Figure 6).



Figure 6. Where Enterprise Apps Are Running



What's Influencing Deployments?

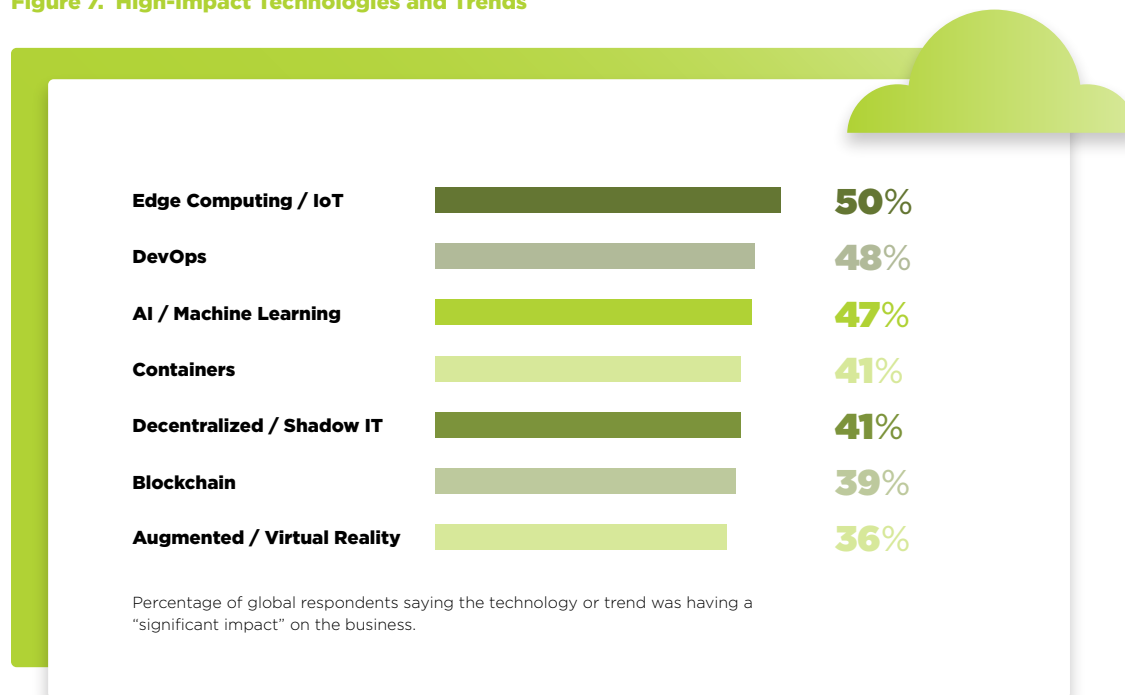
A number of forces and challenges are impacting enterprise cloud strategies and deployments. For example, nearly three-fourths of enterprises surveyed (**72%**) said that digital transformation was the business trend having the biggest impact on its cloud deployments—and digital transformation ranked as the top business priority in the majority of respondents' businesses (**64%**).

As noted earlier, adequate inter-cloud security is the most likely (**60%**) influencing factor on the future of cloud computing for respondents' organizations. Slightly more than half of this year's respondents said the same when it comes to skills availability (53%), and 51% pointed to regulations and policies dictating where data can and can't be stored as affecting what cloud services they're able to use.

From a technology perspective, edge computing and IoT, DevOps, and AI and machine learning ranked highest as having a "significant impact" overall on respondents' businesses (**Figure 7**).



Figure 7. High-Impact Technologies and Trends



The hybrid cloud option is a good one for balancing workloads so that all our eggs are not in one basket.

– Faisal Jawaid, IT Manager, Telus Spark, Calgary, Alberta, Canada

Note that with edge computing/IoT leading the technology impact on respondents' businesses, the laws of physics are playing a greater role in respondents' decision-making than previously. Edge computing reduces latency in situations where instantaneous application response times can serve a number of critical purposes, from saving money to improving process efficiencies to possibly even saving lives. Latency is reduced when data is collected, processed, and analyzed either in the device that collects it or nearby in a local edge computer. That contrasts with more traditional processes of hauling data over a wide-area network to a corporate datacenter, private cloud, or public cloud for processing and analytics, in which the transport delay incurred can render the data stale, skew results, and result in poor decision-making.

It's not surprising, then, that a third or more of respondents listed "Latency" and "Physics" as among the biggest factors influencing the future of cloud computing at their organizations (Figure 8).

A number of forces and challenges

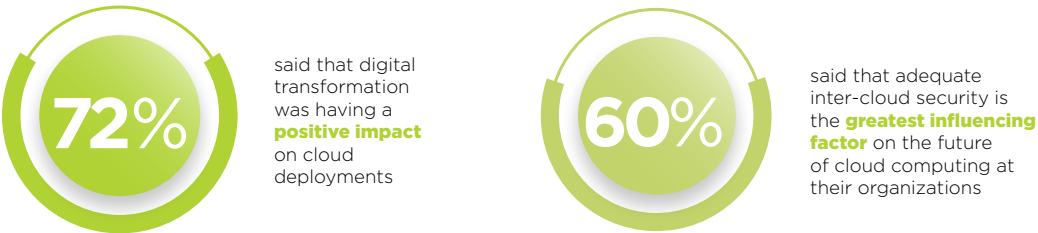
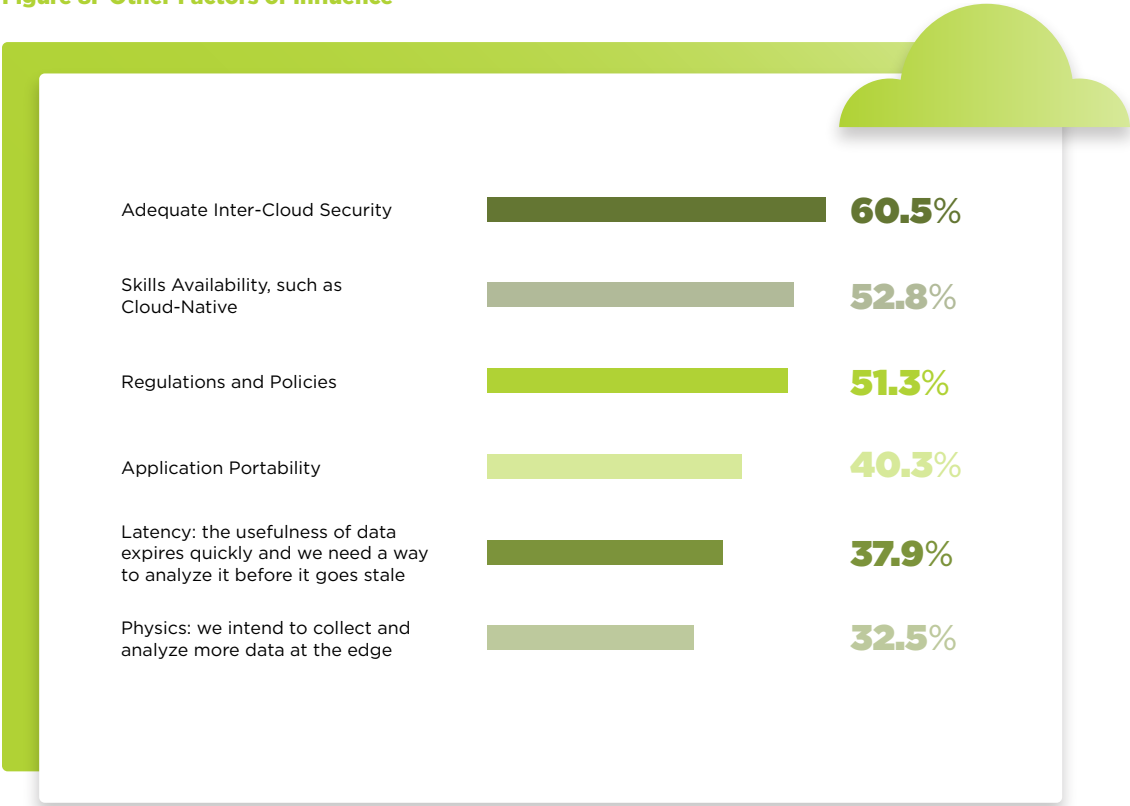


Figure 8. Other Factors of Influence



Conclusions

1 **Hybrid cloud is the IT model of choice, though ambitious deployment plans hit a bump in the road this past year.**

That setback has to do with the following:

- The growing number of cloud choices and the complexity they represent
- The nascent state of cross-cloud management tools from industry players
- Scarcity of internal hybrid skillsets

Nearly a third (**32%**) of 2019 respondents said they lack hybrid computing skills in-house and more than half (**53%**) said that skills availability will have the biggest impact on the future of cloud computing in their organizations. Although the vast majority (**91%**) of respondents say their organizations are investing in reskilling their IT team to keep up with emerging technologies, **49%** agree that their organization lacks all the IT skills necessary to set up a secure and compliant cloud infrastructure.

2 **Enterprises highly value having the flexibility to match a given application or workload to the best infrastructure resource dynamically.**

This is revealed by their ranking application mobility, cloud interoperability, and unified inter-cloud management and security as the top benefits of the hybrid model. In fact, more than six in 10 (**61%**) of 2019 respondents believe that it's "essential" to be able to easily move applications between cloud environments.

3 **As they work through the temporary cloud setbacks, a significant number of enterprises (73%) are bringing some applications back on premisis.**

The current outlook is that this infrastructure shift is a temporary phenomenon as enterprises work through their skills issues and as the industry works to improve cloud management and development tools. Nearly half (**49%**) of respondents cited the hybrid cloud as the IT operating model capable of meeting all their needs, garnering more votes than any other model. In addition, nearly three-quarters of 2019 Enterprise Cloud Index respondents (**71%**) said they're planning to move both new and existing applications onto a cloud platform in the next three years.

Enterprises are striving to integrate cloud computing with their digital transformation goals.

4

Nearly three-quarters (**72%**) of 2019 respondents said digital transformation was having a positive impact on their cloud implementations, and **64%** said that digital transformation was the top business priority in their organizations. Interestingly, when asked about their goals with digital transformation, respondents indicated that they're in early transformation phases. They expressed being concerned more about cost reduction (**19%**), improved business processes (**19%**), and modernizing outdated technology (**18%**) than with improving customer experiences (**16%**) and adding revenue opportunities (**13%**), which are the top business outcomes generally associated with digital transformation.



said that **skills availability** will have the biggest impact on the future of cloud computing in their organizations



said they're planning to move both **new and existing** applications onto a cloud platform in the next three years



said their organizations are investing in **reskilling** their IT team to keep up with emerging technologies

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