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THIRD ANNUAL

NUTANIX
ENTERPRISE
CLOUD INDEX

Enterprises Embark on Hybrid IT Journey

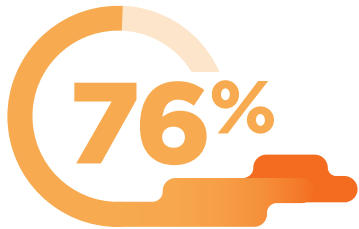# TABLE OF CONTENTS

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ENTERPRISES EMBARK ON HYBRID CLOUD JOURNEY

76%
of respondents said COVID-19 has caused IT to be viewed more strategically in their organizations

86%
of respondents consider hybrid their ideal operating model
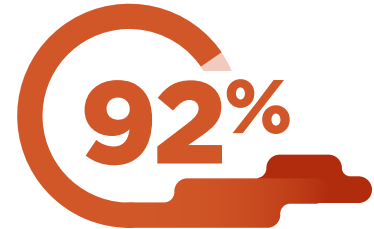
92%
of respondents who currently run on-premises infrastructure have deployed or plan to deploy hyperconverged infrastructure

Background and Research Goals

For the third consecutive year, Nutanix has commissioned research to learn about the state of global enterprise cloud deployments and adoption plans. In mid-2020, U.K. researcher Vanson Bourne surveyed **3,400** 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. This year, survey respondents were also asked about the impact of the COVID-19 pandemic on current and future IT infrastructure decisions and how IT strategy and priorities might be changing because of it.

The Third Annual ECI 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.

KEY FINDINGS

1 **Most enterprises have embarked on a journey to reach their IT operating model of choice: hybrid cloud infrastructure.** Global respondents report taking the initial key steps to successfully run a hybrid cloud environment, which **86%** consider their ideal operating model. These measures include adopting hyperconverged infrastructure (HCI) in their datacenters and decommissioning non-cloud-enabled datacenters in favor of private and public cloud usage. Respondents also reported running a mixed model of private cloud, public cloud, and traditional datacenter more often than any other **(26%)**, likely a stepping stone toward a fully integrated hybrid cloud environment.

2 **Global IT teams are planning substantial infrastructure changes.** They foresee hybrid cloud deployments increasing by more than **37 percentage points** over the next five years and a corresponding 15-point drop in non-cloud-enabled datacenters.

3 **Strategic business outcomes are driving change more so than economics.** Respondents said their primary motives for modifying their IT infrastructures are to get greater control of their IT resources **(58%)**, gain the flexibility to meet dynamic business requirements **(55%)**, and improve support for customers and remote workers **(46% respectively)**. By contrast, just **27%** mentioned cutting costs as a driver.

4 **Respondents running hybrid clouds are planning to focus on driving positive business impact as a result of COVID-19.** Companies running hybrid cloud environments are more likely to say that they're planning on making their organization more agile and seek out ways to become more competitive as a result of COVID-19, compared to organizations using other deployment models. Additionally, they are also more likely to offer flexible work options and strengthen their business continuity plans because of the pandemic. **This finding implies that a hybrid cloud infrastructure positions them more favorably to achieve these goals than other setups might.**

5 **The global pandemic has raised IT's profile and fueled cloud adoption.** More than three-fourths **(76%)** of respondents said COVID-19 has caused IT to be viewed more strategically in their organizations. In addition, **46%** of respondents said they increased their hybrid investments as a direct result of the pandemic.

6 **Businesses increasingly rely on multiple public clouds to meet their needs.** Among those who use public clouds, **63%** of respondents use two or more public clouds, or multicloud Respondents are expecting this number to jump to **71%** in the next 12 months. This indicates that businesses are looking for the flexibility delivered by different public cloud providers.
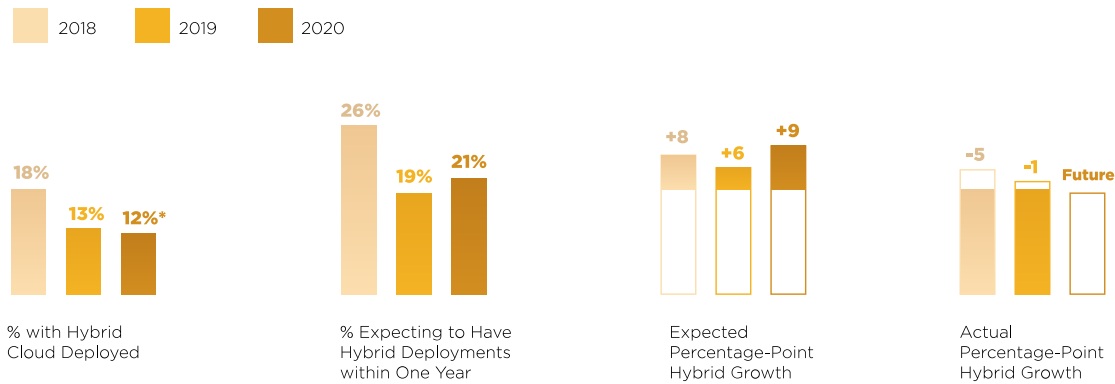
AMID THE PANDEMIC, IT TEAMS PREP FOR INTEGRATED CLOUD INFRASTRUCTURE

For three years running, the majority of global IT pros surveyed for the Enterprise Cloud Index (ECI) have ranked integrated private and public clouds—referred to as hybrid cloud—as their preferred IT operating model. This year, **86%** of the ECI's 3,400 respondents agreed that hybrid cloud is the "ideal IT operating model for my organization." Concurrence with this statement has ranged from **85%** to **91%** of all global respondents for the three years that ECI research has been conducted.

State of Hybrid Cloud Deployments

Enterprise enthusiasm for the hybrid IT model has been strong for all three research years, though most businesses still struggle to fully adopt it. Among the reasons, discussed below, are still-maturing cloud management tools, scarcity of talent skilled in disparate cloud platforms, economic and regulatory trends, and the need to depreciate or transition legacy infrastructure. These issues have conspired to keep hybrid cloud deployments fairly flat to date **(Figure 1)**.

Figure 1. Year-to-Year Hybrid Cloud Plans vs. Actual Deployments

2018   2019   2020

	% with Hybrid Cloud Deployed	% Expecting to Have Hybrid Deployments within One Year	Expected Percentage-Point Hybrid Growth	Actual Percentage-Point Hybrid Growth
2018	18%	26%	+8	-5
2019	13%	19%	+6	-1
2020	12%*	21%	+9	Future

Source: Nutanix 2018, 2019, and 2020 Enterprise Cloud Index Reports, conducted by Vanson Bourne
Survey base: 2300, 2650, and 3400 global IT professionals, respectively, across different industries
*Those with only hybrid cloud infrastructures

It should be noted that in the Third Annual ECI survey, the question was asked whether respondents were running hybrid-only environments (to the exclusion of all other types of clouds and datacenters). It's possible that in addition to the approximately **12%** shown to be running only hybrid cloud infrastructures, some other respondents may also be operating integrated hybrid cloud infrastructures alongside other infrastructure types.

Transitioning with New Cloud Investments

Most enterprises indicate that they're in the process of transitioning to hybrid cloud infrastructure. Hybrid clouds require enterprises to invest in both private and public clouds, which ultimately become integrated with common management and security policies and allow for application portability among them. Third Annual ECI respondents indicated significant progress in establishing private clouds, decommissioning non-cloud-enabled datacenters, and overall upping their cloud investments.

Yet for older, established businesses, transitions don't happen overnight. "If you have 20+ years of history at your business, cloud migration gets expensive, because you invest in new resources, then discover that you can't turn off some legacy things," says Dominic Maidment, Technology Architect at Total Gas and Power Ltd in Red Hill, Surrey, England. "Not everything translates into the new environment. And whether you're re-platforming, lifting and shifting, or repurchasing [using SaaS], you still have to customize, move data, and integrate old and new worlds until you're ready to let go. It's a big deal, so you have to be very clear on the value of running in the new environment. I think these are some of the reasons many are foundering with deploying hybrid cloud."

Adoption Impediments

In addition, a few other issues continue to temporarily slow the pace of hybrid cloud deployments:

- **Tools for managing mixed cloud environments to date have been immature or scarce.** However, experts say that the supply side of hybrid cloud management tools is "coming of age" in 2020, so significant improvements are likely to come. "The toolsets for our private cloud are very good. I don't think the mixed cloud tools are as mature, but they're catching up quickly," says Drew Plaster, Senior Network Systems Administrator, IT Infrastructure, at Moda Health, an insurance carrier based in Portland, Oregon.

- **IT teams are short on in-house skills that bridge on-prem and public cloud tech.** More than a third of respondents **(37%)** say their organizations lack the skills to manage hybrid cloud infrastructure, in part because different cloud technologies work differently. "Standards are lacking," says Joe Kaplovitz, CTO at Kaplan Companies, a construction and real estate company based in Highland Park, New Jersey "The actual differences between public clouds are minute, but getting there is not. If I spend the time to figure out how to get up on, say, Azure, I'm going to stay there, because it's too time-consuming to learn multiple proprietary cloud platforms." That said, **85%** of Third Annual ECI respondents said they're investing in reskilling their IT teams to keep pace with emerging technologies.

- **New cloud options complicate decision-making.** From public clouds extending into a customer's IT environment to private clouds running in different locations, the widening array of offerings is causing IT pros to reevaluate their overall cloud strategies.

- **Changing privacy laws.** Stricter laws about where customer data can be stored have forced IT leaders to rethink where their existing workloads are allowed to run. Nearly three-quarters **(73%)** of respondents to the Second Annual ECI study in 2019, for example, brought some applications and data back from public clouds to on-prem environments as a result.

The remainder of this report takes a closer look at global enterprises' cloud plans, motivators, challenges, and related phenomena affecting their IT infrastructure journeys.

> "Standards are lacking. If I spend the time to figure out how to get up on, say, Azure, I'm going to stay there, because it's too time-consuming to learn multiple proprietary cloud platforms."
>
> **- Joe Kaplovitz, CTO, Kaplan Companies, Highland Park, New Jersey, USA**

THE HYBRID PROMISE

Why does the hybrid cloud infrastructure option continue to rank so high with enterprise IT departments? Third Annual ECI responses indicate that the appeal is about more than cost-cutting, which was the initial draw to cloud computing a dozen years ago.
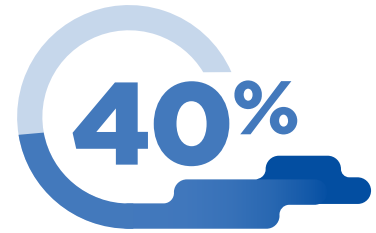
Improving Business Outcomes

Respondents said they are moving away from their current IT deployment models, first and foremost, to achieve better business outcomes. Specifically, they feel they'll gain the flexibility to:

55%
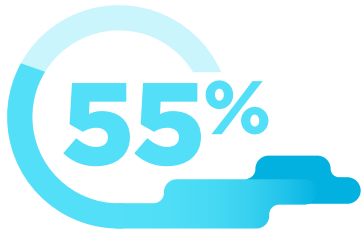
better deliver on business requirements (55%)

46%
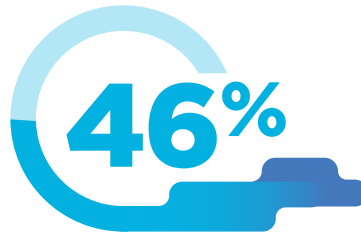
improve support for customers (46%) and remote workers (46%)

40%

achieve stronger data security (40%)

Cost savings are now less of a driver: just **27%** of respondents cited it as a reason for changing their IT operating models.

Why do enterprises associate these business benefits with hybrid cloud infrastructure? The answer might lie in defining what a true hybrid cloud is and does.

Optimizing Where Workloads Run

Global enterprises have long been bullish on cloud and consistently indicate they want the freedom to run workloads in the cloud infrastructure best suited for them based on fluctuating criteria. The "best" location, then, could be dynamically determined by cost, compliance requirements, time-to-market pressures, bursts of compute activity that require on-demand capacity, and other business or technology variables.

The ideal cloud might be private or public, and enterprises want the agility to move workloads among them as requirements change. Together, private and public cloud infrastructures that are able to support this fluidity with common management and uniform security can deliver what is seen by most as the ideal operating model and provide the advantages of a hybrid cloud infrastructure. They make borders between cloud environments all but invisible to users and IT alike.

Poised for Growth

Currently, just under **12%** of global enterprises say they run hybrid cloud and no other IT infrastructure. Not many more—just **18%**—still exclusively run traditional, non-cloud-enabled datacenters. Greater numbers report running mixed infrastructure models and private clouds; this is consistent with companies being on a transitory journey to hybrid cloud, as they adopt hybrid cloud elements first with an eye toward ultimately integrating them.

While these are still early days for hybrid cloud deployments global enterprises remain ambitious: they say they intend to grow the exclusive use of hybrid cloud to **49%** in three to five years. At that time, just **2%** of global respondents intend to still be running traditional, non-cloud-enabled datacenters exclusively **(Figure 2)**.

Figure 2. Current and Planned IT Infrastructure Models*

While the hybrid cloud IT model is not yet pervasive, it's the only model slated for growth three to five years from now.

Legend:
- Hybrid cloud only
- Mixed model (no integration)
- Multiple public cloud (no integration)
- One public cloud
- Private cloud
- Traditional data center (non-cloud-enabled)

Current/Mid-2020: 12%, 26%, 12%, 10%, 22%, 18%

Within 12 Months: 21%, 29%, 17%, 13%, 13%, 7%

In 3 to 5 Years: 49%, 18%, 12%, 6%, 7%, 2%

Net Percentage-Point Change in 5 Years: +37, -8, +<1, -4, -15, -15**
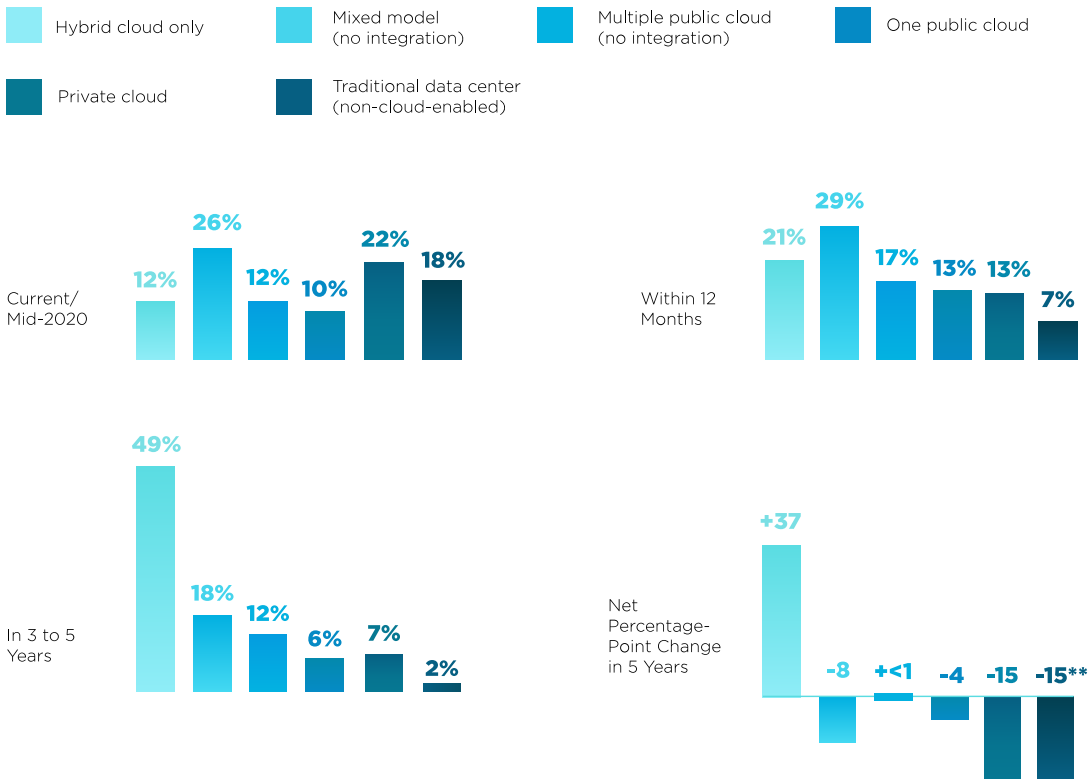
**-15 percentage-point change is calculated by taking the exact percentage of those who currently use a traditional data center (17.5%) and the exact percentage who plan to use it 3 to 5 years' time (2.41%).

*Percentages have been rounded up or down to the nearest whole or half number

Of the many infrastructure categories, respondents reported running a mixed model of private cloud, public cloud, and traditional datacenter more often than any other **(nearly 26%)**. This isn't surprising, as many enterprises see different benefits in different types of IT infrastructure. It's also common for traditional and new technology to coexist for a time, particularly in large, established businesses with legacy infrastructure to depreciate and migrate before all applications, data, workloads, development, and processes are ultimately ported to the new environment many enterprises see differently. Eventually, it will be the integration of these often siloed, mixed-mode environments that will form the integrated hybrid cloud environments.

More enterprises reported running private clouds only **(22%)** than non-cloud-enabled datacenters only **(18%)**. Again, cloud-enabling the datacenter into a private cloud(s) takes enterprises a step closer to hybrid.

Public-cloud-only infrastructures are slated for short-term growth (within a year's time). However, in three to five years, those increases will be absorbed into the hybrid cloud model. No IT infrastructure model other than hybrid cloud is set to grow five years out, as **Figure 2** shows.

DEPLOYMENT DISTRACTIONS

This report touched earlier on the issues keeping enterprises from reaching their hybrid goals. For the past two years, certain macro trends and a rapidly changing cloud marketplace have been among the situations that have gotten in the way of hybrid cloud adoption.
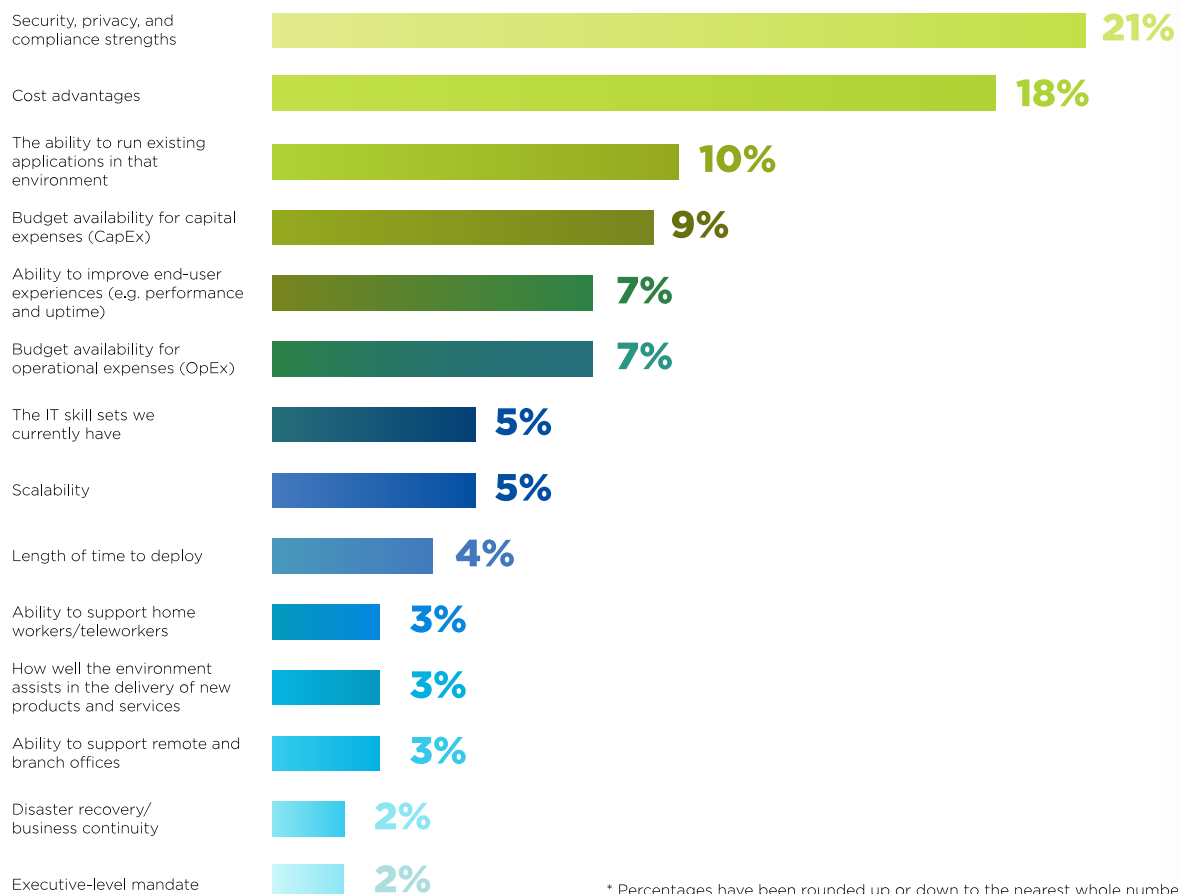
Cloud Repatriation

For example, in 2019, nearly three-fourths of ECI respondents **(73%)** reported having brought some public cloud applications back on-prem, and of those **22%** reported moving five or more applications. Among the reasons were fresh security concerns created by new and emerging privacy laws, such as Europe's General Data Protection Regulation (GDPR). Since then, other global privacy legislation based on GDPR has been forcing companies to carefully orchestrate where they store customer information and to build processes that ensure they have instant access to that information, should requests for it present themselves.

These moves align with ECI research, which shows that security and compliance remain top of mind for enterprises deciding what infrastructure models to deploy. More respondents cited the security, privacy, and compliance strengths of a given solution as a decision factor over any other **(Figure 3)**.

Figure 3. Top Infrastructure Decision Factors*

Percentage of global respondents ranking factor as the most important

Factor	Percentage
Security, privacy, and compliance strengths	21%
Cost advantages	18%
The ability to run existing applications in that environment	10%
Budget availability for capital expenses (CapEx)	9%
Ability to improve end-user experiences (e.g. performance and uptime)	7%
Budget availability for operational expenses (OpEx)	7%
The IT skill sets we currently have	5%
Scalability	5%
Length of time to deploy	4%
Ability to support home workers/teleworkers	3%
How well the environment assists in the delivery of new products and services	3%
Ability to support remote and branch offices	3%
Disaster recovery/ business continuity	2%
Executive-level mandate	2%

* Percentages have been rounded up or down to the nearest whole number.

Respondents also cited data security, privacy, and compliance **(89%)** more often as an infrastructure challenge than any other factor. These findings are consistent with previous years' research, which has indicated that security-related issues continue to represent the most important gating factor in infrastructure decisions while also being the most difficult for enterprises to achieve.

Pandemic Priorities

This year, COVID-19 swept in to turn IT's attention to remote work infrastructure. IT teams focused on providing home workers with quick and secure access to corporate data resources with virtual desktops, virtual private networks (VPNs), and cloud services, which offered a ready-made solution for adding infrastructure and bringing data closer to distributed users. In that respect, the pandemic has served as a catalyst to helping enterprises reach both their hybrid and digital transformation (DX) goals, as cloud services are often considered the cornerstone of DX initiatives.

Defining 'Cloud' Amid New Options

Another issue slowing hybrid cloud adoption—or at least affecting the ability to measure its growth—has been inconsistent industry definitions. These are being driven in part by offerings that bring public cloud infrastructure onto enterprise premises or extend private cloud stacks into a public cloud service, leaving some enterprises uncertain as to what exactly to call their amalgamation of clouds.

For example, prominent cloud infrastructure providers have announced options to run their Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP) offerings on other infrastructures, such as in private datacenters. These solutions include AWS Outposts (available since December 2019), Google Cloud Anthos (available since April 2020), and Microsoft Azure Arc (still in preview at this writing). Google Cloud Anthos and Microsoft Azure Arc both leverage Kubernetes and containers to seamlessly run workloads in a private enterprise datacenter, on their own public cloud platform, or on a competitor's public cloud platform. AWS Outposts, by contrast, is dedicated to on-prem use cases and requires customers to use AWS-provisioned hardware, which essentially precludes multicloud scenarios and the use of an enterprise's own hardware.

Such new models aren't limited to traditional public cloud providers. In addition, some providers of HCI and private cloud software have begun extending their on-prem technology to AWS, Azure, and GCP public clouds as well as to their own purpose-built public cloud services, which they manage. These offerings open up decisions for IT to make about whether to run heterogeneous hybrid environments (different cloud technologies on different clouds) or homogeneous hybrid environments (the same cloud technology on different clouds), among others.

Performing their due diligence in considering the new options that have been introduced to the array of cloud choices is likely slowing some enterprise strategy decisions and deployments as they weigh what mix of services will best suit their organizations.

Shadow IT

Finally, shadow IT continues to play a role in creating enterprise cloud "islands." About **58%** of respondents said that their internal application developers tend to circumvent the IT department. One common motivator for doing so is to gain ready access to cloud infrastructure to build and test applications.

IT awareness of these efforts is important, particularly for cost and security reasons. Enterprises need to know to decommission services no longer being used or being underutilized, for instance—otherwise, they will continue to unnecessarily rack up server charges. If those resources do continue to be needed, IT will want to integrate them with other private and public cloud infrastructure for consistent operations, security, best practices, and governance across cloud locations.

MILESTONES ON THE HYBRID CLOUD JOURNEY

Deploying hybrid cloud infrastructure is more involved than a simple "buy and use," in that it isn't an infrastructure that's for sale per se. Rather, it's a model that evolves as enterprises invest in private clouds and in one or more public cloud services, which they ultimately unite with integrated management, security, and application portability.
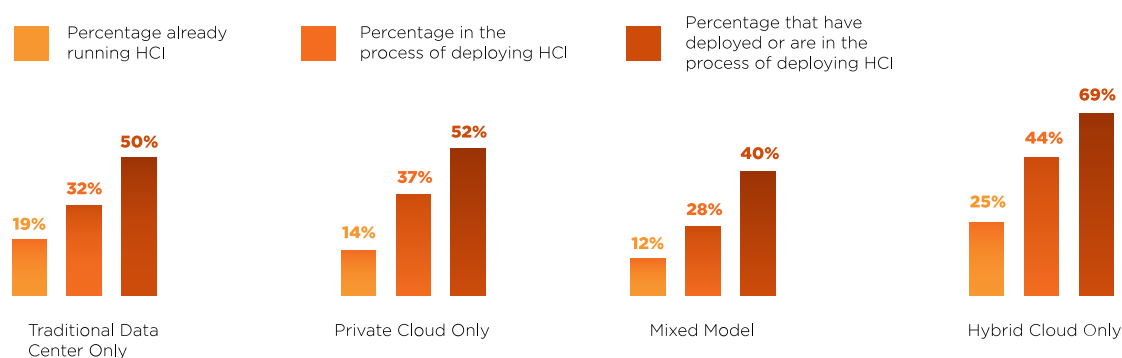
As noted, enterprises report significant progress with the initial steps required to get them to a true hybrid setup, which involves first adopting the private and public cloud services to be integrated into a seamless on/off-prem environment. It's a bit more complicated than it sounds as there are many technology and operational challenges when bringing together disparate environments.

Still, Third Annual ECI respondents report that they're well on their way to their hybrid goals with the following steps under their belts:

- **They're adopting hyperconverged infrastructure (HCI) in their private datacenters.** Nearly all **(92%)** respondents who currently run on-premises infrastructure, or **72** percent of all respondents, have deployed or plan to deploy hyperconverged infrastructure (HCI). HCI slashes the time it takes to build the software-defined infrastructure necessary to support private cloud and enables the rapid capacity expansion that underlies the scalability benefits that cloud infrastructure promises.

  Half **(50%)** of Third Annual ECI respondents with on-prem infrastructure have deployed or are in the process of deploying HCI. And of those who have adopted hybrid cloud, the HCI adoption number soars to more than two-thirds **(69%)**, as **Figure 4** shows, indicating that HCI is a strong underpinning of the hybrid model.

Figure 4. Who's Deploying HCI?*

Legend:
- Percentage already running HCI
- Percentage in the process of deploying HCI
- Percentage that have deployed or are in the process of deploying HCI

Traditional Data Center Only: 19%, 32%, 50%
Private Cloud Only: 14%, 37%, 52%
Mixed Model: 12%, 28%, 40%
Hybrid Cloud Only: 25%, 44%, 69%
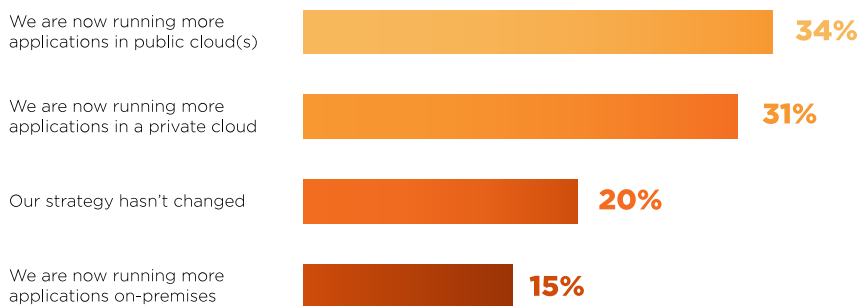
*Percentages have been rounded up or down to the nearest whole number

- **They're decommissioning non-cloud-enabled datacenters.** Enterprises are chipping away at eliminating older technology, such as less flexible three-tiered datacenters. More now run exclusively private clouds **(22%)** than exclusively non-cloud-enabled datacenters **(18%)**.

- **They're running multiple cloud environments.** Respondents reported running a mixed model of private cloud, public cloud, and traditional datacenter more often than any other **(26%)**. This can be an important stepping stone to a fully integrated hybrid cloud environment.

- **They're increasing their overall cloud investment.** Nearly two-thirds **(65%)** of respondents say they're running more applications in private and public clouds this year than they were last year **(Figure 5)**. These actions are helping to construct the hybrid cloud foundation of private and public cloud components.

**Figure 5. Application Distribution Changes, 2019 to 2020***

We are now running more applications in public cloud(s)	34%
We are now running more applications in a private cloud	31%
Our strategy hasn't changed	20%
We are now running more applications on-premises	15%

*Percentages have been rounded up or down to the nearest whole number

These steps indicate that global IT pros are plowing through the uncertainty and complexity of the current economy to achieve key milestones on the journey to their hybrid cloud goals. Building private clouds that are based on hyperconverged, software-defined infrastructure and take the place of static, three-tiered datacenters is a pivotal step, as is increasing investment in public cloud technology and rethinking which environment is the "best" location in which to run their applications.

Many ECI respondents are approaching the integration stage, where their next move might be finding and deploying tools, such as containers or third-party solutions that deliver cohesive visibility, management, and application portability across their private clouds and public cloud services. Further integration will allow the infrastructures to operate with the same processes and technology regardless of where they're located, to be managed and secured through a single pane of glass, to support automation and self-service, and to allow IT to dynamically move applications, data, and other workloads across cloud borders as business demands warrant.

COVID'S IMPACT: THE FUTURE OF WORK AND EDUCATION

Third Annual ECI respondents were surveyed in mid-2020, about three months into the COVID-19 crisis. The majority **(nearly 76%)** said the pandemic has caused their businesses to view IT more strategically. Many have responded to public health safety mandates with sweeping work-at-home remote infrastructure initiatives.

93%
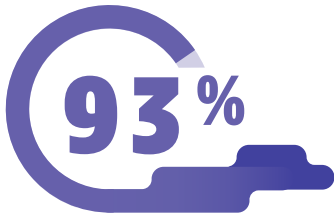
Most respondents **(about 93%)** said their organization's IT infrastructure was either completely or fairly well prepared to fully support remote work at the onset of the crisis. They also responded with greater investments in cloud services, which allow near-instant infrastructure deployments that can scale to reach geographically distributed workforces.

Silver Lining

While COVID moved IT's focus toward remote worker support, the intervening projects have also spurred enterprise progress with cloud expansion and put enterprises closer to their hybrid cloud goals. Nearly half of respondents **(46%)** said their investments in hybrid cloud have increased as a direct result of the pandemic. In addition, **47%** said they've upped their investment in public cloud services, and **37%** have invested more in private cloud. More than a third **(34%)** said they've adopted hybrid cloud tools or solutions as a direct result of COVID-19.
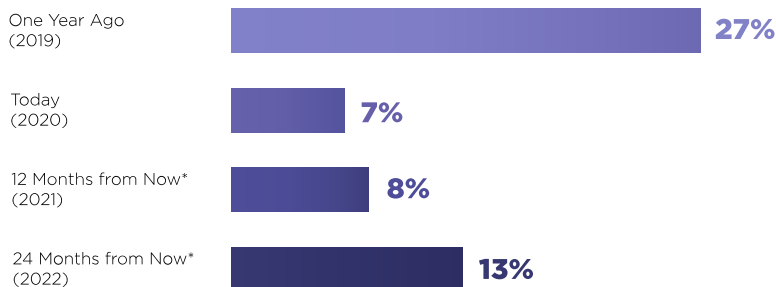
These investments, in addition to helping build out hybrid cloud infrastructure, have been a boon to corporate DX initiatives, which hinge largely on the flexible, agile underpinnings of cloud computing as their foundation.

The New Normal

In 2019, about **27%** of respondent companies had no full-time at-home workers. That number fell 20 percentage points this year to **7%**, thanks to COVID-19 **(Figure 6)**.

Figure 6. Remote Work Changes

Percentage of respondent companies with no employees working from home on a regular basis

One Year Ago
(2019) — **27%**

Today
(2020) — **7%**

12 Months from Now*
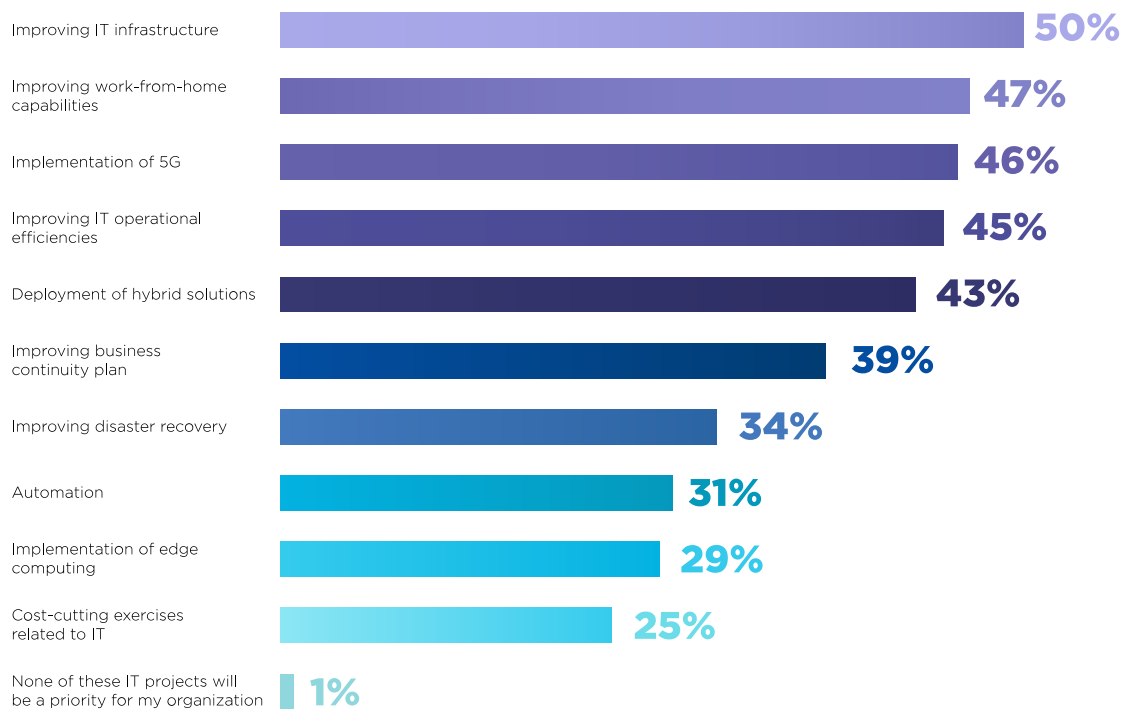(2021) — **8%**

24 Months from Now*
(2022) — **13%**

*Predicted

As the figure indicates, while some remote workers will ultimately return to their traditional office locations during the course of the next two years, not all will. By 2022, **13%** of respondent companies will have no full-time remote employees, less than half as many as a year ago in 2019, before COVID struck.

The implication is that continued investments in cloud infrastructure, along with security, will continue to be a priority in order to serve a larger remote workforce, as the at-work/at-home balance is unlikely to swing back to pre-COVID levels. In fact, improving IT infrastructure **(50%)** or work-from-home capabilities **(47%)** have become priorities for the next 12 to 18 months as a direct result of the pandemic, according to survey respondents **(Figure 7)**.

Figure 7. Post-COVID Priorities*

Percentage of respondents citing actions as a priority for the next 12 to 18 months as a result of the pandemic

Category	%
Improving IT infrastructure	50%
Improving work-from-home capabilities	47%
Implementation of 5G	46%
Improving IT operational efficiencies	45%
Deployment of hybrid solutions	43%
Improving business continuity plan	39%
Improving disaster recovery	34%
Automation	31%
Implementation of edge computing	29%
Cost-cutting exercises related to IT	25%
None of these IT projects will be a priority for my organization	1%

* Percentages have been rounded up or down to the nearest whole number.

Indeed, many organizations may already be at or over capacity with their remote work. Third Annual ECI respondents estimate that, on average, their current remote infrastructures can support **44%** of their employees working from home; they also report that they are already supporting **44%** of their workforces working remotely, on average.

Top Pain Points: Providing Secure Remote Access and Support

With employees continuing to work from home, the top two technical challenges respondents face, on average, are ensuring that workers can access their apps and data securely **(51%)** and providing IT support for remote workers **(50%)**.

Increased public cloud investment helps by allowing IT teams to quickly push infrastructure close to wherever employees are working. But enterprises also have to remember that with public cloud services, security is a shared responsibility between the public cloud infrastructure provider and the enterprise. Essentially, the cloud provider ensures that the infrastructure built within its platform is inherently secure and reliable. The enterprise is responsible for securing all the activities that take place within the cloud, such as access control, identity management, application management, network configuration, and data encryption.

In addition, some of the emerging hybrid cloud tools help by integrating compliance monitoring, network visibility, and security operations across private clouds and public cloud environments. Such tools can enable organizations to implement a zero-trust or "least privilege" security strategy across cloud boundaries, assigning data and network access rights based on the bare minimum required for individuals and applications to perform their roles successfully.

A Peek At What Educators Are Doing

With the recent chaos and uncertainty caused by the COVID-19 pandemic, the education field has faced increased expenses in IT infrastructure and services to introduce or expand remote learning in the era of social distancing. In this way, COVID-19 has helped jumpstart the future of education—while also highlighting many of its challenges. The sudden requirement to quarantine and social distance forced rapid shifts to online/distance learning with little time to vet all the options. The rapid shift also highlighted challenges of the "digital divide" where access to computers, networks, and other technology is not always equitable across communities and individuals.

How education will be delivered moving forward remains a moving target. Schools are struggling to find a safe and effective mix between in-person and remote access. They're also discovering that increased dependence on technology as an education delivery vehicle increases their attack surface for malware, ransomware, Zoom-bombing, cyberbullying, and other forms of cyber mischief and theft.

While all sectors surveyed for the Third Annual ECI said providing secure, remote access to apps and data was a front-and-center challenge caused by COVID, education respondents cited additional issues. They were more likely **(55%)** to cite "ensuring that remote workers have adequate hardware" as a primary technical challenge than any other issue, compared with **41%** globally. In addition, **47%** cited providing "adequate communications channels among employees, customers, and clients" as a top challenge, compared to **38%** of all global respondents.

The education sector is making transformation a focus, even as the future of education has yet to become clear. More respondents than average mentioned digital transformation **(54%)** and making the organization more agile **(49%)** as priorities as a result of COVID. The sector also ranked high in private cloud deployments, with **29%** of respondents saying they were running private clouds only (substantially more than the **22%** global total). In this regard, education was second only to the business and professional services sector, where **35%** of respondents said they were running exclusively private cloud. In addition, more than half **(57%)** of education-sector respondents said they've increased their investments in public cloud services as a result of the pandemic, and a third **(37%)** also say they're running more applications in the public cloud than they were last year.

SUMMARY AND CONCLUSIONS: CORRELATING DX AND CLOUD

Cloud computing is often seen as the engine behind digital transformation (DX), the sweeping effort across companies of all sizes and geographies to digitize operations in ways that provide the agility needed to enter new markets, serve customers better, offer employees new working models, and overall become more competitive.

50%

cited improvements to IT infrastructure as a priority to come out of the pandemic

47%
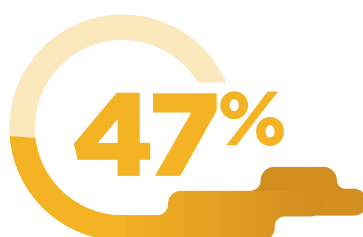
cited work-at-home capabilities as a priority to come out of the pandemic

43%
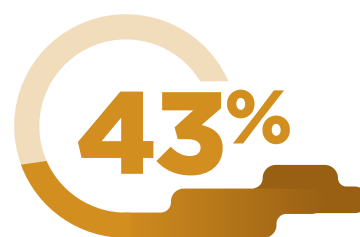
cited deployment of hybrid solutions as a priority to come out of the pandemic

COVID-19, according to **76%** of respondents, has caused their organizations to view IT as more strategic. As such, respondents cited improvements to IT infrastructure **(50%)** and work-at-home capabilities **(47%)** as the two most likely priorities to come out of the pandemic. Deployment of hybrid solutions **(43%)** is a more likely priority than improving business continuity **(39%)** and disaster recovery **(34%)**.

The hybrid cloud IT model, when it reaches maturity, will further these highly correlated DX and IT initiatives, as it represents the most flexible cloud deployment option. With hybrid cloud, enterprises will be able to deploy applications and services quickly in the location that makes the greatest sense from a cost and delivery point of view. If cost, geography, security, or other criteria warrant it, they'll have the agility to dynamically move them to different clouds for optimum function and cost. By cloud-enabling their datacenters, using more private and public clouds, and investing in hybrid management tools, many Third Annual ECI respondents have shown that they're already far along the path to success.