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The State of Hybrid Multicloud Resilience

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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



ERIC HANSELMAN

CHIEF ANALYST

Eric Hanselman is the Chief Analyst at 451 Research. He has an extensive, hands-on understanding of a broad range of IT subject areas, having direct experience in the areas of networks, virtualization, security and semiconductors. He coordinates industry analysis across the broad portfolio of 451 Research disciplines. The convergence of forces across the technology landscape is creating tectonic shifts in the industry, including SDN/NFV, hyperconvergence and the Internet of Things (IoT). Eric helps 451 Research's clients navigate these turbulent waters and determine their impacts and how they can best capitalize on them. Eric is also a member of 451 Research's Center of Excellence for Quantum Technologies.

Executive Summary

Organizations large and small are shifting to hybrid approaches to building infrastructure. Some have made significant progress, and others are just beginning to evaluate that journey. Across this spectrum, organizations are having to adapt processes and capabilities to ensure business continuity in this new, more complicated world. 451 Research conducted a study to explore the current state of this transition and the experiences and expectations of those on this path. This report looks at the results of that study, along with additional data from our quarterly Voice of the Enterprise (VoTE) studies, and examines some of the business continuity imperatives and challenges that enterprises are facing. Those results paint a picture of a drive to harness the power of hybrid multicloud environments and a struggle to adapt traditional resilience practices to this new world. The data shows a frank understanding of the costs associated with failure but also identifies a lack of understanding of the realities of this new operational model, even in the face of clearly identified problems.

On the Journey to Hybrid Multicloud

In their search for more efficient and agile infrastructure, more enterprises are starting to add cloud-based resources to their portfolio. This can be an intelligent choice to add different cost models and operational modes to an organization's pool of resources. Cloud-based resources can also present complexities for organizations that aren't able to effectively integrate these new resources into their existing business continuity and disaster recovery plans. Extending infrastructure into new realms requires them to extend their operational models. For organizations that are already juggling more projects than they have the resources to complete, ensuring that these new areas are as resilient as legacy resources may not get the attention that business needs require.

This study looks at the current state of the respondents' journey to hybrid multicloud and examines their expectations for managing resilience. It also looks at the rate and severity of outages in cloud-based environments and explores some enterprise views on that situation. There is significant demand to make this journey, and work to be done to ensure that the path is a smooth one.

Key Findings

- The journey to hybrid multicloud is well underway.
- Hybrid multicloud is presenting operational challenges – 34% of survey respondents report a notable or worse outage.
- Resiliency strategies are immature for most.
- Some 65% of companies polled lack a management plan for hybrid today.
- Business continuity planning isn't keeping up with the journey to hybrid multicloud.

Strong Drive to Off-Premises Destinations

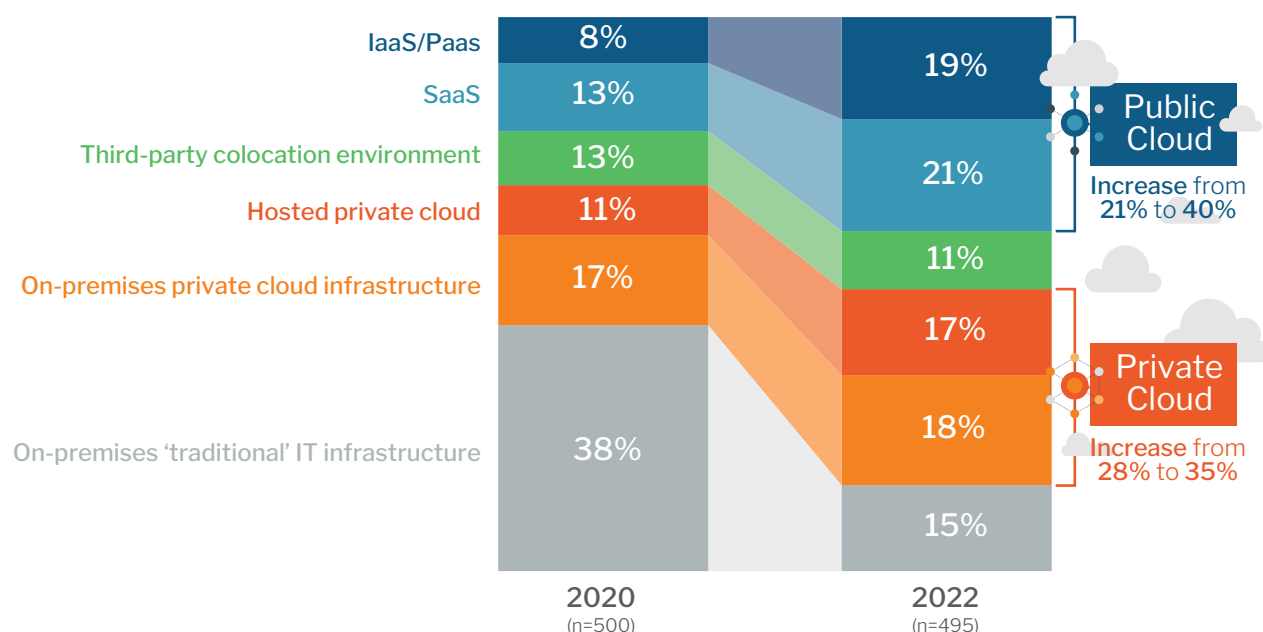
451 Research has been studying enterprise desire to move workloads and applications that have been running in traditional datacenter environments to hosted, managed, colocation or cloud locations for several years in its VoTE studies. There has been strong desire to move to off-premises infrastructure, and the most recent study, which took place in January and February 2020, illustrates the current magnitude of that change.

Figure 1: Identifying the magnitude of movement toward off-premises destinations

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Workloads & Key Projects 2020

Q: Thinking about all of your organization's workloads/applications, where are the majority of these currently deployed? Where will the majority be deployed two years from now?

Base: All respondents



Enterprises are expecting to dramatically change the resources they use to build their businesses. One could debate whether the average enterprise could make as dramatic a change as respondents reported in the study, but it's an important indicator of the eagerness with which enterprises are pursuing that change. That level of eagerness is leading many organizations to move to hybrid multicloud deployments without fully mature operational support behind them. These new environments may not be fully covered by traditional resilience protections, and enterprises may not fully understand the implications of the new environments on potential outages. The data from this study provides useful insights into areas where enterprises can strengthen their footing as they make the journey to hybrid multicloud.

The study was undertaken to better understand several aspects of and perceptions about the ways in which enterprises are dealing with infrastructure resiliency in hybrid multicloud environments. It explores the current state of global enterprise infrastructure and resiliency strategies.

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4

Methodology

The study included a 23-question web-based survey that garnered 1,211 respondents, as well as a set of in-depth interviews that were conducted by telephone for additional depth and narrative response. The in-depth interviews were used to ensure that the questions were fully understood by the study panel. Those results also informed the analytical perspectives that have been drawn from the data. The study was administered to a global panel and was translated from English into local languages, as required. The charts contained in the report were created from the study data and contain both direct question results and crosstabs derived from correlated question responses.

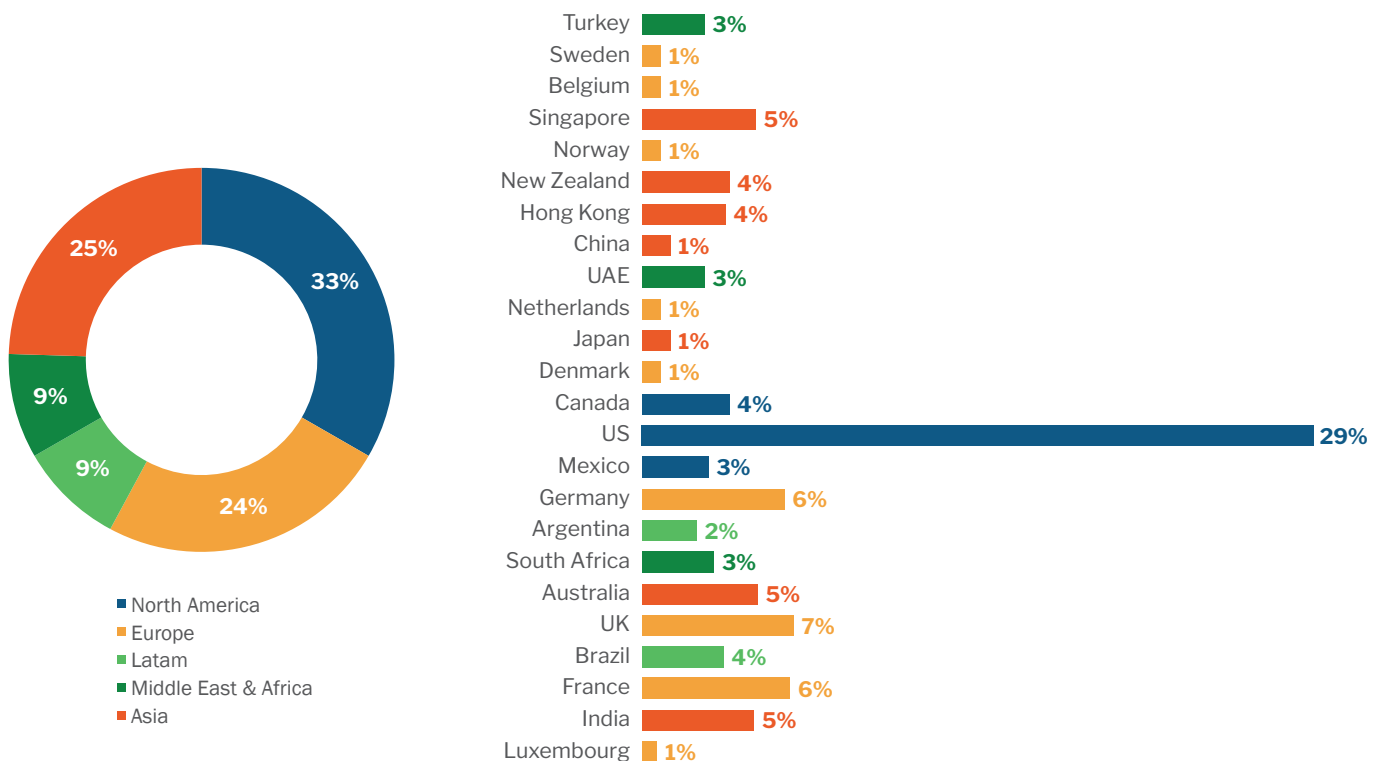
Demographics

Study participation was limited to enterprise IT decision-makers in organizations that have annual revenue of at least USD\$500m that are currently using hybrid multicloud environments for their IT infrastructure. Industry verticals polled were the banking, financial services and insurance, retail, healthcare, hospitality, travel, and transportation sectors, representing businesses around the globe.

Figure 2: Study participants represented the world's corporate landscape

Source: 451 Research custom study

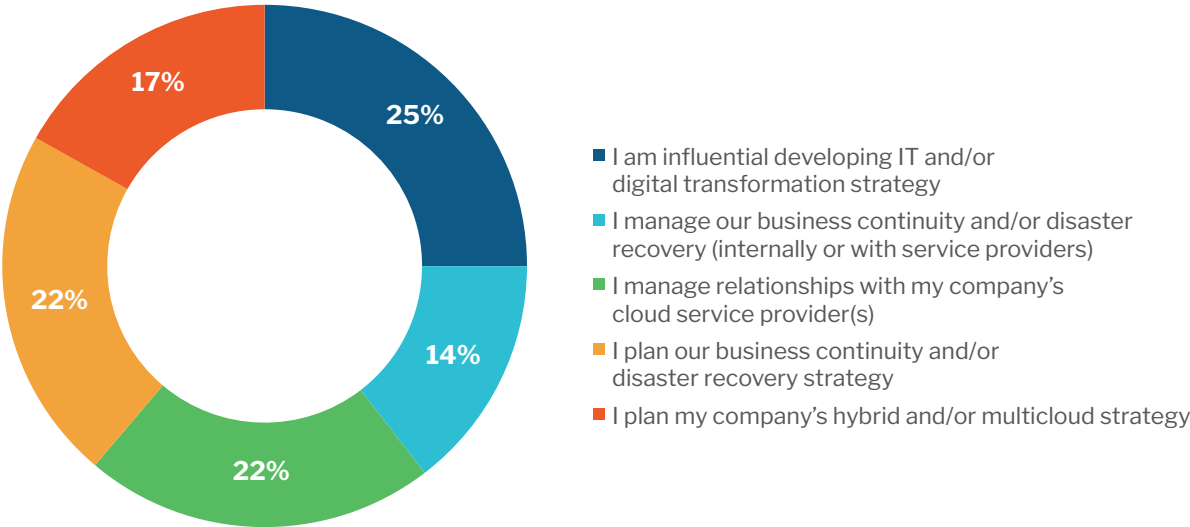
Base: All respondents (n=1,211)



The respondents were all managerial level or more senior and either planned or influenced their organization’s hybrid multicloud strategy or managed relationships with their cloud service providers.

Figure 3. Study participants shape the strategic direction of IT for their organizations

Source: 451 Research custom study
Q: Which of the following statements best describes your role at work?
Base: All respondents (n=1,211)



Initial Impressions Revealed: Reshaping Plans for Hybrid

The study data paints a picture that should be familiar to IT decision-makers around the globe. Corporations are using a blend of IT resources to meet business requirements and are trying to make sure that their operations are as effective as possible. As is often the case with new initiatives, some of these new efforts are moving faster than good operational planning can keep up with. There are many reasons that these gaps are created. A project that starts as an experiment may not need robust capabilities at its outset, but if successful, it can rapidly grow in both size and business importance. If an organization is having difficulty keeping up with the scale of growth, integrating better resiliency services may lag behind.

Toward the Accidental Hybrid?

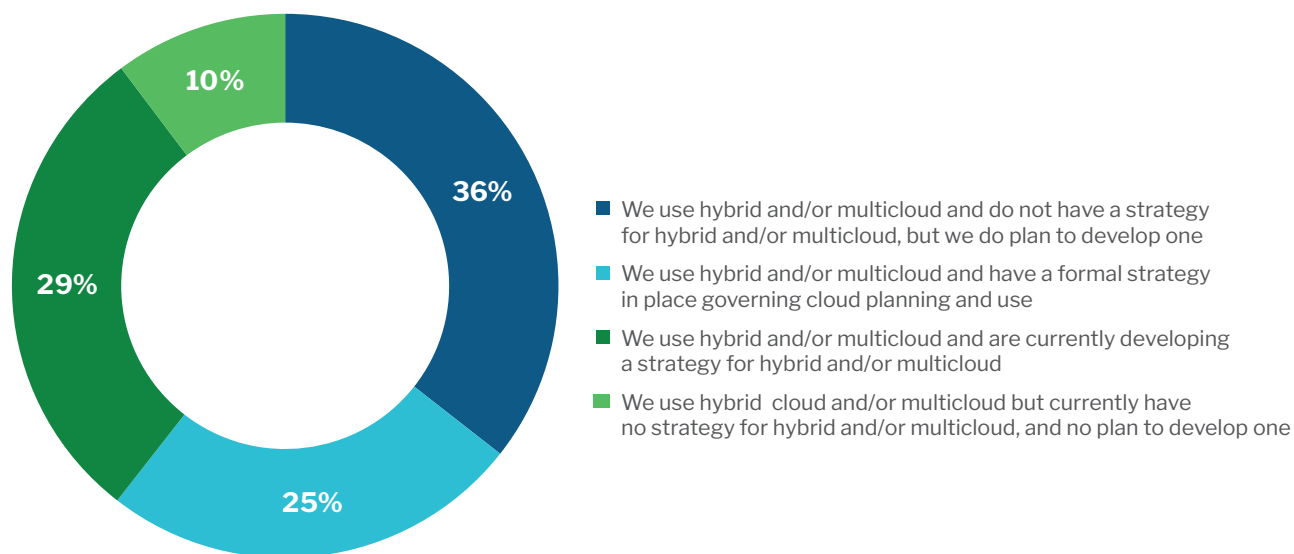
One of the study's initial indications that the pace of movement to hybrid multicloud environments may be outstripping organizations' ability to manage it is the lack of formal planning that many respondents reported for these deployments. Only 25% indicated that they have a formal strategy in place for management.

Figure 4. The current state of hybrid cloud strategy planning and deployment

Source: 451 Research custom study

Q: Which of the following best describes the state of your organization's strategy regarding hybrid cloud and/or multicloud?

Base: All respondents (n=1,211)



However, a positive sign is that another 65% are either working on a plan or expecting to develop one. This is an indication that there is awareness of the need to be doing better. There's a reasonable case to be made that enterprises are having difficulty accomplishing this on their own.

Opportunity for Improvement Outlined

With the IT skills shortage having become a chronic issue, enterprises need to carefully assess how they expect to successfully manage hybrid multicloud environments. The average enterprise needs to do better but can be so significantly resource-starved that proactive activities, like building strategic plans, are never achieved. This is an area where organizations need to make clear assessments of their capabilities and the risks of postponing better planning.

Planning and Strategy for Hybrid Multicloud Success

Most organizations' experience with off-premises resources started with hosted or managed services, or possibly with colocation. In these situations, it's possible to extend existing management practices with a minimum loss of resilience. The same tools probably operate in the new environments, and they're generally using the same types of equipment and operational models.

The move to cloud presents significant change and greater challenges than traditional operating models. Tools for data protection may not be supported, and different interconnection characteristics can make some approaches prohibitively expensive. To effectively manage a hybrid multicloud environment, organizations need to have a strategy that fully integrates all of the resources on which the business depends.

Drivers for Hybrid Intentions

The study examined what was driving enterprises to look at the resilience levels of their environments. As the greatest imperative in a top-three selection, over two-thirds (68%) indicated that their businesses need to be available around the clock – a sensible, high-level motivation. The second-most-important driver identified by respondents is the prevention of data loss (48%), which is a bit more telling, and given the outage data that we'll review here shortly, speaks to the fact that many have experienced data loss so are all the more sensitive to it. Asked what is driving the need to ensure the availability of workloads running in a hybrid or multicloud environment, data loss was rated higher (48%) than ensuring customer service (41%) and the consequential costs of downtime (38%), reinforcing the pain that such events can cause.

Assessing the Current State of Practice

To identify where enterprises are in their move to hybrid multicloud, the study first looked at how respondents characterize the current situation and then asked how they believe their infrastructure is distributed today and where it will be in two years. The move to off-premises, cloud-based capacity is well underway.

Journey's Progress Mapped – Starting Positions Outlined

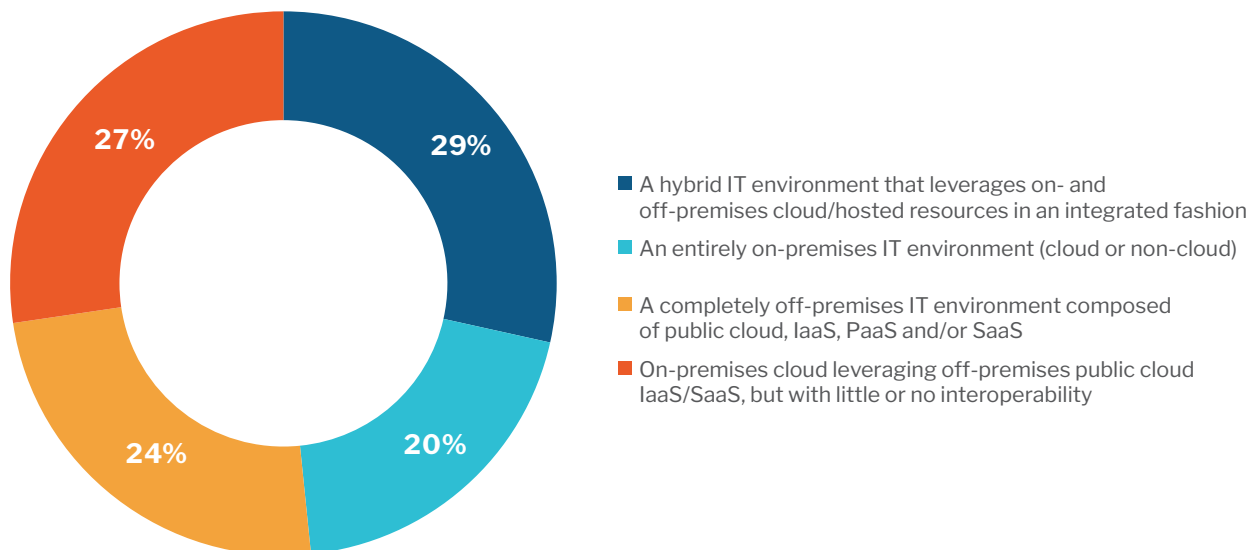
Based on survey responses, some of the enterprises are forward-looking in the construction of their IT infrastructure. Almost a quarter (24%) reported that they have moved off-premises for their key workloads and applications, but a fifth (20%) are solidly on-premises (see Figure 5). The remaining 56% were almost evenly split between those that are using integrated management in their mix of on- and off-premises resources and those that are taking a more ad hoc approach. The latter are most likely experiencing additional operation overhead, given the duplication of effort that comes with running separate environments. Those using integrated management have better prospects but may still have some hurdles to overcome.

Figure 5. Profiling the current state of existing IT environments

Source: 451 Research custom study

Q: Which of the following best describes the current state of your organization's entire existing IT environment?

Base: All respondents (n=1,211)



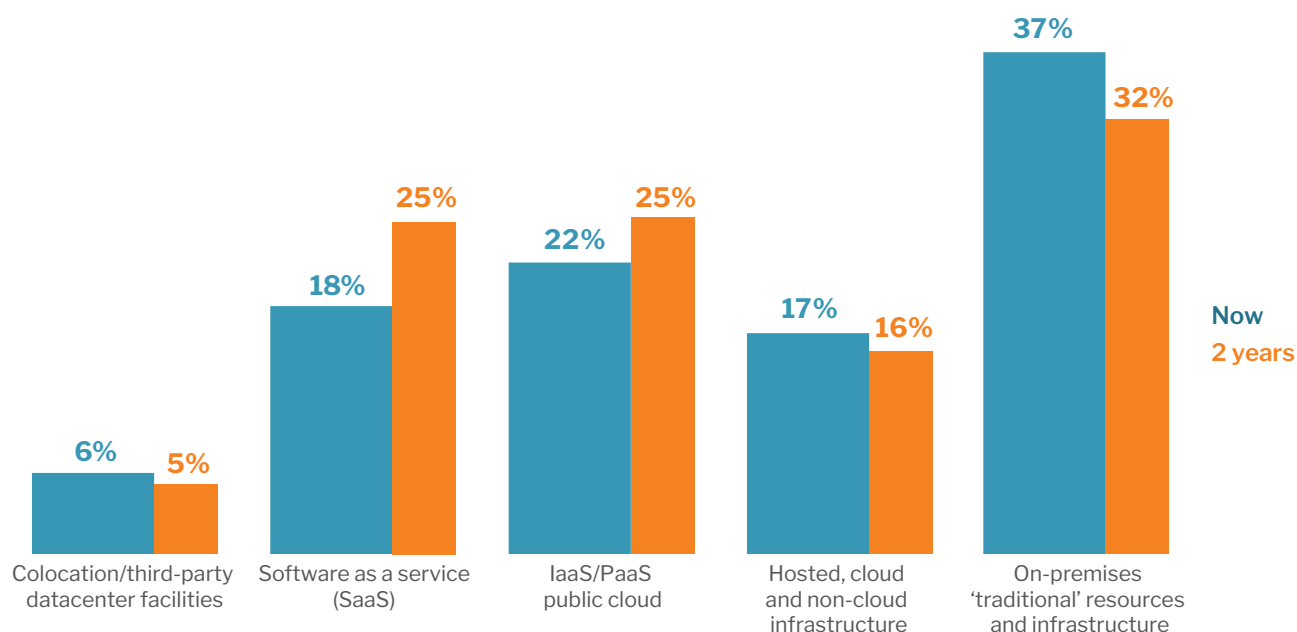
While the pace of the move off-premises (see Figure 6) that the respondents predicted isn't quite so aggressive as other broader market results we have considered, it's still very strong. The mean values for percentage of each type show that there is an expectation that their infrastructure will become increasingly hybrid.

Figure 6. The shifting landscape of corporate IT environments over the coming two years

Source: 451 Research custom study

Q: To what extent does your organization use the following types of IT environments – now and in two years? (Please sum each to 100.)

Base: All respondents (n=1,221)



With this change underway, the study looked to determine how ready enterprises are to operate in this new model.

Plans in place? Operations at the Ready?

In building the study, we expected that some of the planning required for hybrid management would be reflected in strategic initiatives, such as business continuity and disaster recovery planning. We were surprised to see a significant disparity between the reported high level of BC/DR planning and plan testing and the level of hybrid multicloud management strategy. This seems to represent a disconnection in the understanding of what strategic planning needs to encompass and is a significant risk to IT operations.

Figure 7. Current state of the extent of strategic approaches to business continuity and disaster recovery

Source: 451 Research custom study

Q: Do you have a formal strategy and/or well-documented plan for business continuity/disaster recovery?

Base: All respondents (n=1,211)

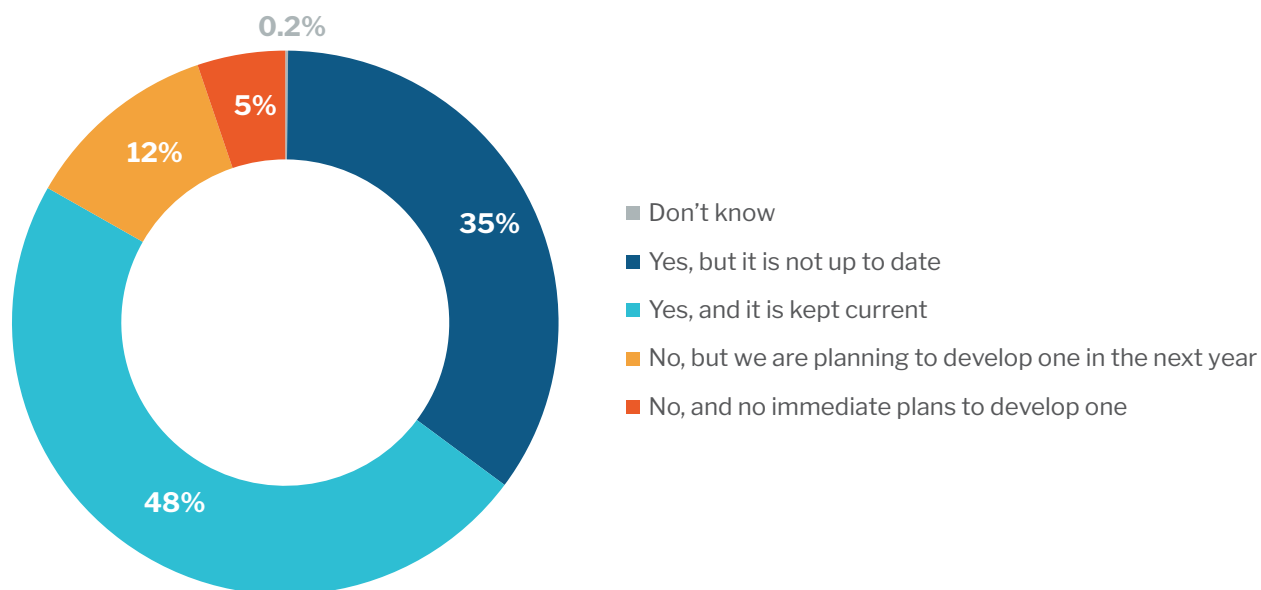


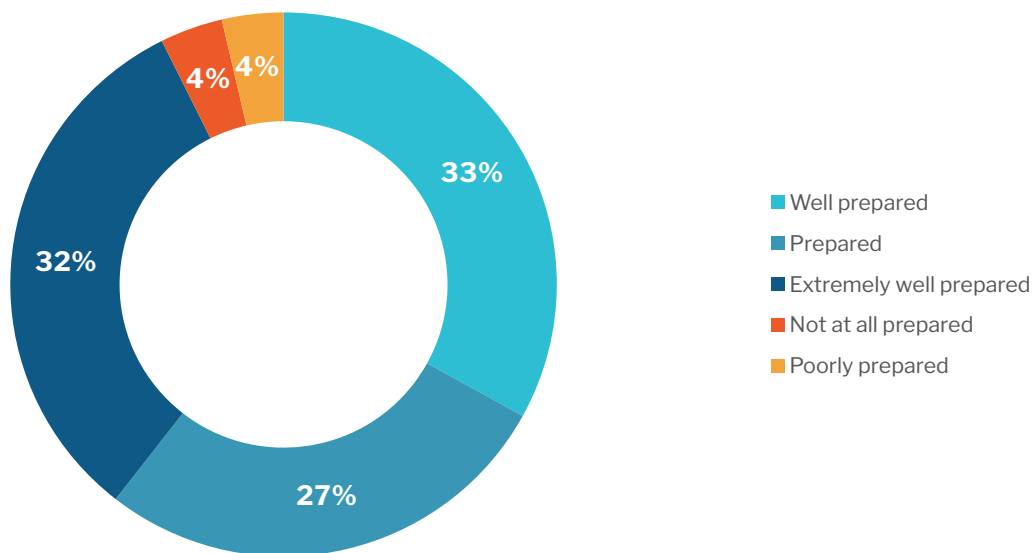
Figure 7 shows that almost half of the respondents in the study reported that they have a current plan, but only a quarter identified that they have a strategy for the hybrid environments in which 80% are currently operating. At the same time, respondents felt that they were well prepared to deal with outages and incidents that might befall them.

Figure 8. Perceptions of the ability to recover from an outage or incident that impacts application or continuous business and/or service availability

Q: How would you rate your company's ability to recover from such an outage or incident that impacts application or continuous business and/or service availability?

Source: 451 Research custom study

Base: All respondents



Over 90% believe that they're prepared to recover from an outage, with almost a third identifying that they are extremely well prepared (see Figure 8). However, the lack of comprehensive planning reported illustrates a blind spot that is not uncommon in IT environments. Planning is taking place, but it's often incomplete due to a lack of visibility or expectations of the scope of individual planning processes. The study moved from this point to explore the operational impacts of this situation.

Assessing the Risk of Cloud Outages and Business Impacts

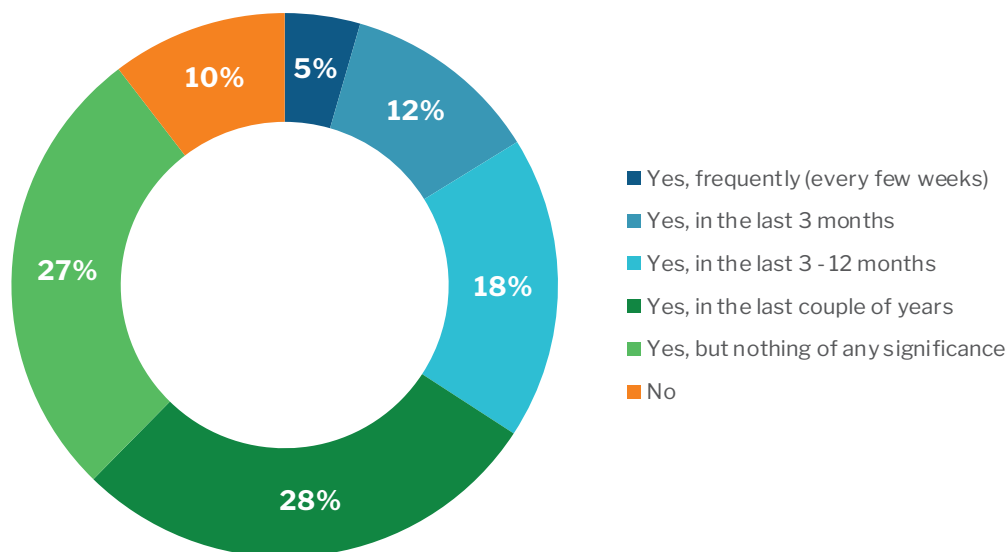
The reports of outages from respondents were significant, and the study aimed to understand both their nature and their impact on businesses. We first looked at public and private cloud outages.

Figure 9. Extent of application or business outage as a result of you running certain business workloads in a public or private cloud

Source: 451 Research custom study

Q: Has your company ever experienced any application or business outage as a result of running certain business workloads in a public or private cloud? (Single select)

Base: All respondents (n=1,211)



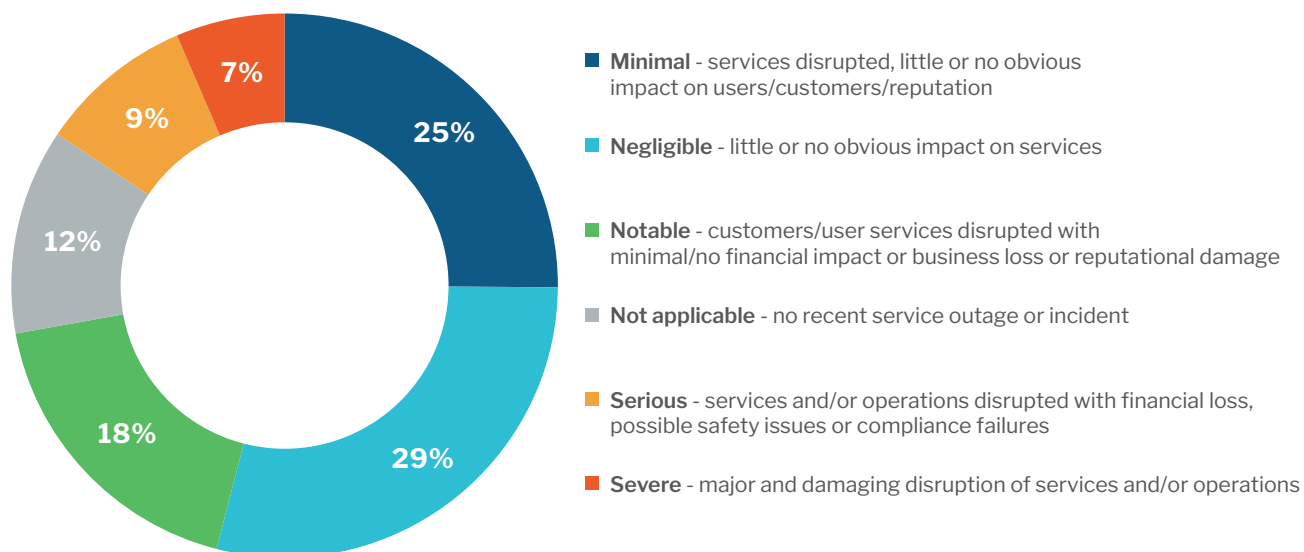
Based on the initial response, the situation doesn't appear to be severe – more than a third of respondents reported a minimal number of outages. However, when taking into account the responses regarding the severity of outages, the situation appears to be more serious.

Figure 10. Rating the impact of the most recent cloud service outage or downtime incident across the study group

Source: 451 Research custom study

Q: How would you categorize your most recent cloud service outage or downtime incident?

Base: All respondents (n=1,211)



One-third of respondents reported that the most recent incident was notable, serious or severe, with customer services disrupted. And the financial impacts reflected that situation: In estimating the total cost of downtime, almost two-thirds (64%) reported a cost of over \$1m. When considering the degree of preparedness that these respondents reported regarding their ability to respond to outages, it seems that the blind spot between planning and operations is both large and expensive.

Complexity's Effects Across IT Environments

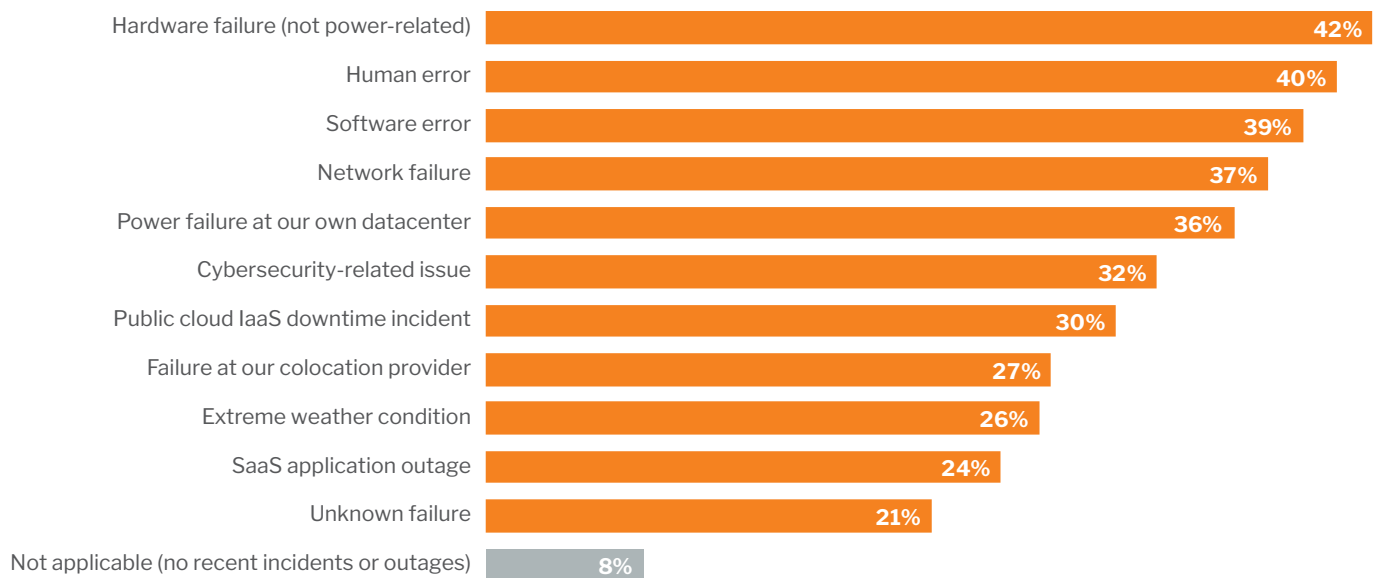
We also looked at the causes of outages and how they related to the environments in which the respondents operated. The leading cause of outages after hardware failures was human error (see Figure 11). The positive aspect of this finding is that automation of many IT operations provides a direct means of addressing this risk. 451 Research sees a consistent lag in the implementation of automation for a range of operations tasks. Most organizations are still a long distance from adopting DevOps-style practices, but automation can be integrated without a wholesale change to existing operations.

Figure 11. The primary cause(s) of respondent organizations' largest or most recent incident or outage identified

Source: 451 Research custom study

Q: What was the primary cause(s) of your organization's largest or most recent incident or outage?

Base: All respondents (n=1,211)

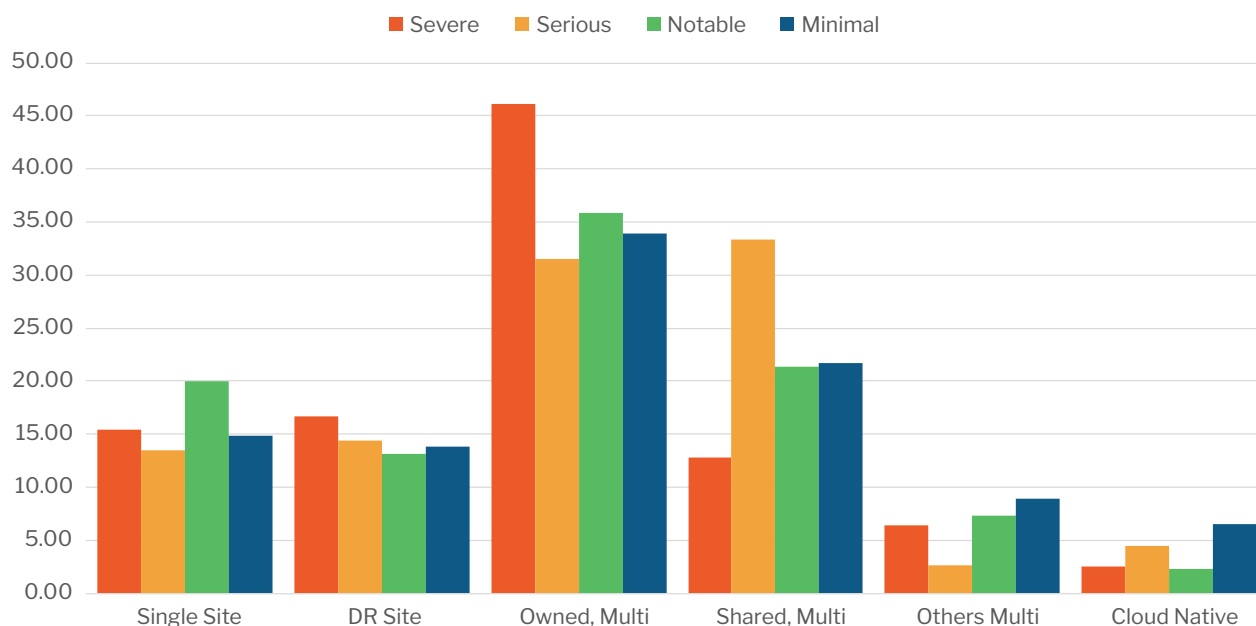


The correlation between the complexity of the infrastructure and the severity of the outages that were reported shows the impact of not incorporating automation.

Figure 12. Review of the potential impact of automation – the correlation between the complexity of the infrastructure and the severity of the outages reported across the study

Source: 451 Research custom study

Base: All respondents (n=1,211)



Environments with multiple sites, where these were owned by the enterprise, experienced the highest percentages of reported incidents with higher severities. Environments that are closest to what we characterized as cloud-native (cloud-provider-based resiliency) suffered the least, followed by the fully off-premises enterprises. This reinforces the idea that operating complex environments with traditional, disconnected management capabilities is difficult to do successfully.

Cost and Effort: Strong Motivations for Change

Recovery from outages is also costly. More than half of respondents (53%) indicated that recovering from an outage required moderate or significant efforts to bring the failed systems back into operation. The combination of the cost of the outage and recovery efforts should create a strong motivation for organizations to manage their environments more effectively.

Expectations About the Way Ahead to Hybrid

The study results offer some perspective regarding what enterprises should expect in their journey to hybrid multicloud environments, as well as ideas about how they can avoid problems along that path. There are good reasons to move to hybrid operations and good reasons to ensure that the approaches that are being used will be successful.

Including Hybrid Services into the Strategic Plan

First and foremost, enterprises have to expand their planning to include their complete portfolio of infrastructure services. They exclude cloud services at their peril, as key data sources and application elements continue their move there. That planning needs to span the differing resource types and controls that make up a hybrid environment and create a means to use a common operating model across them. This is an area that can deliver significant operation simplification, as well as consistent performance.

Operational Integration Becomes Imperative

The most fundamental aspect of operational improvement that the study data suggests is operational integration. Complexity creates a set of challenges that can fuel issues driven by human error and mechanical failure. By integrating operations across hybrid multicloud environments, enterprises create common models that simplify the way in which their environments operate.

Conclusions

Greater use of hybrid multicloud environments is an inevitability for modern organizations. There are significant benefits in being able to master the complexities of operating in this mode that can make businesses more cost-efficient and deliver resource agility that is difficult to achieve by any other means. However, the complexities of this path can add risk to those that are unable to manage them well. It's an area where new skills and operational models are required but may be difficult for businesses to grow organically. Enterprises are moving forward faster than their operational protections can keep up, and that's a risky proposition. They need to take stock of their current situation and build up their levels of resiliency before they encounter problems that could endanger their hybrid multicloud journey.

Recommendations

- Given the challenges that most enterprises face regarding resources and skills, it's important for them to look for an outside assessment of the resilience of their full resource portfolio, as well as the systems and procedures that they have in place to manage application resilience, and to look more broadly at business continuity planning.
- In many cases, the path to increasing resilience across hybrid multicloud environments can simplify operations and grind out complexity.
- Insights into best practices can help IT organizations become more efficient and enable them to do more with the teams that they have.



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Kyndryl, formerly IBM Infrastructure Services helps clients develop and implement enterprise-wide resilience strategies and solutions to de-risk their journey to hybrid multicloud. It helps clients optimize IT availability and business continuity, either within day-to-day operations or under unexpected conditions such as cyberattacks, hardware and software failure, supplier failure, and natural or human-made disasters.

Kyndryl's portfolio of resilience offerings includes advisory, infrastructure, design/build, implementation, and managed services – ranging from resilience orchestration, backup and data protection, disaster recovery, and cyber resilience to full-scale compute, data and application resilience, high availability, and efficient facilities and data centers.

Using software-defined approaches and orchestration solutions, Kyndryl Resiliency Services helps clients keep mission-critical applications running, safeguard enterprise data, and achieve faster and reliable recovery in the event of outages. It provides rapid failover and failback for compute environments across physical, virtual, cloud and legacy layers. It also offers cloud landing zones for failover to help clients achieve improved agility, flexibility and cost efficiency.

Kyndryl supports businesses with complex hybrid multicloud deployments, including public cloud, private cloud, colocation and on-premises data centers. It also has a strong multicloud practice across popular cloud providers, including Red Hat OpenShift, AWS, Azure, Google Cloud, and IBM Cloud.

For more information, visit: www.kyndryl.com/.

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NEW YORK

55 Water Street
New York, NY 10041
+1 212 505 3030



SAN FRANCISCO

One California Street, 31st Floor
San Francisco, CA 94111
+1 212 505 3030



LONDON

20 Canada Square
Canary Wharf
London E14 5LH, UK
+44 (0) 203 929 5700



BOSTON

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