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Thought Leadership Paper
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Hybrid IT Strategy Insights

How Composable Infrastructure Can
Fuel Breakthrough Business Innovation
And Performance

Table Of Contents

- 1** Executive Summary
- 2** IT Leaders Seek Empowerment Through Hybrid IT Models
- 4** Hybrid By Accident — Not Design — Limits Potential Gains
- 7** High Performers Who Embrace Composability And Continuous Delivery Reap Rewards
- 13** Key Recommendations
- 14** Appendix

Project Director:

Rudy Hernandez,
Senior Market Impact Consultant

Contributing Research:

Forrester's Infrastructure &
Operations research group

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Composability allows infrastructure to be treated like applications — enabling IT operations to construct new systems from collections of building blocks, using software-defined models to create new composite systems at will. The models are managed as code, and automation tools produce the actual infrastructure as described by the model.

Executive Summary

IT leaders desperately need to innovate their infrastructure and operations practices to remain competitive in the age of the customer. While public cloud offers benefits of speed and scale, leaders recognize that the “one-size-fits-all” approach does not always work — many adopt and execute hybrid IT strategies as a result. Organizations need to leverage infrastructure best practices and seek guidance on the technologies needed for this hybrid success.

In September 2017, HPE commissioned Forrester Consulting to evaluate the state of hybrid IT models. Forrester conducted an online survey with 562 IT decision makers across the globe who are leading their firms through digital transformation efforts to explore the technologies used, challenges experienced, and benefits gained from their hybrid IT models. We found that when hybrid IT is built by accident — and not by design — it can inhibit digital transformation efforts. Other firms adopted both continuous delivery release automation and local composable infrastructure (i.e., software-defined infrastructure where models are managed as code and have granular composability with atomic selection down to CPU and memory assignment). These firms were more likely to mitigate challenges and were in a better position to empower their organization to win, serve, and retain customers.

KEY FINDINGS

- › **Hybrid strategies are designed to position IT as an essential part of the business.** Fifty-six percent of respondents state that positioning IT as a central part of the organization is an element of their hybrid IT strategies — more than any other element.
- › **Two-thirds of firms end up with hybrid by accident — not design.** Only 33% of firms design a comprehensive hybrid IT strategy from the ground up. The rest have seen their plans spin out of control, are trying to triage an organic model, or are not tackling the issue at all.
- › **Adoption of both local composable infrastructure and continuous delivery release automation correlates with increased control and greater business benefits.** Combining the impact of local composable infrastructure with that of continuous delivery release automation truly unlocks the power of both. Those that have done so report faster, more flexible, and more efficient ecosystems that enable them to better meet customer expectations (92%), gain an edge over competitors (91%), and increase selling opportunities (89%).

Models can have **local composability** (granular, atomic hardware selection down to CPU and memory assignment), **global composability** (container or virtual machine [VM] definitions leveraged across multiple sites), or a combination of the two.

IT Leaders Seek Empowerment Through Hybrid IT Models

IT leaders who wish to remain relevant through technology-fueled, customer-led disruption must elevate the status of the IT department — thinking beyond maintaining back-end functions and seeking to lead initiatives that directly affect the business' ability to win, serve, and retain customers. Making this transition means IT must reimagine its current infrastructure approach; models now need to maximize scale, reliability, and cost flexibility to stay apace with the speed of customers.¹

Hybrid models have provided a solution for many firms undergoing this digital transformation journey. While public cloud enables enterprises to scale continuous delivery and innovation to their specifications, it does not serve all their needs. A hybrid model allows for customization where needed, while also controlling for costs. This study of 562 IT decision makers worldwide in organizations that have undertaken a hybrid journey confirms that:

- › **IT is expected to highly contribute to or outright own key business initiatives.** In addition to maintaining back-end operations, IT is directly tasked with delivering value to customers and helping the business succeed. Enterprises expect IT to contribute highly or even outright own the responsibility of understanding their customers through data (80%) and improving user experience (UX) across channels (78%) in addition to table stakes such as fraud protection and streamlining business processes (see Figure 1).
- › **Hybrid strategies are designed to position IT as an essential part of the business as a whole.** IT turns to hybrid strategies specifically to help achieve its newly acquired goals and to showcase itself as an integral part of the enterprise. Indeed, this is the most common element of all hybrid IT strategies among those surveyed (see Figure 2).
- › **A hybrid model has the potential to deliver the benefits of public cloud while controlling costs.** IT professionals pursue a hybrid model to allow them to integrate with public cloud while still maintaining control and reducing costs (see Figure 2). A VP of infrastructure confirmed that he was pursuing his current hybrid strategy specifically to achieve the ease of administration received from public cloud, without the costs.

“We’ve been wanting to achieve the ease of administration and the economies that you get in terms of your staffing and maintenance costs that are associated with public cloud, but not the expenses associated with public cloud. We like the control that you get when your own infrastructure. So, we’re trying to blend those two worlds together.”

VP of infrastructure, large US media company



Figure 1

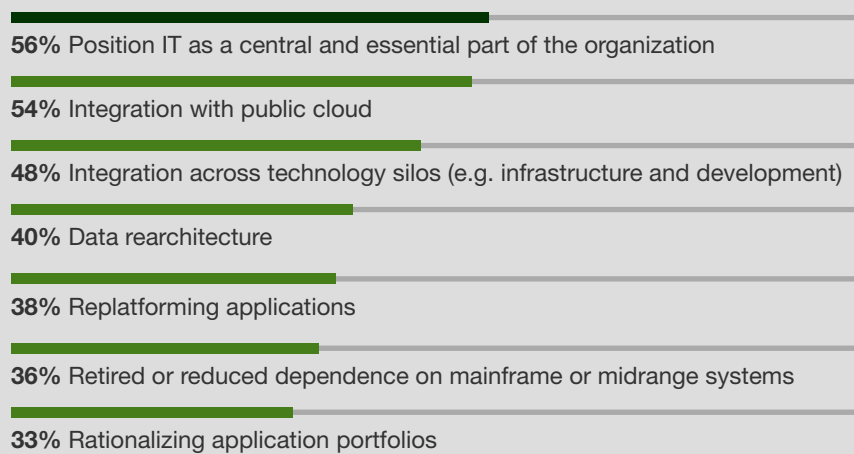
“Among the priorities that are most important to your business, what level of contribution is expected from the IT department?” (Showing those selecting “A high level of contribution is expected from IT” or “IT is expected to own or lead this priority” from a 5-point scale)



Base: 562 decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Figure 2

“Which of the following elements are part of your organization’s hybrid IT strategy?” (Select all that apply)



Base: 562 decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Hybrid By Accident — Not Design — Limits Potential Gains

Due to the high stakes involved, IT professionals have a lot riding on their hybrid IT models. The expectation is that these models will have the necessary flexibility and scalability to handle increasingly complex environments where workloads can live anywhere. Unfortunately, reality rarely meets expectation: Pervasive people, process, and technology challenges cause IT departments to take pause. In attempting to work around these challenges and patching together solutions, IT leaders often find that they stray from their overarching mission. The result is a hybrid model by accident: integrating public cloud with on-premises tech without standardizing on a common infrastructure-as-code practice, shadow IT cloud “experiments” that suddenly become production, and outdated governance practices that slow everyone down. Leaders end up with a model that fails to elevate IT beyond back-end operations, fails to live up to the hybrid IT’s potential, and ultimately confuses operations for everyone.

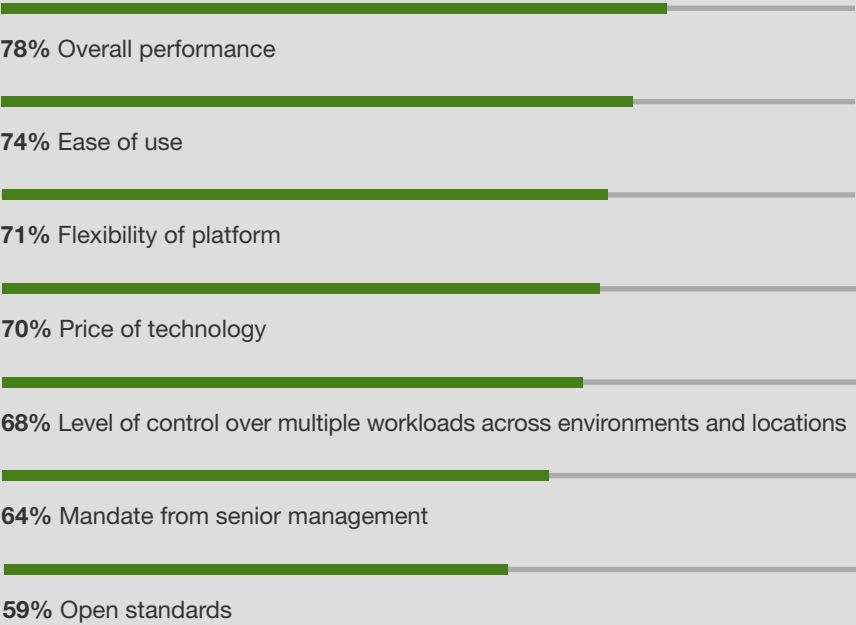


Results of this study show that:

- › **Flexibility, ease of use, and high performance are essential for a hybrid IT strategy to succeed.** Ultimately, IT professionals develop their strategy with flexibility (71%), ease of use (74%), and overall performance (78%) in mind. Moreover, while 70% factor in price, IT ultimately needs a solution that just works (see Figure 3).

Figure 3

“How much of an influence did the following aspects have in informing how you came to your current hybrid IT strategy?” (Showing those selecting “Critically influential” or “Highly influential” on a 5-point scale)



Base: 562 decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

› **People, process, and technology challenges abound.** In addition to the ever-present security (45%) and budget (37%) challenges that enterprises often face, IT professionals must solve a host of issues to make their hybrid IT strategies work. Indeed, legacy systems, multiple workloads, finding and retraining the right people, and compliance issues are among the top challenges that IT must mitigate (see Figure 4).

Figure 4

“Which of the following specific challenges have you witnessed by implementing your current hybrid technology strategy?” (Select all that apply)



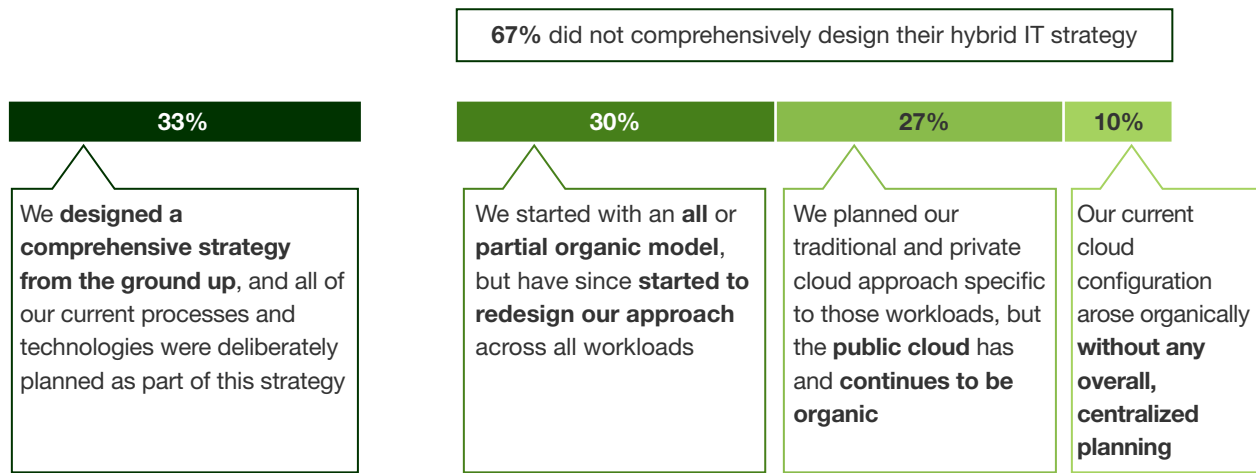
Base: 562 decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

› **Two-thirds end up with hybrid by accident — not design.**

Unfortunately, many enterprises are unable to navigate through their challenges cohesively: Issues are tackled piecemeal, and shadow IT creeps up and needs to be integrated into overall processes. Only 33% of enterprises in this study were able to architect their hybrid IT strategy and stick to it. The rest have either seen their plans spin out of control, are trying to triage an organic model, or are not tackling the issue at all (see Figure 5).

Figure 5

“What best describes how you arrived at your organization’s current IT configuration?” (Select one)

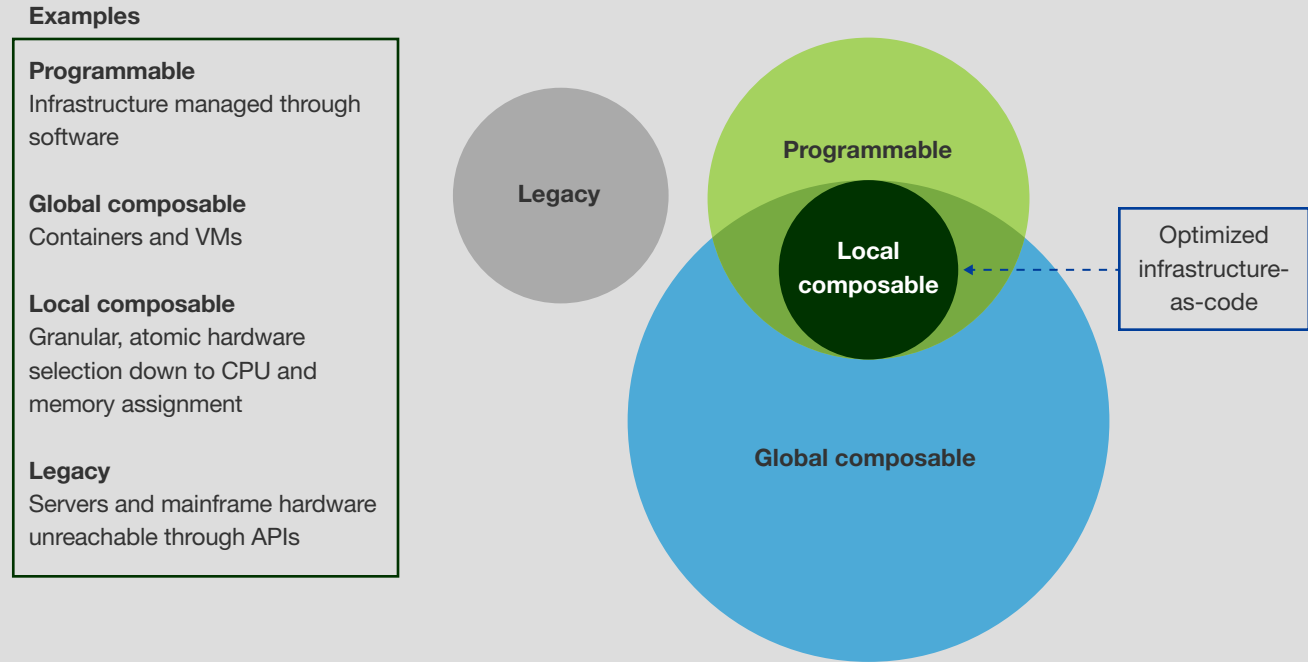


Base: 562 decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

High Performers That Embrace Composability And Continuous Delivery Reap Rewards

A growing number of firms that design their hybrid IT strategy by implementing both elements of local composable and continuous delivery have been able to overcome challenges and experience business benefits, including greater speed of innovation and responsiveness, as well as control over workloads. Technology that promotes continuous, iterative development is essential to keeping up with evolving users. Meanwhile, composable infrastructure allows for virtual infrastructure to be treated like applications — enabling IT operations to construct new infrastructure from collections of building blocks, using software-defined models to create new composite systems at will. The models are managed as code, and automation tools produce the actual infrastructure as described by the model. Models can have local composability (granular, atomic hardware selection down to CPU and memory assignment), global composability (container or virtual machine [VM] definitions leveraged across multiple sites), or a combination (see Figure 6).²

Figure 6
Types of infrastructure



Source: Forrester Research

IT professionals in this study who adopted both local composable infrastructure and continuous delivery witnessed significantly more benefits than those who did not (see Figure 7). These enterprises were able to:

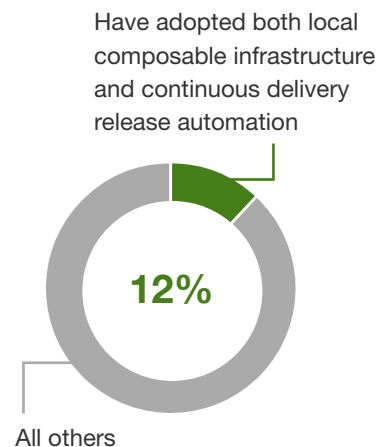
- › **Replace legacy tools, better organize staff for hybrid, and refocus their vision/direction.** Those adopting local composable infrastructure and the complementary approach of continuous delivery were more likely to revamp their people, processes, and technology to overcome the challenges that come with implementing a hybrid IT model. They were more likely than all others in this study to replace legacy toolsets (59%), bring in new employees (58%), merge developers and operations into integrated product teams (50%), and refocus their overall vision (52%, see Figure 8).
- › **Improve control, reliability, and speed while reducing complexity.** Those adopting local composable infrastructure and continuous delivery report notably greater control over their workloads than all others — 61% say they have extremely high levels of control of their workloads, compared to 24% of those without these two technologies (see Figure 9). They are also much more likely to experience improved reliability and redundancy (62%), faster updates (62%), higher-quality data (58%), and reduced infrastructure (46%) and app (44%) complexity (see Figure 10).
- › **Reap more rewards from their technology ecosystem.** A faster, more flexible, and more efficient ecosystem makes the entire organization more productive. This translates into improved business outcomes: The organization can better meet customer expectations (92%), gain an edge over competitors (91%), and increase selling opportunities (89%). Also, there is a focus on deriving better data insights (89%), improving UX (89%), and streamlining business processes (86%, see Figure 11).

LOCAL COMPOSABLE INFRASTRUCTURE WORKS TOGETHER WITH CONTINUOUS DELIVERY TO DELIVER BENEFITS

Importantly, while both local composable infrastructure and continuous delivery provide benefits on their own, those organizations that have adopted both together have been able to couple their advantages. When examined individually — isolating those that adopted only one of the technologies and comparing the benefits they received — this study confirms that those adopting only local composable infrastructure or only continuous delivery do not experience the higher quality and reduced infrastructure complexity as those that adopt both (see Figure 12). The reason is simple: While you can use continuous delivery with simple programmable hardware, you will not have the same fine-grain control. Local composable hardware unlocks the ability for continuous delivery to treat hardware like their globally composable counterparts: rich degrees of scale and precise tuning for every application release.

Figure 7

“Which of the following technologies have you adopted as part of your hybrid IT strategy?”

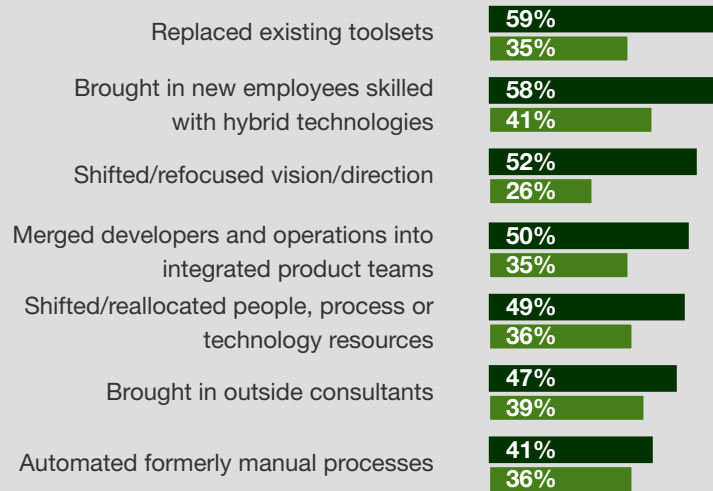


Base: 562 decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Figure 8

“Which of the actions have you taken to help you overcome the challenges you’ve faced with your hybrid IT strategy?”
(Select all that apply)

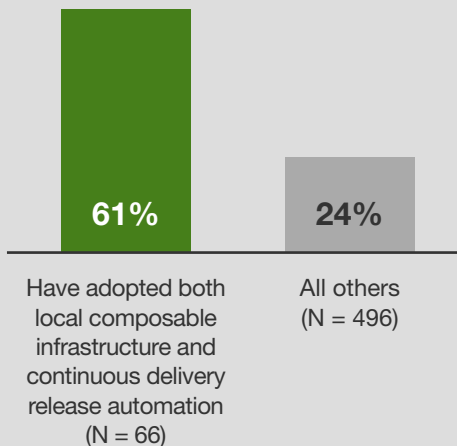
- Have adopted both local composable infrastructure and continuous delivery release automation (N = 66)
- All others (N = 496)



Base: Decision makers responsible for IT operations, enterprise architecture, and app development at global enterprises
Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Figure 9

“Which of the following best describes the level of control you have over all of the workloads across all of the environments and locations throughout your organization?” (Showing those stating “Extremely high level of control” on a 5-point scale)

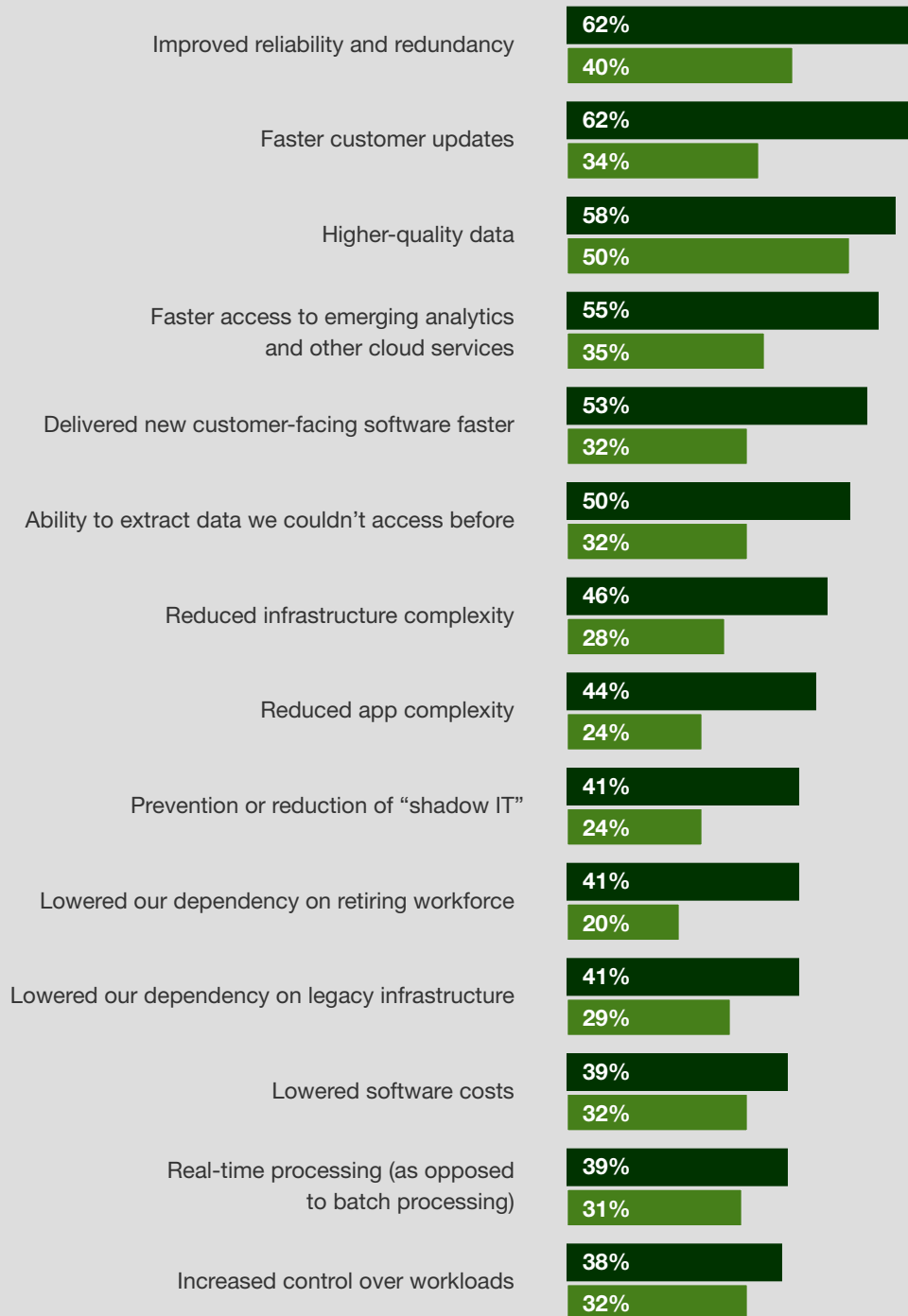


Base: Decision makers responsible for IT operations, enterprise architecture and app development at global enterprises
Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Figure 10

“Which of the following benefits have you witnessed by implementing your current hybrid IT strategy?” (Select all that apply)

- Have adopted both local composable infrastructure and continuous delivery release automation (N = 66)
- All others (N = 496)

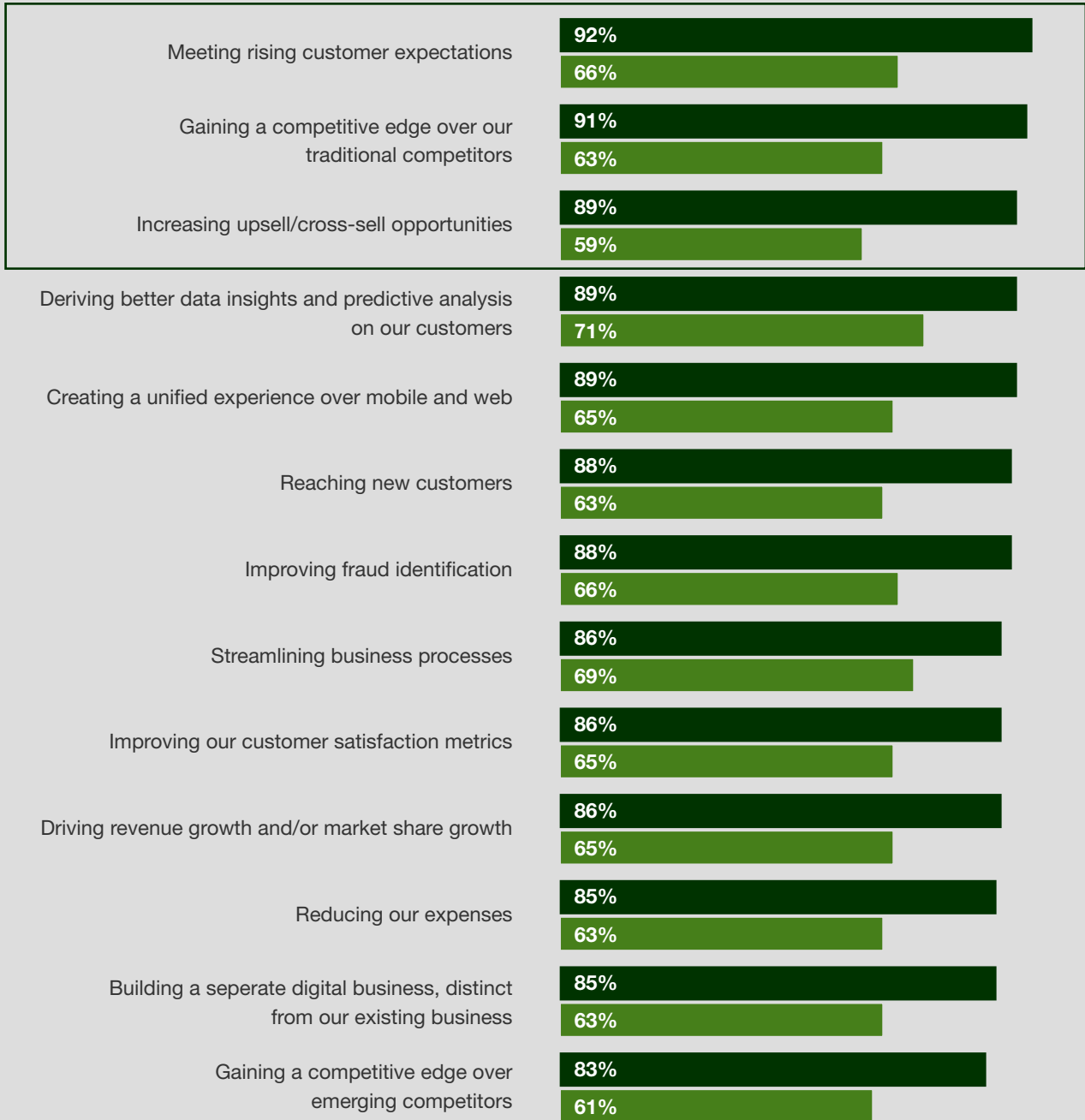


Base: Decision makers responsible for IT operations, enterprise architecture and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Figure 11

“To what extent have the technologies currently deployed/adopted as part of your organization’s hybrid IT strategy set helped your organization achieve its business priorities?” (Showing those selecting “Very” or “Extremely helpful in achieving this priority” on a 5-point scale)

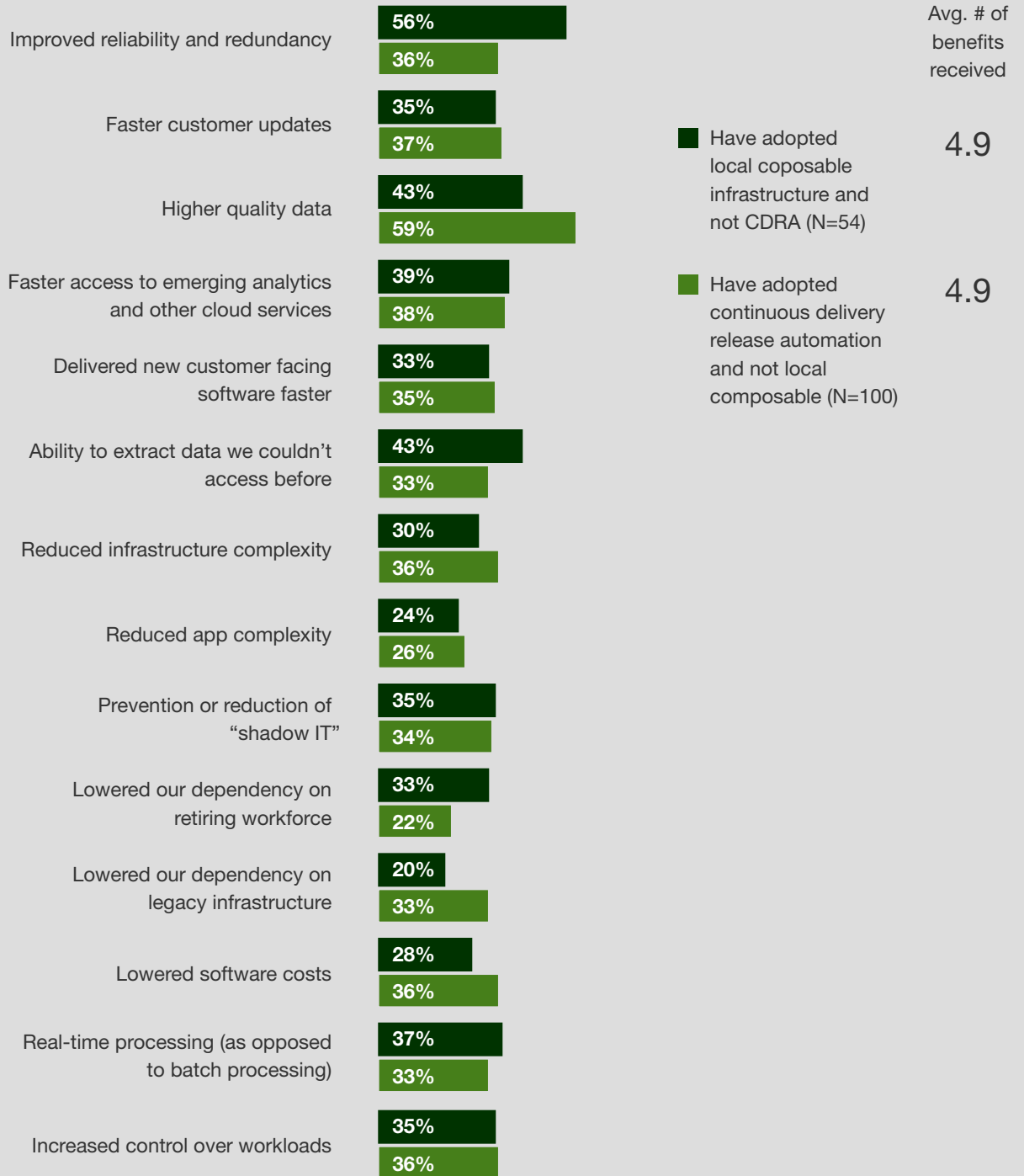
- Have adopted both local composable infrastructure and continuous delivery release automation (N = 66)
- All others (N = 496)



Base: Decision makers responsible for IT operations, enterprise architecture and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Figure 12

“To what extent have the technologies currently deployed/adopted as part of your organization’s hybrid IT strategy set helped your organization achieve its business priorities?” (Showing those selecting “Very” or “Extremely helpful in achieving this priority” on a 5-point scale)



Base: Decision makers responsible for IT operations, enterprise architecture and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Key Recommendations

The effort toward being hybrid by design is as much cultural as technological. Local composable infrastructure enables flexibility, but only when paired with the right automation toolsets. You must skill your workforce around automation and build teams dedicated to improving product, not project, delivery. Leaders who wish to take this journey must:



Rationalize automation tools and skillsets. Many enterprises that have experimented with automation end up with “islands”: different tools being used in different parts of the organization that achieve the same purpose. This is a strong example of “hybrid by accident.” To best address this, conduct a rationalization effort. Determine what tools are best-in-class for your purposes, and design your automation operating model around them. Build consensus around common workflows — do not dictate them.



Adopt local composable infrastructure and continuous delivery release automation together. While gains can be achieved by employing continuous delivery release automation or deploying composable infrastructure separately, the combined impact of both truly unlocks their power. Continuous delivery permits the atomic nature of composable infrastructure to be fully exploited, tying specific infrastructure designs to application releases. It offers richer degrees of scale and more precise tuning for every software release. When done right, continuous delivery becomes a systems-wide proposition, fully leveraging the infrastructure’s flexibility to achieve an optimized hybrid vision.



Skill your workforce around local and global composable technologies. While cloud has enabled an uptick in technology professionals attuned to application delivery, there is still much work to be done. Systems administrators are now developers and must employ all the tricks of the trade (source code management, release automation, etc.) as their coding counterparts — particularly with local and composable infrastructure. Skilling around developing infrastructure as code allows infrastructure and operations to deliver business objectives more effectively.



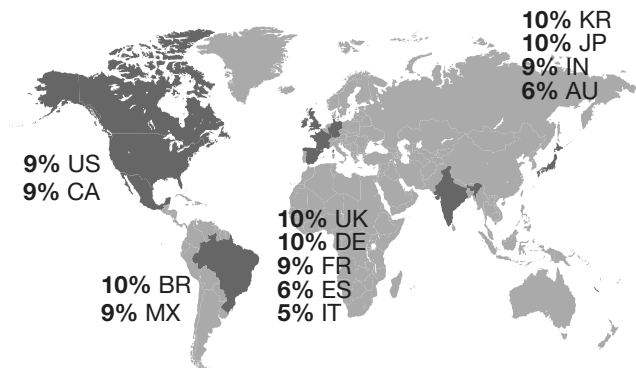
Merge architects, developers, and operations into integrated product teams. The drums of silo breakage have been beaten for years, but we are finally reaching traction in their collapse. Product delivery, rather than project delivery, is key. Build teams focused on individual products and their releases, crossing disciplines of design, development, and operations. Incorporate security professionals and, of course, line of business to own rollouts and be an active stakeholder. Your business will stall without this integration.

Appendix A: Methodology

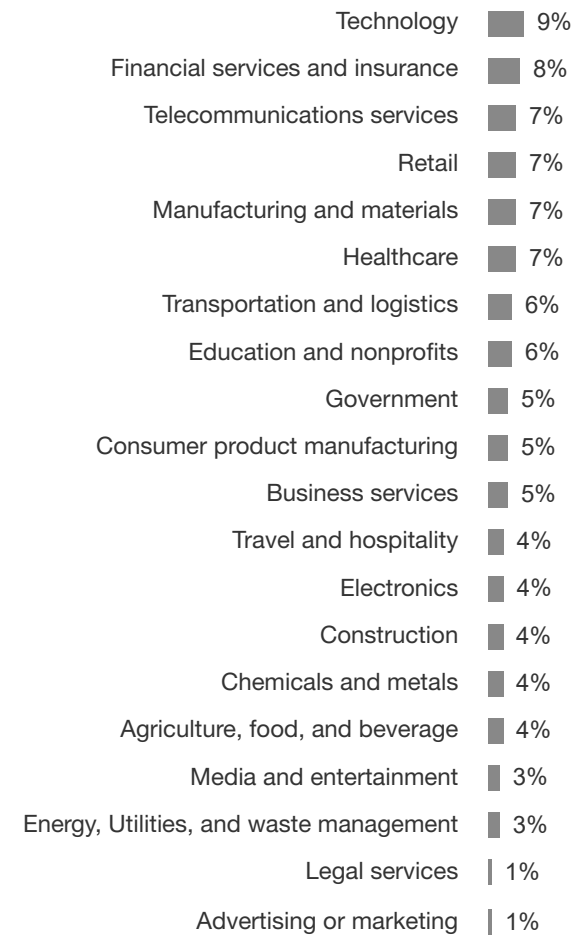
In this study, Forrester conducted an online survey of 562 IT professionals in the US, Canada, Brazil, Mexico, the UK, France, Germany, Spain, Italy, South Korea, Japan, India, and Australia to evaluate how organizations embarking on digital transformation efforts approach their hybrid IT strategies. Survey participants included decision makers in IT operations, enterprise architecture, and app development. Questions provided to the participants asked about technologies implemented, elements of their strategies, priorities, challenges, and benefits received. This study was also augmented with three phone interviews with IT decision makers with the same qualifications of those in the quantitative study. The study began and was completed in November 2017.

Appendix B: Demographics/Data

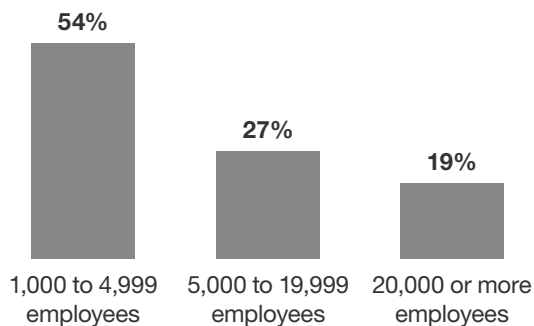
“In which country are you located?”



“Which of the following best describes the industry to which your company belongs?”



“Using your best estimate, how many employees work for your firm worldwide?”



Base: 562 decision makers responsible for IT operations, enterprise architecture and app development at global enterprises
 Source: A commissioned study conducted by Forrester Consulting on behalf of HPE, November 2017

Appendix C: Supplemental Material

RELATED FORRESTER RESEARCH

“Lead The I&O Software Revolution With Infrastructure-As-Code,” Forrester Research, Inc., September 12, 2017.

Appendix D: Endnotes

¹ Source: “Automation Drives The I&O Industrial Revolution,” Forrester Research, Inc., November 29, 2017.

² Source: “Lead The I&O Software Revolution With Infrastructure-As-Code,” Forrester Research, Inc., September 12, 2017.