



Cognizant

# Driving Digital Through Hybrid Cloud

FEATURING RESEARCH FROM FORRESTER

Top 10 Facts Every Tech Leader Should Know About Hybrid Cloud

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### DRIVING DIGITAL THROUGH HYBRID CLOUD

Leveraging a Hybrid Cloud framework for infrastructure is one of the best steps businesses can take to be Digital. By combining the security afforded by Private Cloud with the elasticity and scalability of Public Cloud, Hybrid Cloud provides IT leaders with the ability to respond to rapid growth, new business demands, and allows dynamic orchestration of application workloads between the Public and Private Cloud, and the ability to unify the architecture with integrated processes, tools and governance.

Immediate ROI can be extracted from this approach when combined with pre-packaged, pre-built solutions that are easily integrated and adopted across the enterprise. Digital applications can be delivered through Private-Public-Multi Cloud resources securely, while streamlining and accelerating infrastructure services, without costly overhauls. Partnering with the right service provider for a Hybrid Cloud strategy is key to being efficient, agile, and customer-centric, in a speedy and affordable manner.

### COGNIZANT'S APPROACH TO HYBRID CLOUD

Enterprises often find themselves having to make a choice between productivity and portability, depending upon whether they choose a by-design or by-accident approach to Hybrid. Application re-architecting may be required to reduce latency and ensure consistent user experience, while enterprises may also need to invest in tools so as to enable them to manage infrastructures across multiple providers and networks.

Another very important factor to be kept in mind, is that there is no one-size fits-all approach to Hybrid Computing and the success of any Hybrid Cloud initiative depends greatly on the planning and implementation process. Mixing different Clouds also creates challenges associated with governance and compliance, which need to be addressed in the beginning, so as to avoid greater complexity, security risks, and integration problems later on.

Successful Hybrid Cloud implementation enabled one of our clients, a prominent energy utility services provider, to bring dramatic improvements to their business. With a futuristic, Multi-Cloud approach, Cognizant played the role of an integrator for the client. Through standardization and simplification of services with seamless service experience across Azure, AWS and Private Cloud, and Hybrid Cloud automation through Cognizant's Hive Center AI (Enterprise Automation Platform), the client was able to drive superior customer experience with rapid provisioning and reduce deployment times from weeks to within hours.

Cognizant's approach helps enterprises make the most of their Cloud strategy, and become more agile, efficient, and customer-centric. With a vast pool of highly talented professionals and years of cross-industry experience in Cloud implementation, Cognizant delivers reliable Hybrid Cloud services that have been proven to drive business transformation for its clients. Its unique CloudFrame online portal for IaaS allows enterprises to easily estimate costs, compare service providers, and take a look at all the hardware/software components involved, giving them a complete view of the solution and allowing them to gauge its impact on business. About Cognizant:

#### **NEXT STEP**

Refer to this Forrester report on "Top 10 Facts Every Tech Leader Should Know About Hybrid Cloud", to understand the finer nuances and best practices with respect to Hybrid Cloud and the factors that need to be taken into consideration to successfully implement Hybrid Cloud to modernize your IT infrastructure for the Digital world.

# Top 10 Facts Every Tech Leader Should Know About Hybrid Cloud

Hybrid Cloud Isn't A Specific Strategy — It's A Sanity Statement

by Lauren E. Nelson

April 25, 2018

## Why Read This Report

Hybrid cloud is an obvious strategy, and despite cloud migration interest, it's here to stay. Cost of change and compliance are the two biggest proof points for hybrid's continued relevance, but no single deployment model serves all use cases. This report serves as a primer on multicloud and hybrid cloud to help infrastructure and operations (I&O) pros and leaders understand hybrid definition, current status, best practices, and how hybrid has advanced over the past few years.

## Key Takeaways

### **Multicloud And Hybrid Cloud Are Equally Useless Terms**

Hybrid cloud is the use of cloud in parallel with other technologies, whether cloud or noncloud. Multicloud requires the use of multiple cloud technologies. Both mean very little. Avoid the terminology traps, and focus on goals.

### **Hybrid-By-Design Is Slower Than Hybrid-By-Accident**

Hybrid-by-design sounds great, but in practice, it can slow down developer productivity to an extent that removes I&O from the conversation. Many organizations start with hybrid-by-accident and hope to evolve toward hybrid-by-design in the future.

### **Invisible Cloud Management Gives Greater Control To Developers Than Invisible Clouds**

I&O pros strive to abstract away "where" decisions from the development process. However, many developers prefer to abstract away I&O — not the clouds — from the process.

# Top 10 Facts Every Tech Leader Should Know About Hybrid Cloud

## Hybrid Cloud Isn't A Specific Strategy — It's A Sanity Statement



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with [Glenn O'Donnell](#), William McKeon-White, Amanda Lipson, Julia Caldwell, and Diane Lynch

April 25, 2018

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### Related Research Documents

[Azure Stack Sparks The Hybrid Cloud Explosion](#)

[Now Tech: Hybrid Cloud Management, Q1 2018](#)

[The State Of Cloud Migration, Portability, And Interoperability, Q4 2017](#)



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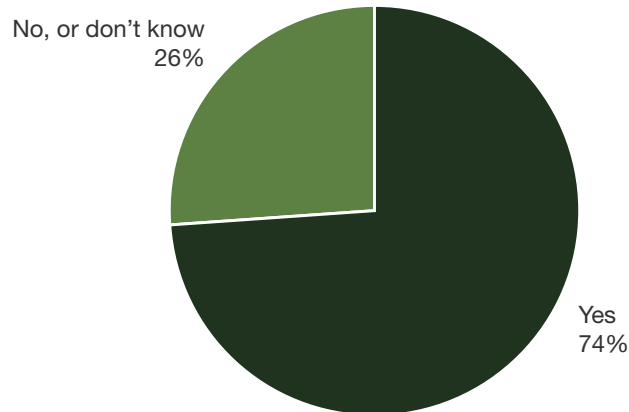
## Hybrid Cloud Is The Obvious Strategy — And You Already Have One

Forrester frequently fields questions from I&O pros asking whether hybrid cloud will survive in the world of cloud migration.<sup>1</sup> The answer is obvious — yes, it will. Executing on new technology can be complex and costly, and completely switching from today's current infrastructure reality to one based 100% on public cloud is so prohibitively expensive that no one's doing it. Even General Electric (GE), exemplar of the cloud migration movement, places all low-criticality applications into the public cloud, with the remainder using either OpenStack or VMware on-premises.<sup>2</sup> The specific mix will vary by organization and evolve over time, but it's hybrid, nonetheless. Hybrid cloud articulates a balance of leveraging existing investments while wrapping in new cloud technologies to bring powerful improvements. In 2017, 74% of North American and European enterprise infrastructure decision makers defined their strategy as hybrid (see Figure 1).<sup>3</sup> However:

- › **Hybrid cloud means very little.** NIST's cloud definitions are the standard in all things as-a-service — except when it comes to hybrid cloud. NIST defines hybrid cloud as the ability to burst between two or more clouds for load balancing data and applications.<sup>4</sup> This vision has little relevancy in today's cloud reality. Hybrid cloud, as the market defines it, is the use of cloud in parallel with other technologies — cloud or noncloud (see Figure 2). It's cloud plus anything. Essentially, it describes every organization, but with absolutely no specificity. It's a statement that no single infrastructure technology serves all the needs of an organization, and because of that, facilitating this hybrid reality is complex.
- › **Multicloud isn't any better.** To break free from this definition and its vague variations, some have replaced the term hybrid cloud with *multicloud*. This new term requires the use of multiple cloud technologies. The difference is minimal. Although the term is fresh, many use it interchangeably with hybrid cloud. Today, 39% of enterprise cloud users define hybrid cloud specifically as multicloud, either using multiple public and private clouds for different use cases (25%) or using multiple public clouds (14%) (see Figure 3). At times, this added nuance creates clarity, but it can also lead to confusion.

**FIGURE 1** North American And European Enterprise Decision Makers Consider Their Cloud Strategies Hybrid

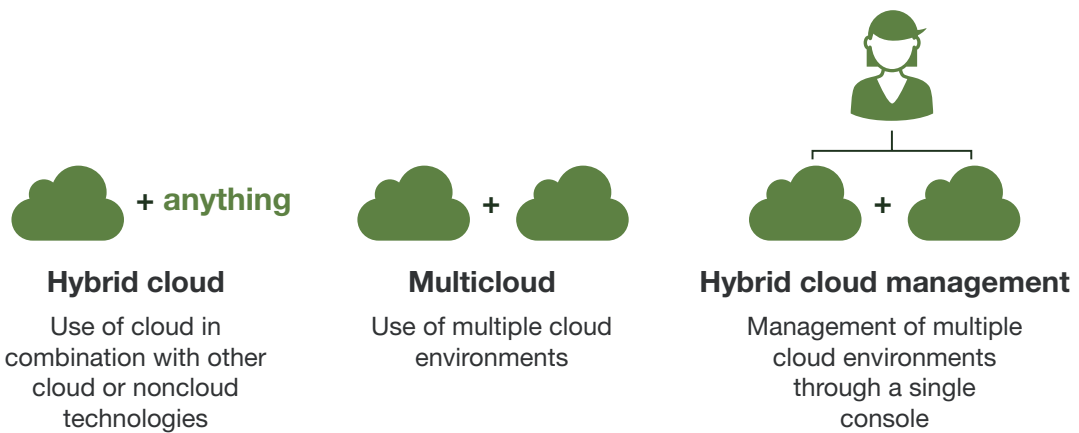
**“Would you describe your cloud strategy as hybrid?”**



Base: 902 North American and European enterprise IT infrastructure decision makers whose firms have implemented or are planning, implementing, or expanding cloud

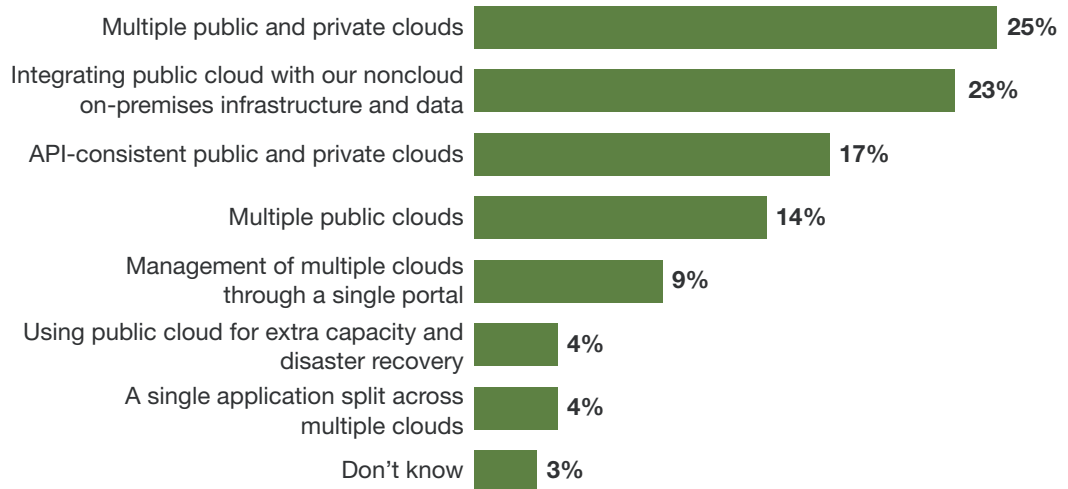
Source: Forrester Data Global Business Technographics® Infrastructure Survey, 2017

**FIGURE 2** Defining Hybrid Cloud, Multicloud, And Hybrid Cloud Management



**FIGURE 3** Hybrid Cloud Definitions Vary

**“Which of the following most closely describes what ‘hybrid cloud’ means in your organization?”**



Base: 902 North American and European enterprise IT infrastructure decision makers whose firms have implemented or are planning, implementing, or expanding cloud

Source: Forrester Data Global Business Technographics® Infrastructure Survey, 2017

## Top 10 Facts Every Tech Leader Should Know About Hybrid Cloud

The term hybrid cloud not only describes very little but also includes everything. Being an expert in hybrid cloud requires depth in knowledge about people, processes, and technology across the full spectrum of as-a-service and supporting technologies. This includes cloud apps, cloud application and developer services, cloud platforms, cloud management tools, and solutions that help connect your solutions of choice. As enterprises start to build their hybrid cloud strategies, be aware of these 10 key principles.

1. **Hybrid-by-accident is common.** Cloud strategies are often a compilation of the best tools available at the time that organizations select them. Companies facing digital transformation realize that stagnation is death and have jumped into this rapidly moving space to serve a variety of use cases, teams, and developer types. This world is hybrid, but it's also an accidental hodgepodge of tools rather than a group of carefully selected, integrated, and modernized solutions. Although this is chaotic at times, it preserves productivity above all else, often sacrificing compliance and governance in the name of innovation. This is by no means ideal, but it's a starting point that gives credibility to technology organization teams at the front end of cloud adoption. It helps avoid disconnected shadow IT efforts that lack governance.



2. **Hybrid-by-design has also fallen short of expectations.** The alternative to hybrid-by-accident is hybrid-by-design — an approach that follows the “get out in front of cloud usage” mantra. The cloud management team picks the tools to serve multiple teams and use cases. Decisions consider ease of integrations, ability to leverage existing systems, and total required budget. Although the goal is to uphold productivity, governance, and compliance, in practice, productivity suffers. This can kill momentum and raises the question of the value of operations in cloud strategies altogether. For this reason, some organizations start out with open gates, allowing developers to utilize cloud technologies easily and eventually pivot to a more strategic model that positions specific usage patterns or rules of usage. Templates, automated workflows, native portal access via APIs, and business-group-led cloud strategies are all ways tech leaders are tackling productivity hurdles while ensuring that developers get the tools they need.
3. **New application brokerage differs from strategic rightsourcing efforts.** Both old and new workloads require sourcing, but the urgency differs. Developers and business groups want a fast decision about what new solution serves their needs. At times, they may simply pick their preferred platform rather than relying on insights from a brokerage tool. Application rationalization and rightsourcing efforts tend to be less urgent. Follow a systematic approach to determine anticipated life and value of the workload, ideal hosting solution, and the timeline for moving to the preferred location.<sup>5</sup> Business leaders rarely care about application rationalization unless it means retiring an app, replacing an app, or substantially changing performance of an application. Place less effort on your own marketing bandwidth for this effort, instead emphasizing those that affect acquiring new capabilities. Treat these as separate efforts, and expect ambivalence when it comes to infrastructure-as-a-service (IaaS) cloud migration.
4. **Hybrid applications are common.** Apps are hybrid, too. Some apps include multiple coding languages as well as multiple platform/service heritages, locations, and hosting environments. Hybrid applications are often intergenerational or cross-team, where productivity or functional advantages outweigh the technical difficulty of added technologies. From a cloud hosting perspective, hybrid applications come in several forms: 1) an app split across multiple platforms within a single data center; 2) a legacy application composed of traditional code and surrounded by native cloud application services; or 3) an app split across multiple data centers. The last requires due diligence for workloads sensitive to latency. In the era of cloud migration, hybrid apps are becoming increasingly common.<sup>6</sup>
5. **Bursting is on the horizon.** Cloud bursting may be the single most overhyped topic from the early cloud days. It describes an enhanced portability between private cloud and public cloud environments, based on changing workload circumstances. Facilitating bursting is hard, complicated by latency between sites; cost of data movement; and lack of consistency between public and private cloud environments. Bursting is by no means the definition of — or a requirement of — hybrid or multicloud. However, it seems that some enterprises are just starting to explore this possibility. Adobe shared its bursting story at an OpenStack event in November 2017.<sup>7</sup> Many vendors, including Avere and Google, are beginning to target these use cases.

6. **Vendor lock-in mitigation shouldn't be the hybrid cloud driver.** Every technology leader knows the harsh reality of vendor lock-in. Today, the fear focuses on megacloud providers. Basic cloud services are each unique but can easily convert in the event of migration. Where megacloud providers are stickiest is in their application and developer services. Forrester encounters two major approaches to avoid vendor lock-in: 1) building alternative services and templates in several cloud environments and 2) banning the use of application or developer services. Both are poor options. The first bloats spending unnecessarily and creates extra work without clear value, and the second denies useful tools to developers. Weigh the cost of rewriting a portion of your application in the future versus delaying now but maintaining that code over time. Those that have completed this exercise find that it rarely makes sense to build a cloud-agnostic service when a native cloud service is already available.
7. **Common API targets portability.** “Common API” refers to consistent APIs between a public cloud and a private cloud environment.<sup>8</sup> Initial attempts included the early Microsoft CPS offering and OpenStack distributions. In 2017, Azure Stack, the first common API offering, launched. It took years to develop, and Microsoft promises to deliver all public Azure app and developer services to Azure Stack. This allows a workload to move freely between public and private deployment models, based on app characteristics in the application life cycle. However, this approach doesn't address vendor lock-in. Several others in the market claim common API, including Alibaba, IBM Cloud Private, and Oracle at Customer. Today, 17% of North American/European enterprise cloud adopters believe that API-consistent public and private clouds best describe hybrid cloud in their organization.<sup>9</sup>
8. **“Invisible clouds” is the goal for some.** As noted above, the goal for some tech leaders is to get out in front of cloud usage, providing tools that abstract away the clouds they're using. For some developers, this places the focus on code rather than worrying about the “where,” the cloud platform APIs, or even what they're provisioning. The two major single-pane-of-glass attempts to abstract away from the underlying cloud platforms are hybrid cloud managers (HCMs) and standalone platform-as-a-service (PaaS) offerings. HCMs focus on management and speed-to-provision, while standalone PaaS involves managing the development life cycle itself. At times, this abstraction can create portability from the underlying clouds.<sup>10</sup> However, abstraction often has two side effects: 1) opinionated solutions to problems and 2) limited support of application and developer services. Each has implications on productivity for various teams. The right solution will vary by group, use case, and company.
9. **“Invisible management” is the alternative model.** Some developers are less productive when their preferred clouds are invisible. Instead, they get value out of the specific application and developer services. Rather than having management get in front of the development process, these services enable access to the developer experiences and clouds that developers want. They insert cloud knowledge, best practices, and governance rules into the native cloud API experience via agents or review them retroactively to correct violations. This approach treats the cloud provider as

the standard and places a high value on being current with the latest services available. Some limit management tools to managers, whereas others divvy up their developers into different categories, with some getting invisible clouds and others getting invisible cloud management.

10. **Connecting your tools isn't simple.** Developers have a long list of tools they want to use. Enterprises struggle with piecing together the preferred tools in a meaningful and sustainable way. Hybrid cloud managers strive to do this from a cloud platform perspective to unify the metrics and alerts. However, they lose many of the services and unique features of each cloud in this abstraction. Standalone PaaS offerings attempt to do this for developers by providing an opinionated format for progressing along the development life cycle. The challenge with each model is that integrations become dated, and opinionated processes are rarely flexible enough to accommodate diverse use cases of the tools that individual development teams want. There's no shortage of crafty developers building custom solutions, but these lack scalability or sustainability. If you're struggling with this connectivity, you're not alone. In fact, tool connectivity has been a major issue of technology since long before the cloud arrived — and there's little hope on the horizon.

## Recommendations

### Your Strategy Is Hybrid — Now What?

Knowing that their strategy will be hybrid answers few questions for I&O professionals. Ask your executives about the definition of hybrid cloud, and each answer will be different. Ask your executives to discuss specific sourcing, and they might quote popular cloud stories or the conservative nature of your industry. Get specific about your hybrid cloud goals before jumping into decisions about public or private cloud and complex sourcing algorithms for determining the fate of your application portfolio. What greater purpose does your cloud strategy serve? What specific efficiencies — process and resource utilization — do you seek for your company, and why are those important? This primer on hybrid cloud services can help start the conversation on developing *your* hybrid cloud strategy. Here are some of the early decisions you'll be making:

- › **Is this the moment for change?** Too much change at once can spiral costs, and your business, out of control. However, there are moments when you should evaluate more radical change. These “change moments” typically occur when contracts end, massive refreshes are pending, new leadership enters an organization, or staffing radically changes. Change moments occur when it's more tolerable to pivot direction due to compelling cost avoidance figures, change appetite is higher, or the need is dire. If your organization is planning to build a new data center, refresh a colocation contract, reduce tech organization staff size, hire cloud skill sets, replace C-level leadership, or undergo a massive infrastructure refresh, it's worth evaluating a more radical approach. For some, that means pivoting away from hybrid and toward a single deployment model.

- › **Can your organization handle hybrid-by-design?** Hybrid-by-design sounds great, but it's slow. Controlling intake can deter developers from using the approved clouds. Most organizations find that in practice, accidental hybrid is far easier to achieve, enabling developers with self-service access from the beginning. As they automate more elements of management, they have the bandwidth to start cleaning up behind early versions of their hybrid strategy. Over time, they hope to slowly become more strategically hybrid. Decide which approach is most practical for your organization at this point in your cloud maturity.
- › **Is your management team goal invisible clouds or invisible cloud management?** Get to know your developers. Some don't care about which cloud they use or where that resource lives. Others care deeply about the native cloud platform services available and the impact on productivity and performance. Cloud management teams seeking invisible clouds look for optimal developer experiences that abstract away the platforms through a standalone PaaS, container-as-a-service (CaaS), or hybrid cloud management platform.<sup>11</sup> Those seeking invisible cloud management allow for native platform access while they either remediate after the fact or apply rules through agents at the time of provisioning.
- › **Can you sacrifice productivity for portability?** Before planning to jump through endless hoops to ensure portability from one cloud platform to another, decide if portability is worth the effort. Portability comes at the expense of productivity, and that may not be a price your developer teams are willing to pay. Ensuring portability from one platform to another means limiting use to generic cloud services and foregoing any use of application or developer services, increasing the initial time to complete a service and ongoing maintenance of that service. Others look to write templates to work cross-providers or segment app and infrastructure templates, making only infrastructure templates specific to one provider. Find the inflection points to decide when portability is worth the developer tradeoffs and when it simply increases cost and complexity and wastes development hours.

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## Supplemental Material

### SURVEY METHODOLOGY

The Forrester Data Global Business Technographics® Infrastructure Survey, 2017, was fielded in July and August 2017. This online survey included 3,923 respondents in Australia, Brazil, Canada, China, France, Germany, India, New Zealand, the UK, and the US from companies with two or more employees.

Forrester Data Business Technographics ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of business and technology products and services. Research Now fielded this survey on behalf of Forrester. Survey respondent incentives include points redeemable for gift certificates.

Please note that the brand questions included in this survey should not be used to measure market share. The purpose of Forrester Data Business Technographics brand questions is to show usage of a brand by a specific target audience at one point in time.

## Endnotes

- <sup>1</sup> If you're using any cloud today, it's likely that you're already at hybrid cloud. See the Forrester report "[Now Tech: Hybrid Cloud Management, Q1 2018.](#)"
- <sup>2</sup> Source: "GE Healthcare Accelerates to Cloud on Openstack Platform," OpenStack video, 2017 (<https://www.openstack.org/videos/boston-2017/ge-healthcare-accelerates-to-cloud-on-openstack-platform>) and Jim Fowler, "AWS Case Study: General Electric," Amazon Web Services video, 2015 (<https://aws.amazon.com/solutions/case-studies/general-electric/>).
- <sup>3</sup> We asked infrastructure decision makers at North American and European enterprises to define hybrid cloud and then asked whether they believe their cloud strategy is hybrid and whether they've achieved hybrid thus far. Source: Forrester Data Global Business Technographics Infrastructure Survey, 2017.
- <sup>4</sup> Source: Peter Mell and Timothy Grance, "The NIST Definition of Cloud Computing," National Institute of Standards and Technology, September 2011 (<https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf>).
- <sup>5</sup> For more on the cloud provider landscape, see the Forrester report "[Understanding The Cloud Services Provider Landscape.](#)"
- <sup>6</sup> Today, only 4% of survey respondents state that a single application split across multiple clouds best describes hybrid cloud in their organization. Source: Forrester Data Global Business Technographics Infrastructure Survey, 2017.
- <sup>7</sup> Source: Nicolas Brousse, "Adobe Advertising Cloud: The Reality of Cloud Bursting with OpenStack," OpenStack video, 2017 (<https://www.openstack.org/videos/boston-2017/adobe-advertising-cloud-the-reality-of-cloud-bursting-with-openstack>).
- <sup>8</sup> For more information on consistency between public and private clouds, see the Forrester report "[Azure Stack Sparks The Hybrid Cloud Explosion.](#)"
- <sup>9</sup> Source: Forrester Data Global Business Technographics Infrastructure Survey, 2017.
- <sup>10</sup> For more information on portability between cloud environments, see the Forrester report "[The State Of Cloud Migration, Portability, And Interoperability, Q4 2017.](#)"
- <sup>11</sup> PaaS has become a catchall for services that aren't quite SaaS or IaaS but have elements of each, and it aligns better across three dimensions, with CaaS and some cloud management platforms falling under the broad category. For more-refined definitions of the PaaS landscape, see the Forrester report "[The Three Faces Of Platform-As-A-Service.](#)"

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