Unlock The Value Of Cloud

How To Expand Your Hybrid Cloud With
Consistency, High Performance, And Security
Everywhere

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Project Director:
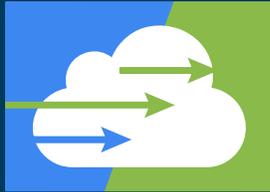Mark Brozek,
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Executive Summary

Hybrid cloud is not the future: It's here today. The rapid pace of innovation in both public and private cloud platforms is driving strong adoption of each by enterprises building and modernizing the software that drives competitive advantage. Most companies today already use multiple public and private clouds to meet different service, performance, or security needs — a "multicloud" strategy. Leading companies go further and create a "hybrid" cloud by integrating public and on-premises apps, services, and platforms together for a consistent cloud both on- and off-premises.

To accelerate adoption and gain the greatest benefits from hybrid cloud, companies are now actively seeking platforms, tools, and services that help make hybrid cloud simpler, safer, faster, and easier to manage. Enterprises that build out new cloud-native applications using the public cloud as one landing zone while at the same time modernizing legacy applications in their on-premises data center can achieve the best of both worlds, since many core business applications are better suited to on-premises deployment today.

In May 2017, Intel commissioned Forrester Consulting to evaluate hybrid cloud adoption, perceptions, and investment plans. Forrester conducted an online survey of 515 respondents from North America, Europe, and Asia to explore this topic.

KEY FINDINGS

› **Hybrid cloud delivers tangible, valuable business benefits.** Integrating public cloud services with private enterprise cloud infrastructure gives companies choice, flexibility, and access to innovation. Hybrid cloud users report greater cost efficiency, better ability to manage IT resources, stronger security, enhanced scalability, and improved data management.

› **Enterprises struggle with inconsistent platforms and management tools.** The biggest threat to hybrid success is a plethora of disconnected management tools and inconsistent cloud platforms. Complexity kills efficiency. Cloud decision makers overcome this by investing in consolidated and unified monitoring tools and by encouraging their cloud platform vendors to leverage established security, performance, and compute components.

› **Many organizations do not optimize their workload configurations.** More than half of companies surveyed do not actively optimize workload configurations today and are therefore failing to maximize the benefit of their hybrid clouds. Forrester expects increased investments in monitoring and management tools in 2017 — a critical requirement for hybrid cloud success.

› **Companies turn to trusted vendors to help them expand hybrid cloud with consistent security and performance.** Decision-makers prefer integrated solutions from vendors they trust. Security concerns top the list of hybrid cloud challenges. Starting with a strong security foundation built on known, trusted technologies is the best way for companies to safely expand hybrid cloud with confidence.

Hybrid cloud adoption is accelerating: Nearly seven in 10 enterprises are building a comprehensive cloud strategy today, and six in 10 are already adopting a hybrid approach today.

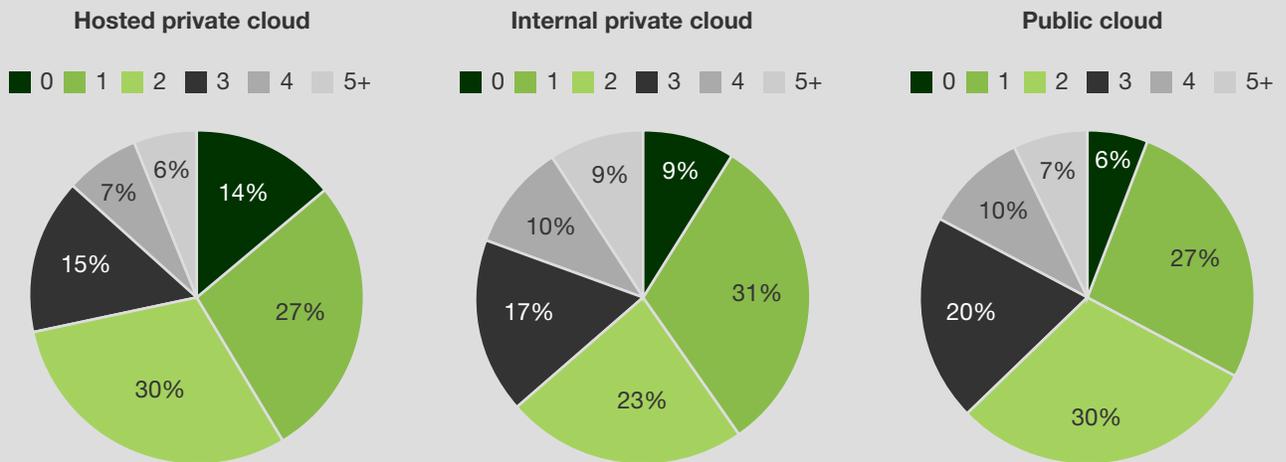FORRESTER®

Hybrid Cloud Adoption Is Accelerating

Enterprise cloud computing adoption has accelerated each of the last several years. Sixty-eight percent of enterprise decision makers rated developing a comprehensive cloud strategy as a high or critical priority in 2016, up from 52% in 2012, and this percentage will continue to rise in 2017.[1] Cloud is now seen as the key to business technology transformation, as decision makers move an ever-increasing number of enterprise workloads to both private and public cloud platforms — and rarely rely on a single platform. Forrester Data Business Technographics® shows that multicloud and hybrid cloud deployments are now the norm, as cost and agility benefits have been shown to outweigh the management complexity of using multiple platforms. Our study further validated these trends, and found that:

›   **Hybrid cloud is already commonplace — and growing.** Forrester's data shows that 59% of North American and European organizations with a cloud strategy have a hybrid cloud today, combining hosted private, internal private, and public cloud platforms.[2] Our study found that most organizations that utilize hybrid cloud have between one and three of each type of cloud platform (see Figure 1).

›   **There are as many reasons to go multicloud as there are permutations of multicloud.** Companies often start by using different public or private clouds for different workloads or use cases. Many organizations initially use public cloud for data backup and disaster recovery, and most private clouds are initially built to support software development and testing. When asked why they use multiple clouds, respondents cited these use cases as well as the general desire to take advantage of each on-premises or off-premises platform's unique performance and service levels (see Figure 2). Going further than multicloud, modern hybrid cloud solutions can greatly simplify workload mobility and cloud federation between service providers, thus providing significant value beyond using public cloud as just a secondary storage tier, for example.[3]

›   **Data center consolidation and automation are huge IT priorities over the next 12 months.** Enterprise IT leaders are under enormous pressure to increase services while decreasing costs. Consolidation and automation are part of this strategy, yet organizations still generally gain better cost efficiencies by leveraging different platforms for their respective strengths. This leads organizations to virtualize, consolidate, and automate their data center infrastructure, while leveraging cloud infrastructure-as-a-service (IaaS)/platform-as-a-service (PaaS) at the same time. Hybrid cloud offers efficiency and flexibility as organizations look to consolidate and optimize their use of all infrastructure simultaneously, whether in the data center or in the public cloud.

Figure 1

"How many of each of the following types of platforms are in use at your organization?"

Hosted private cloud	Internal private cloud	Public cloud
■ 0 ■ 1 ■ 2 ■ 3 ■ 4 ■ 5+	■ 0 ■ 1 ■ 2 ■ 3 ■ 4 ■ 5+	■ 0 ■ 1 ■ 2 ■ 3 ■ 4 ■ 5+

Hosted private cloud: 14%, 27%, 30%, 15%, 7%, 6%

Internal private cloud: 9%, 31%, 23%, 17%, 10%, 9%
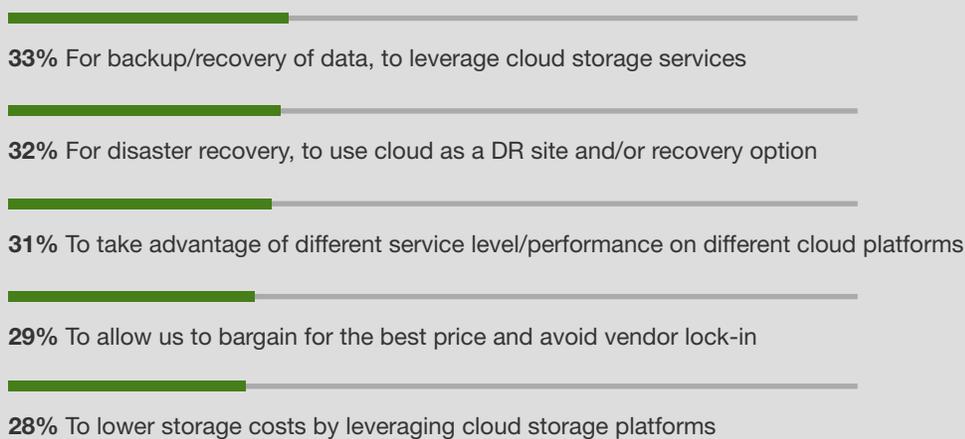
Public cloud: 6%, 27%, 30%, 20%, 10%, 7%

On average, organizations have between one and three of each type of cloud platform.

Base: 515 manager-level or above enterprise IT decision makers responsible for cloud decisions
Note: Percentages may not total 100 because of rounding.
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

Figure 2

"Why do you use multiple cloud platforms?"
Showing top 5 responses

33% For backup/recovery of data, to leverage cloud storage services

32% For disaster recovery, to use cloud as a DR site and/or recovery option

31% To take advantage of different service level/performance on different cloud platforms

29% To allow us to bargain for the best price and avoid vendor lock-in

28% To lower storage costs by leveraging cloud storage platforms

Base: 515 managers or above with either purchasing/budgetary authority or who make/influence decisions about cloud platforms for their organization
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017
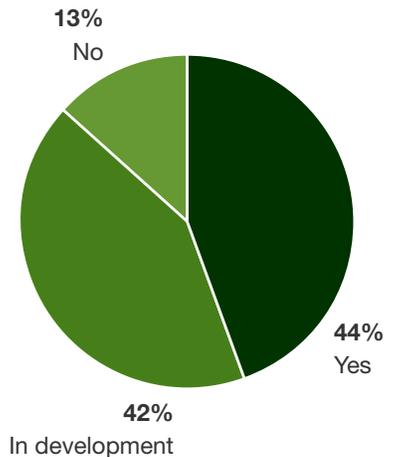
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Enterprises Struggle With Inconsistent Cloud Platforms And Management Tools

When considering an investment in multiple cloud solutions, a common concern is management complexity. How will companies retain control and security as the number of different cloud platforms expands? Increasing the number of disparate tools and platforms logically adds complexity, and it can be daunting to IT pros who are already stretched thin. This can be overcome with the right strategy — and, indeed, 2016 saw a consolidation in the market for cloud management tools as organizations look to build consistency across tools and environments.[4] Our survey found that many organizations still have room for improvement in this area:

› **Many organizations do not optimize their workload configurations.** Less than half of companies surveyed actively optimize workload configurations today, and are therefore likely not effectively rightsizing workloads in public or private clouds (see Figure 3). IT decision makers are increasing cloud spending in 2017, and Forrester forecasts an increase in cloud monitoring and management solutions as a critical part of this investment.[5]

› **Tracking and measurement are inconsistent.** The way organizations track security, cost, and performance varies widely. Thirty percent of our survey respondents reported challenges with tracking costs across multiple clouds, and 28% said that monitoring is more difficult in a hybrid environment. Methods for tracking security, cost, and performance will vary widely whether you're tracking public or private cloud or both. To reduce complexity, companies should encourage the use of consistent platforms and tools wherever possible across public and private clouds. Public cloud is based on the same essential infrastructure components found in the data center. The more that companies can prioritize platforms that leverage the components they already know and trust, the less variation they will introduce with each new cloud platform.

Figure 3

"We take steps to optimize workload configurations and cloud placement."

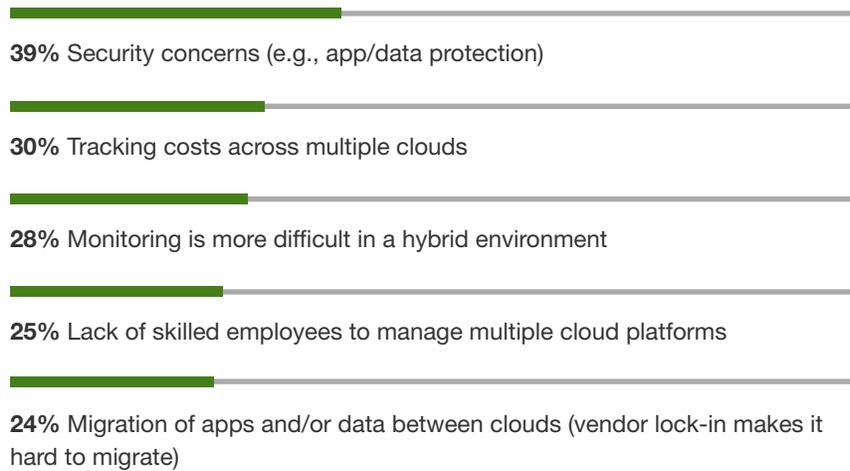
13%
No

44%
Yes

42%
In development

Base: 499 managers or above with either purchasing/budgetary authority or who make/influence decisions about cloud platforms for their organization
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

› **Complex deployments require advanced skillsets.** The top challenges inhibiting further expansion of hybrid cloud are security/privacy concerns, lack of cloud platform and management skillsets, and lack of consistent monitoring or management tools across platforms (see Figure 4). Without consistent security and platforms, current staff skills will be stretched, limiting how much more hybrid companies can safely adopt. These concerns will continue to hold companies back from becoming more hybrid.

Figure 4

"What challenges have you faced deploying/using multiple cloud platforms/environments?"

39% Security concerns (e.g., app/data protection)

30% Tracking costs across multiple clouds

28% Monitoring is more difficult in a hybrid environment

25% Lack of skilled employees to manage multiple cloud platforms

24% Migration of apps and/or data between clouds (vendor lock-in makes it hard to migrate)

Base: 515 manager-level or above enterprise IT decision makers responsible for cloud decisions
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

Organizations Will Modernize More Business-Critical Apps And Data Using Secured Hybrid Clouds

Regardless of any concerns or challenges, hybrid cloud is here to stay, and companies slow to embrace and optimize hybrid environments will increasingly find themselves at a competitive disadvantage. Companies plan to become even more hybrid over time, by moving even more secure workloads, more and more data, and more business-critical apps to both public and private cloud platforms. Our study found that:

› **Hybrid cloud provides tangible business benefits.** There are important reasons that so many organizations are using multiple and hybrid clouds; the top-cited benefits include better IT cost management overall, improved IT flexibility, and stronger security, scalability, and data management (see Figure 5). Most importantly, hybrid clouds help speed application modernization, which is a key IT priority in the age of the customer.[6] To stay ahead of their digital competitors, companies seek hybrid cloud because a hybrid model can offer higher consistency, better security, and more agility than any one public or private cloud alone.

› **Decision makers seek integrated solutions from vendors that they trust.** Integration is paramount to a successful hybrid cloud strategy, as it is only when platforms are integrated that IT pros can effectively monitor, optimize, and secure their workload configurations. Our study found that when considering cloud investments, 74% of organizations prefer to use integrated hybrid cloud solutions from vendors that they know and trust rather than using multiple different best-of-breed solutions (see Figure 6).

Figure 5

"What do you perceive as the top benefits of using hybrid cloud?"

34% Better IT cost management overall

33% Improved IT infrastructure management and flexibility to customize our workload strategy

31% Improved security and compliance

30% Improved scalability and resiliency

30% Improved data management

Base: 515 manager-level or above enterprise IT decision makers responsible for cloud decisions
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

Hybrid cloud unlocks more ways to save IT costs, including "buy the base and rent the spike" strategies.

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› **Consistent security, performance, and availability top the list of what companies demand from their hybrid cloud platforms.** There are a number of features and capabilities that are important to IT decision makers as they build out their hybrid clouds. As organizations look to expand their hybrid deployments, their top demands are consistent security, high availability, highest compute and storage performance at the lowest cost, and support for virtualization and advanced infrastructure (see Figure 7).

› **Hybrid cloud solutions must integrate easily with existing technologies and come with strong partner ecosystems.** Our study also found that organizations look to modern, efficient solutions that are easy to manage and expand, integrate well with existing infrastructure, and offer a broad and supportive partner ecosystem (see Figure 8). Few companies will manage their emerging hybrid cloud on their own; a vibrant and broad ecosystem of vendors that can help migrate, modernize, and support both existing and new workloads wherever they run is key to hybrid success.

Figure 6

"Which of the following statements best describes your sourcing strategy for hybrid cloud?"
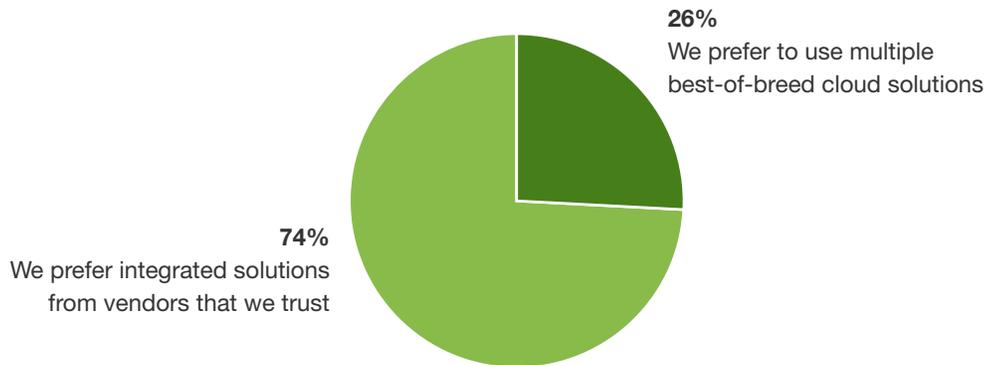
26%
We prefer to use multiple best-of-breed cloud solutions

74%
We prefer integrated solutions from vendors that we trust

Base: 515 manager-level or above enterprise IT decision makers responsible for cloud decisions
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

Figure 7

"Which features of a hybrid cloud infrastructure platform are most important to you?"

34% Consistent security across public and private infrastructure

31% High availability features built in

30% Access to the highest-performance computing at the lowest cost

29% Support for hybrid storage architectures across public and private

27% Support for my preferred virtualization platforms

27% Access to the most advanced computing infrastructure

25% More robust application development platform (e.g., database-as-a-service or platform-as-a-service)

23% Broad ecosystem of suppliers that offer solutions based on my primary infrastructure platform

21% Software-defined networking to extend my corporate network to the cloud
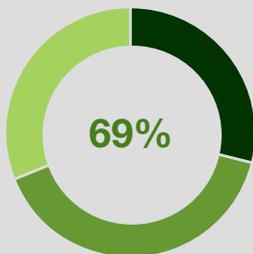
Base: 515 manager-level or above enterprise IT decision makers responsible for cloud decisions
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

Figure 8

"How important are the following aspects of a hybrid cloud platform to you as you expand your use of cloud?"

■ Very important   ■ Very important   ■ Very important
■ Somewhat important   ■ Somewhat important   ■ Somewhat important
■ Other   ■ Other   ■ Other

69%

Support for our existing databases and middleware technologies

64%

Advanced scalable hardware and software platforms

57%

Broad partner ecosystem and marketplace of prebuilt tools and applications

Base: 515 manager-level or above enterprise IT decision makers responsible for cloud decisions
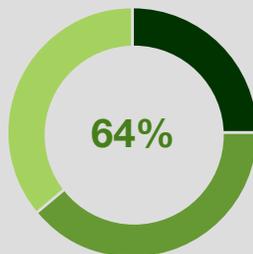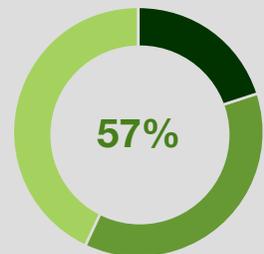Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

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Key Recommendations

Hybrid cloud should accelerate digital transformation, not complicate it. In your drive to find ways to modernize existing apps and infrastructure, to consolidate and drive up efficiency in your data center, and to leverage the public cloud for new apps, take the complexity out of hybrid cloud by:

Adopting modern efficient platforms for hybrid cloud innovation and self-service orchestration. Look for both public and private cloud platforms based on the most efficient, performant, and manageable modern infrastructure components, from compute to storage to networking. Make sure your business and development consumers have a cloud-like experience (self-service and on-demand provisioning) across all the private and public clouds they use.

Optimizing your workload strategies for multicloud environments. If your IT organization has not already started modernizing infrastructure and processes, they will need to do so in the near future to keep pace with your competitors. Evaluate your app requirements to determine what makes sense to modernize in the public cloud (with elastic, on-demand infrastructure and cloud-native development services) and what makes sense to modernize on-premises (to maintain control and security and optimize the use of existing infrastructure).

Taking an app-driven, step-wise approach to becoming more cloud-native. Run an app portfolio analysis to identify which of your existing apps are best modernized in your own data center because of security, performance, or integration requirements. Continuously review and prioritize all legacy apps as you transform your business. And, at the same time, build new, greenfield apps as cloud-native. A strong hybrid cloud foundation supports both efforts.

Thinking extension rather than addition when it comes to management tools. Prioritize extending your well-known and trusted platforms and management tools into the hybrid cloud over adding new security, performance, or cost management tools for each new cloud platform you use.

Starting with a unified and cross-cloud approach to management. Choose public cloud providers that offer modern converged infrastructure and private cloud software platforms, so you can take advantage of your existing IT skillsets and monitoring tools as your hybrid cloud expands.

Demanding consistent security, high availability, and the lowest cost across cloud platforms. The leading public clouds already rely on the same fundamental compute and virtualization technologies that you are likely using to modernize your own data center. It's up to you to make sure the public side of your hybrid cloud is secured to the same levels as your data center to ensure consistent protection.
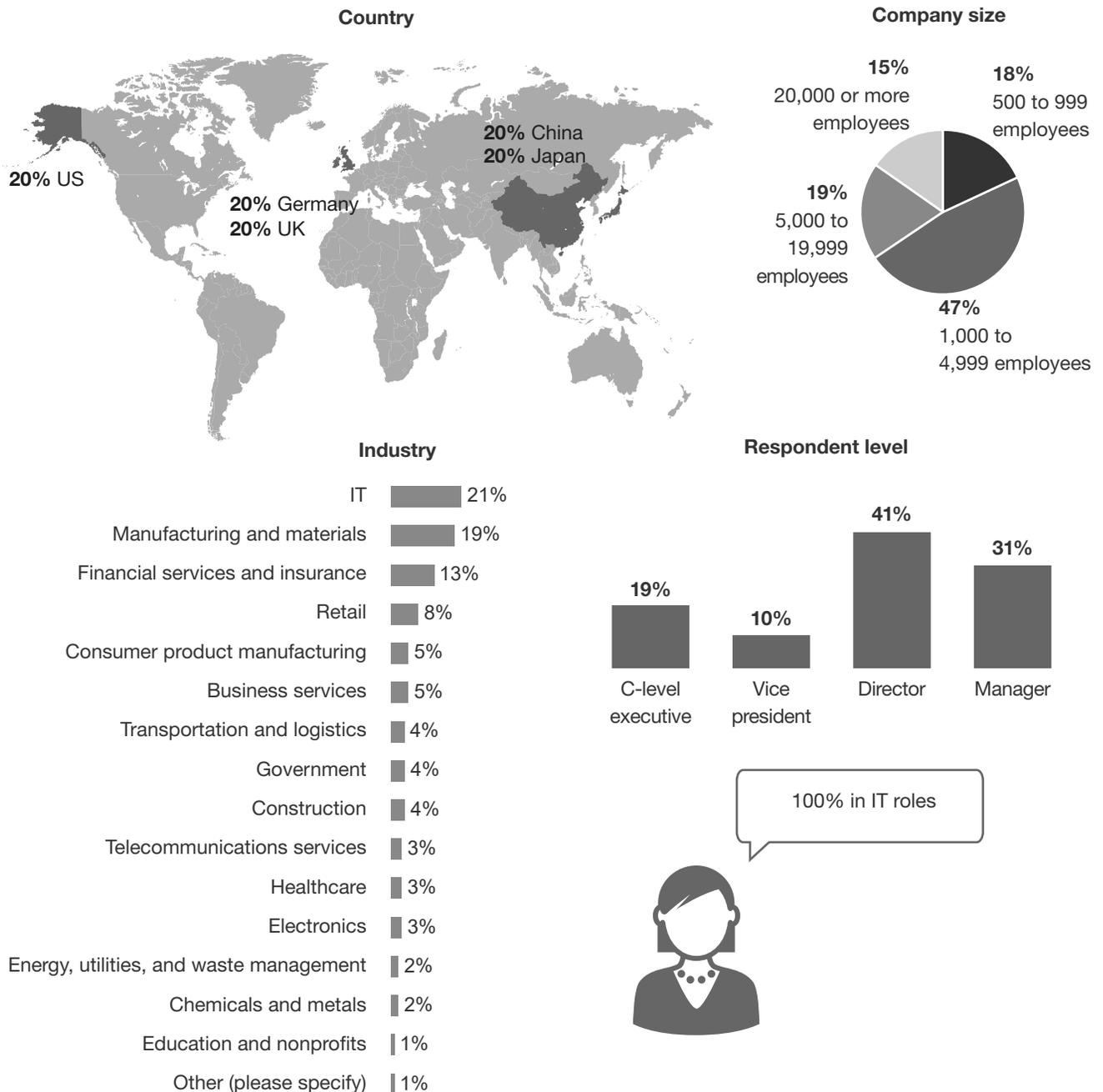
Finding the right partners. Don't go it alone. Reach out to your trusted infrastructure, support, and software ecosystems providers. The right hybrid partners take on some of the multicloud integration complexity and let you consistently and seamlessly expand your use of hybrid cloud with confidence.

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Appendix A: Methodology

In this study, Forrester conducted a double-blind online survey of 515 cloud decision makers from enterprises in the US, Germany, the UK, Japan, and China to evaluate their adoption of and attitudes toward hybrid cloud solutions. Survey participants included manager-level and above IT decision makers at organizations with a cloud strategy. Respondents were offered a small incentive as a thank you for time spent on the survey. The survey was conducted in May 2017.

Appendix B: Demographics/Data

Country

20% US
20% Germany
20% UK
20% China
20% Japan

Company size

15% 20,000 or more employees
18% 500 to 999 employees
19% 5,000 to 19,999 employees
47% 1,000 to 4,999 employees

Industry

IT	21%
Manufacturing and materials	19%
Financial services and insurance	13%
Retail	8%
Consumer product manufacturing	5%
Business services	5%
Transportation and logistics	4%
Government	4%
Construction	4%
Telecommunications services	3%
Healthcare	3%
Electronics	3%
Energy, utilities, and waste management	2%
Chemicals and metals	2%
Education and nonprofits	1%
Other (please specify)	1%

Respondent level

- **19%** C-level executive
- **10%** Vice president
- **41%** Director
- **31%** Manager

100% in IT roles

Base: 515 manager-level or above enterprise IT decision-makers responsible for cloud decisions
Note: Percentages may not total 100 because of rounding
Source: A commissioned study conducted by Forrester Consulting on behalf of Intel, May 2017

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Appendix C: Supplemental Material

RELATED FORRESTER RESEARCH

"Benchmark Your Enterprise Cloud Adoption," Forrester Research, Inc., January 3, 2017

"Justify Your Hybrid Cloud Future With A Solid Business Case," Forrester Research, Inc., July 6, 2017

Appendix D: Endnotes

[1] Source: "Benchmark Your Enterprise Cloud Adoption," Forrester Research, Inc., January 3, 2017.

[2] Source: "Benchmark Your Enterprise Cloud Adoption," Forrester Research, Inc., January 3, 2017.

[3] Source: "Hybrid Cloud Is The Foundation For Storage Agility And Economics," Forrester Research, Inc., April 28, 2017.

[4] Source: "Scoring Forrester's 2016 Cloud Predictions," Forrester Research, Inc., December 22, 2016.

[5] Source: "Benchmark Your Enterprise Cloud Adoption," Forrester Research, Inc., January 3, 2017.

[6] Source: "Vendor Landscape: Cloud Migration Services," Forrester Research, Inc., March 28, 2017.

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