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# EXECUTIVE SUMMARY

2016

# Cloud Computing Survey

FROM IDG



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# Cloud Adoption Keeps Moving Ahead

**Companies anticipate having 60% of their total IT environment in public, private, and hybrid clouds by 2018**

**T**HE CONCEPT OF CLOUD COMPUTING has transitioned from being an emerging technology to a mainstream powerhouse going beyond basic storage. As digital enterprises continue to require agile solutions for their workforce and customers, the growth in cloud technologies has proven beneficial from speed, to cost reduction and access. Companies continue their migration of both applications and computing infrastructure to the cloud at a steady pace. They have moved 45% of their applications and computing infrastructure to the cloud already, and they expect well over half of their IT environment to be cloud-based by 2018. On average, IT decision-makers (ITDMs) plan to allocate more than a quarter of their total IT budgets to cloud spending, but organizations with fewer than 1,000 employees (SMBs) are making significantly different choices than larger enterprises in how they spend that money, according to a recent IDG Enterprise survey of 925 ITDMs.

**70% HAVE ALREADY  
MOVED AT LEAST ONE  
APPLICATION OR A  
PORTION OF THEIR  
INFRASTRUCTURE TO  
THE CLOUD.**

The results of the survey represent the practices and opinions of ITDMs whose organizations have all made cloud investments or have plans to do so. Seven in ten (70%) have already moved at least one application or a portion of their infrastructure to the cloud. Another 16% plan to do so in the next 12 months, while the remaining 14% plan to move applications or infrastructure to the cloud within the next three years.

The survey results indicate that companies continue to migrate their IT environment to the cloud using a mix of public, private, and hybrid cloud solutions. Currently, the average company has 45% of its IT environment in the cloud, with 23% in private cloud, 15% in public cloud, and 7% in hybrid cloud. By the end of 2017, though, the average company expects to have moved 59% of the IT environment to the cloud: 28% in private cloud, 22% in public cloud, and 10% in hybrid cloud.

The preference for public or private cloud varies by company size, with smaller companies leaning toward public and enterprises (more than 1,000 employees) toward private. The average enterprise organization has 26% of its IT environment in private cloud and 13% in public cloud, while SMB has 21% of its IT environment in private cloud and 17% in public cloud. The levels between private and public cloud are expected to remain consistent over the next 18 months.

Overall, the average company plans to devote 28% of its IT budget to cloud computing in the next 12 months. In dollars, that works out to an average of \$1.6 million — essentially unchanged from last year — although enterprise organizations plan to invest an average of \$3.04 million while SMBs anticipate spending \$286,000, which differs from last year's results of \$2.87 million for enterprise organizations and \$587,000 for SMBs.

## Where the Budget Goes

The average company plans to allocate 45% of its cloud budget to Software-as-a-Service (SaaS), 30% to Infrastructure-as-a-Service (IaaS), 19% to Platform-as-a-Service (PaaS), and 6% to other as-a-service models such as Backup-as-a-Service and Storage-as-a-Service. Enterprises plan to invest more heavily

than SMBs in PaaS (21% enterprise vs. 17% SMBs). On the other hand, SMBs are slightly more likely than enterprises to plan to spend more than 75% of their cloud budget on SaaS (19% SMBs compared to 13% enterprise).

## CLOUD BUDGET ALLOCATIONS

<b>45%</b>	<b>Software-as-a-Service (SaaS)</b>
<b>30%</b>	<b>Infrastructure-as-a-Service (IaaS)</b>
<b>19%</b>	<b>Platform-as-a-Service (PaaS)</b>
<b>6%</b>	<b>Other as-a-service models*</b>

\*Such as Backup-as-a-Service, Storage-as-a-Service

Adoption of specific cloud-based services has picked up measurably since IDG Enterprise's 2015 survey. Nearly three-quarters (72%) of respondents already use or plan to deploy Storage-as-a-Service in the next year. More than half are using or planning to use Disaster-Recovery-as-a-Service (59%), Database-as-a-Service (58%), Monitoring-as-a-Service (53%), and Compute-as-a-Service (53%), while exactly half are using or plan to use Communications-as-a-Service.

Interestingly, the use of APIs has dropped since 2015: 46% of respondents are using APIs to integrate databases, applications, and other workloads into the cloud, a nine percentage point drop, while 40% are using APIs to connect the application layer with cloud and underlying IT infrastructure, a two percentage point decrease.

## Migration Trends and Goals

While cloud adoption continues to rise, there is a constant increase in cloud tools and services which provides organizations more cloud choices than ever before. Over half of organizations (56%) are still identifying IT operations that are candidates for cloud hosting and 36% of respondents say they have identified all IT operations they're comfortable migrating to current cloud offerings. Both of these figures remain unchanged from 2015. It may be that companies are continuously discovering new cloud offerings, allowing them to identify IT operations for migration that previously had no cloud-based alternatives.

### FOUR PRIMARY GOALS DRIVING ITDMs TO INVEST IN CLOUD SOLUTIONS

1. Lower total cost of ownership
2. Replacing on-premise legacy systems
3. Enabling business continuity
4. Speed of development

Overall, more than half of companies are already migrating a majority of their systems or plan to do so within the next three years. The only exceptions are compliance management, supply chain management, and product lifecycle management, however at least 40% of companies are shifting these applications to the cloud or plan to do so.

There are an average of four primary goals driving ITDMs to invest in cloud solutions, with lower total cost of ownership and

replacing on-premise legacy systems leading, followed by enabling business continuity and speed of development. However, enterprises and SMBs differ on their other objectives. Enterprises are significantly more likely to base their cloud investments on the desire to speed development and enable innovation, digital business transformation, big data strategy, and DevOps. By comparison, SMBs are significantly more likely to prioritize enabling business continuity, improving security, and satisfying a need for real-time information.

Respondents' top priorities for cloud migration in the next year involve data analysis, management, sharing, and storage. This may be because companies' on-premise systems are overwhelmed by the ever-increasing volumes of data they're expected to gather, process, and analyze, along with the growth of the IoT exacerbating the issue. While only 21% of respondents are using cloud-based analytics today, an additional 43% say they plan to be doing so in 3 years at the most.

Possibly due to their continuing concerns about the security of the cloud, companies are taking their time adopting IT security measures in the cloud. Nearly three quarters (73%) of respondents have adopted some kind of cloud-based security service, but each individual service has a relatively low level of adoption. The most popular are identity and access management (35%) and real-time monitoring and analytics (35%), followed by endpoint protection (34%).

## **Effects on the IT Organization**

A greater commitment to cloud computing requires changes within the IT function. Nearly half (45%) of the companies surveyed believe that cloud computing will increase IT's collaboration with other business units or departments — no surprise, given the cloud's orientation toward enabling self-service. They also seem to expect cloud computing to create significant shifts within the IT organization — new structure, new hires, new responsibilities for existing staff — while, in some cases, reducing budget and/or head count, especially at larger companies. It's likely that these respondents expect to be able to shift at least some responsibility for cloud-based applications to their vendors, thus freeing up IT staff and finances for other projects once the cloud migration is complete.

Some of these changes are already underway. Nearly 6 in 10 companies have added new roles or functions as a result of their cloud investments, primarily cloud systems administrator, cloud architect/engineer, or security architect/

## CHANGES WITHIN IT FUNCTION DUE TO CLOUD COMMITMENT

<b>45%</b>	IT will increase collaboration with other business units or departments
<b>41%</b>	Rethink IT organization structure
<b>36%</b>	We will retrain or reposition current IT staff
<b>35%</b>	We will seek new IT talent/skills
<b>22%</b>	IT budgets will decrease

engineer. However, the addition of new roles varies significantly by company size. While the majority of enterprise organizations (70%) plan to or already have added cloud-related IT roles or functions to their organization, less than half of SMBs have done the same.

### Barriers to Adoption: Not Just Security Concerns

This year's survey looked at challenges specific to implementing public, private, and hybrid cloud deployment models. For public cloud, the top three concerns involve where data is stored (43%), the security of cloud computing solutions (41%), and vendor lock-in (21%). For private cloud, vendor lock-in rises to the top (24%), followed by a lack of appropriate skills (22%) and security concerns (21%). And just as hybrid is a blend of public and private cloud, so too are respondents' concerns about it: security (24%), where data is stored (19%), and the lack of appropriate skills (18%).

Business leaders are far more concerned about data security both in applications and in storage with public cloud, which may explain why they have moved more of their IT environment to private clouds. In addition, nearly half (46%) of companies say the leading issue they need to address or resolve before they can more fully embrace cloud is the need to ensure that cloud service providers' security meets their compliance requirements.

Surprisingly, nearly one in three (31%) also say they cannot fully embrace cloud until they educate certain senior business executives on its value versus its risks. At the same time, 44% say lack of knowledge about the cloud is a primary challenge in their organizational culture preventing or slowing cloud



deployment, closely followed by resistance from individuals who prefer the comfort of familiar traditional technologies (43%). The persistence and pervasiveness of these issues across both enterprises and SMBs are puzzlingly high considering that cloud has now been a mainstream computing technology for a decade. Enterprises were significantly more likely to cite the need to prove ROI on cloud migration investments and the sense in IT that cloud threatens job security. Enterprises were also twice as likely as SMBs to blame decreased deployment of cloud services on poor communication between IT and both the executive suite and the departments where the solutions are deployed. Increasing education and improving communication could improve adoption speed and success, at least at larger companies.

### A Little Help, Please

Fortunately, CIOs and top IT executives have the greatest influence over the cloud computing purchase process than business leaders, followed by IT architects, CSOs and CTOs. But to exert that influence persuasively, roughly 4 out of 5 respondents say they want vendors to help them sell the benefits of cloud to internal stakeholders. In particular, they feel they need help reassuring stakeholders about the security of cloud, specifically public cloud (36%), while only 25% need security reassurance for private cloud.

## TOP THREE CONCERNS

### PUBLIC CLOUD

**43%** Where data is stored

**41%** Security

**21%** Vendor lock-in

### PRIVATE CLOUD

**24%** Vendor lock-in

**22%** Lack of appropriate skills

**21%** Security concerns

### HYBRID CLOUD

**24%** Security

**19%** Where data is stored

**18%** Lack of appropriate skills

Those who want this help say they most need details about the vendor's security practices (cited by 71%) and proof of the vendor's cloud security expertise (61%). More than half also want vendors to provide demonstrated knowledge of industry-specific security challenges and third-party security certifications and audits. Enterprises also placed particular emphasis on visibility into the provider's cloud infrastructure.

No matter the level of adoption, cloud technology is becoming a staple to organization's infrastructure. As both cloud and businesses evolve, organizations continue to explore how cloud computing fits into their workplace and applications while cloud vendors realize and accommodate the needs of their clients.

## Methodology

IDG Enterprise's 2016 Cloud Computing Survey was conducted among the audiences of six IDG Enterprise brands (CIO, Computerworld, CSO, InfoWorld, ITworld and Network World). The survey fielded online with the objective of understanding organizational adoption, use-cases, and solution needs with respect to cloud computing. This was a targeted research effort, to be considered qualified respondents must have reported cloud utilization was planned or currently leveraged at their organization. Furthermore, respondents must have reported personal involvement in the purchase process for cloud solutions at their organization.

Results are based on 925 qualified responses. The margin of error on a sample size of 925 is +/- 3.22 percentage points. For the purposes of this report, enterprise companies refer to those respondents at companies with 1,000 or more employees. Small and mid-sized (SMB) companies refer to those respondents at organizations with less than 1,000 employees. Percentages on single-select questions may not sum to 100% due to rounding.

Seventy-one percent of respondents are from North America, 13% from Asia Pacific, 8% from the European Union, and 8% other regions. A broad range of industries are represented including financial services (13%), education (12%), high tech (11%), government & non-profit (10%), and services (9%). Fifty percent of respondents are employed by organizations with fewer than 1,000 employees while 49% are employed in 1,000+ employees (1% did not provide an answer).