



Adoption, Approaches & Attitudes

The Future of Cloud Computing in the Public and Private Sectors



A Global Cloud Computing Study

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EXECUTIVE SUMMARY

Cloud computing has been around in one form or another since the late 1990's. Salesforce.com is often credited with introducing the concept of delivering simple enterprise applications and services via the web. In the twenty years that have followed, everyone from Google to Microsoft have brought their own interpretation of the cloud model to market.

We're reaching an interesting stage in the evolution of the cloud – one where hype needs to become reality and the technology needs to deliver on its promise of adding strategic value to a business while still driving down costs.

Influencers in the technology space consistently claim the promise of cloud computing is huge. Market research firm In-Stat recently predicted that by 2014, businesses in the United States will spend more than \$13 billion on cloud computing and managed hosting services¹. A 400 percent plus increase on what is being spent today.

But for all the online chatter and expert forecasts, do we have a realistic picture of where organizations are with cloud today? More importantly, do we know what the opportunities are for businesses looking to capitalize on cloud-based technologies in the coming years? In March 2011, AMD commissioned a global cloud computing study to explore how different regions and business sectors were engaging with cloud computing.

Over 1,500 public and private sector organizations were surveyed across Europe, Asia and the United States to explore the state of cloud computing globally. The research evaluated the percentage deploying cloud solutions today, the business value being achieved and the applications most suited for cloud environments, among others.

Encouragingly, the resounding message is that the hype-stage is nearing its conclusion. Businesses are deploying cloud solutions in great numbers and are basing the strategic future of their IT in the cloud. More encouragingly, they are already beginning to see business value from these deployments.

The research revealed some interesting regional comparisons, as well as wildly different attitudes and approaches to cloud between both public and private sector organizations and small and large businesses. All are engaging with the cloud, but at different levels and at very different speeds.

A breakdown of results regionally, by sector and by business size, pointed to one very simple fact – while there is a huge opportunity for cloud computing, there is no such thing as a “one size fits all” approach. Vendors of cloud solutions, like AMD, need to tailor their technology by region, business size, sector and workload to address the demands of all types of cloud environments. Those who do not take this approach risk missing a huge opportunity.

This report provides in-depth analysis and interpretation of the research findings.

¹ In-Stat research report, US Business Spending by Size of Business and Vertical, 2009–2014: Cloud Computing and Managed Hosting Services, January 2011

METHODOLOGY AND BACKGROUND

1,513 interviews were carried out with businesses in the United States, Asia (China, India and Singapore) and Europe (UK, France, Germany) during March 2011. The research was conducted online and targeted organizations with 100+ employees in both the public and private sector.

Redshift Research is a global market research company, headquartered in the United Kingdom.

1.0 GLOBAL TRENDS

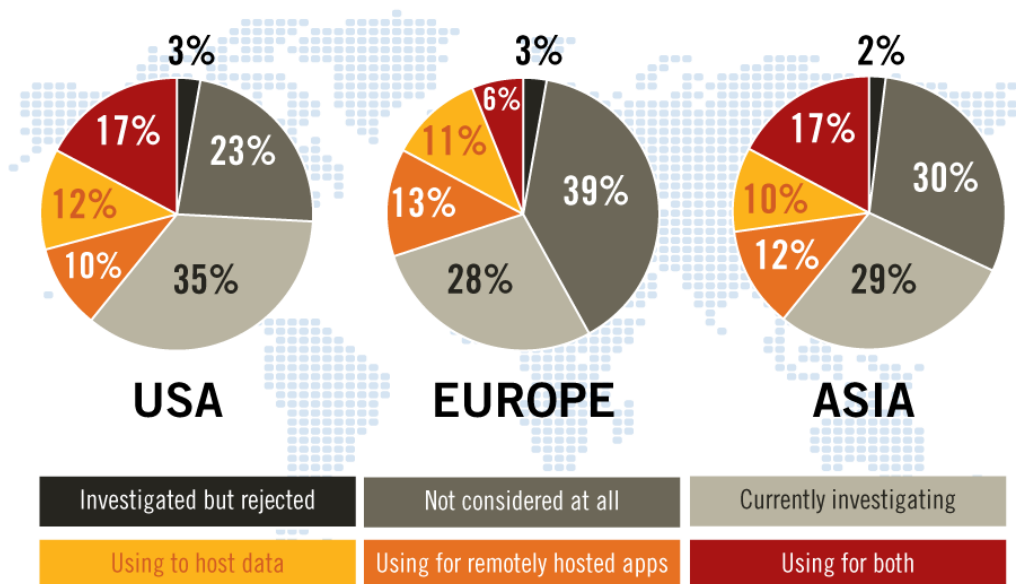
Regional Approaches Drive Results

One clear finding to emerge from the research is that different regions appear to be at significantly different stages in the cloud deployment lifecycle (see figure 1.1 below) and have contrasting attitudes towards the cloud.

“37% of organizations globally are deploying cloud solutions”

Overall, there is healthy uptake of cloud solutions. 37 percent of businesses globally are deploying cloud to either remotely host applications or host data (or both), with North America and Asia being most advanced in their implementation of cloud solutions. Globally, the majority of organizations are at the stage of ‘investigating the technology,’ with only a very small number (3 percent) having rejected the move to cloud, outright. The adoption and level of engagement around cloud points to the fact that organizations needs and IT environments across the world are as unique as ever, leading to a staggered uptake of cloud models.

Figure 1.1. Organization's position in relation to cloud computing, by region





With such a significant percentage of organizations evaluating cloud globally, this suggests we can expect an even greater wave of cloud deployments in the next six-to-twelve months as these organizations move from investigation to implementation.

Europe Slow to Adopt; Asia and US More Aggressive in Deployments

The findings point to the fact that Europe appears to be behind Asia and the US in its approach towards, and deployment of, cloud solutions. Three percent of businesses in Europe have rejected the model outright with 39 percent stating that they have not considered a move to the cloud versus 30 percent in Asia and 23 percent in the US. There are also a smaller proportion of European businesses using the cloud for remotely hosted applications (17 percent) and to host data (19 percent). This number jumps to 29 percent in the US for hosting applications, and 29 percent in Asia for hosting data.

There is also clear indication that the perception of cloud among European businesses is as a tactical, cost-saving necessity rather than a strategic CIO driven priority. 47 percent of businesses in Asia believed cloud represented 'a strategic shift' in IT policy for the business versus 33 percent in Europe while just 15% of businesses in Asia responded that cloud was a cost-saving necessity versus 31 percent in Europe. Finally, just 24 percent of European cloud implementations were being driven by the CIO as compared to 71 percent in Asia.

Whether European businesses are less willing to take risks with cloud or are held back by lack of senior level sponsorship is unclear, however the contrasts between the regions are stark. The indication is that Europe needs to be a major focus in the education of businesses on the benefits that the cloud model can bring to their organizations.

CIOs Drive Cloud Adoption

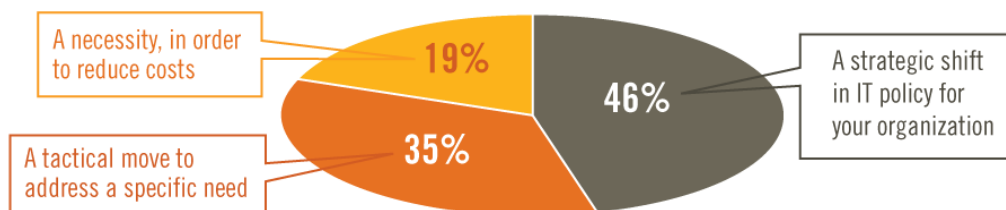
The move to the cloud is a CIO driven strategic technology shift for organizations as they look to lower costs and evolve their computing models to deliver competitive advantage to the business.

“51 percent of businesses stated the CIO, Head of IT or IT Director is driving the move to cloud”

For 51 percent of businesses, the CIO, Head of IT or IT Director was responsible for driving the decision to adopt cloud solutions, suggesting that cloud is regarded as a critically important technology investment (this number jumped to 71 percent in Asia). This was revealed when examining businesses' descriptions of their move to cloud (figure 1.2). The majority, 46 percent, stated it was a strategic shift in IT policy for the organization with just 19 percent describing it as a cost-saving necessity.

“19 percent of respondents described the move to cloud as a cost saving necessity”

Figure 1.2. How organizations describe their move to the cloud (global)



2.0 CLOUD DEPLOYMENT SCENARIOS

Believe the Hype. Cloud Begins to Deliver Tangible Business Value

With almost 40 percent of businesses already deploying cloud solutions of some description, there is no question that cloud has begun to mature with a substantial number of organizations reporting having achieved tangible business value from their cloud implementations.

“26 percent of respondents hosting data in the cloud”

“26 percent of respondents using the cloud for remotely hosted applications”

26 percent of businesses are currently using the cloud to host data while 26 percent are also using it for remotely hosted applications. Approximately 15 percent are using the cloud for both purposes, with organizations under 500 employees further ahead than larger organizations in the deployment of cloud technology.

Figure 2.0. Business implementations of cloud technology

	Total	USA	Asia	Europe	Under 500	500 +	Non-public	Public
Total	1513	1000	259	254	525	988	1176	311
Not considered at all	27%	23%	30%	39%	23%	29%	23%	38%
Currently investigating	33%	35%	29%	28%	32%	33%	32%	36%
Using for remotely hosted applications	26%	29%	27%	17%	30%	24%	29%	16%
Using to host data	26%	27%	29%	19%	29%	24%	29%	15%
Using for Both	15%	17%	17%	6%	16%	13%	16%	8%
Investigated but rejected	3%	3%	2%	3%	2%	3%	3%	3%

The majority of organizations considering a move to the cloud are looking at private cloud solutions (32 percent) while 16 percent are looking at hosted private solutions. Just 11 percent are considering public deployments. This indicates that organizations are intelligently approaching cloud computing by taking a controlled approach initially and deploying private clouds before making a full jump into adopting public cloud solutions.

“32 percent of businesses considering a move to the cloud are looking at private cloud solutions”

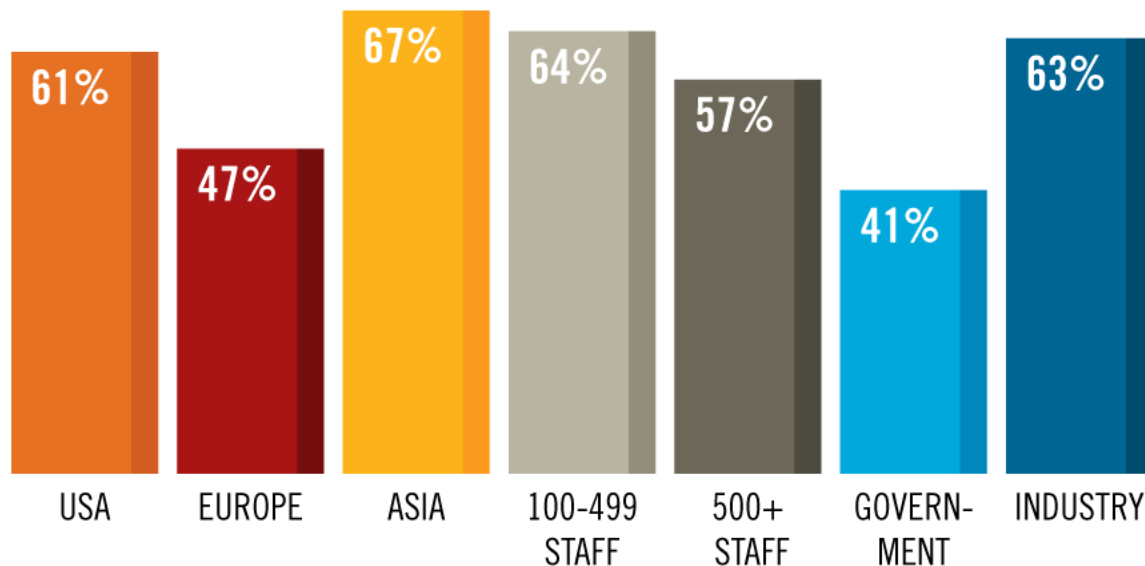


The applications that have primarily been moved to a cloud model already include finance/accounting (47 percent), email (41 percent), HR (39 percent), e-commerce (36 percent), marketing (33 percent) web serving (31 percent) and sales (31 percent).

Deriving Value from the Cloud

Although remotely delivered products and services have been around in one form or another for years, the cloud as we know it, is still in its infancy and has only just begun seeing widespread deployment in business environments. Encouragingly, on a global level the majority of organizations (60 percent) are already seeing value from their cloud implementations with that number jumping to 67 percent in Asia. 28 percent of businesses stated it was too early to say.

Figure 2.1. Percentage that reported achieving business value from the cloud

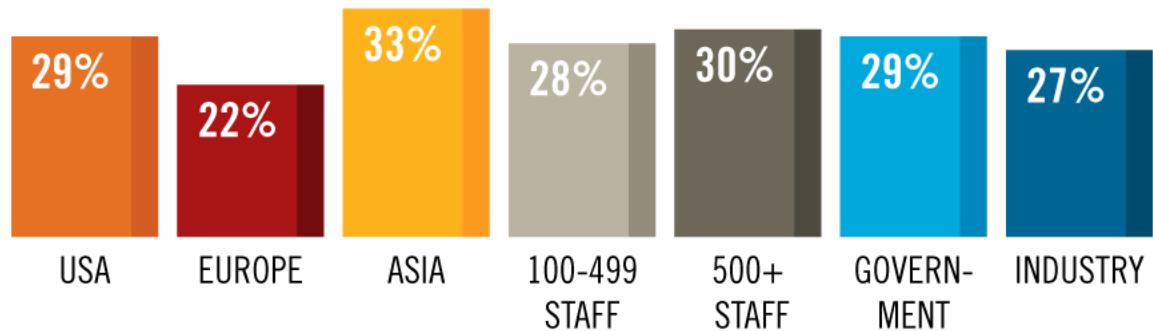


In terms of the level of return-on-investment experienced, 41 percent are experiencing a 21 – 50 percent ROI in their cloud deployments. This number jumps to 55 percent in Asia. Businesses not yet deploying cloud have wildly different views on the amount of ROI they would need to see to make an implementation worthwhile.

37 percent of businesses that evaluated but rejected cloud stated that they would have needed 100 percent ROI or more to justify a move to the cloud. For those businesses investigating cloud, 21 percent would expect to achieve a 21 – 30 percent ROI (choices provided were 0 percent, 1-5 percent, 6-10 percent, 11-20 percent, 21-30 percent, 31-50 percent, 51-70 percent, 71-100 percent, complete ROI or significant returns above investment).



Figure 2.2. Average ROI from cloud deployments



Hardware Matters

A common discussion between vendors of cloud solutions and organizations using the technology is whether anyone actually cares what hardware and software is powering the cloud, or if they just care that it works. The results of the study proved overwhelmingly that infrastructure matters. Ninety-two percent of businesses already using cloud computing stated that the infrastructure – the servers, software and underlying technology - was important in the selection of a cloud solutions provider. This indicates that businesses care about the technology powering the cloud, given that failure of any of that technology could have dramatic implications on the IT services being delivered to employees. This also clearly indicates that IT vendors need to take the lead in the conversation about optimized hardware and software for the cloud beyond buzzwords. It is time for better education of the market so that customers can make the right infrastructure decisions.

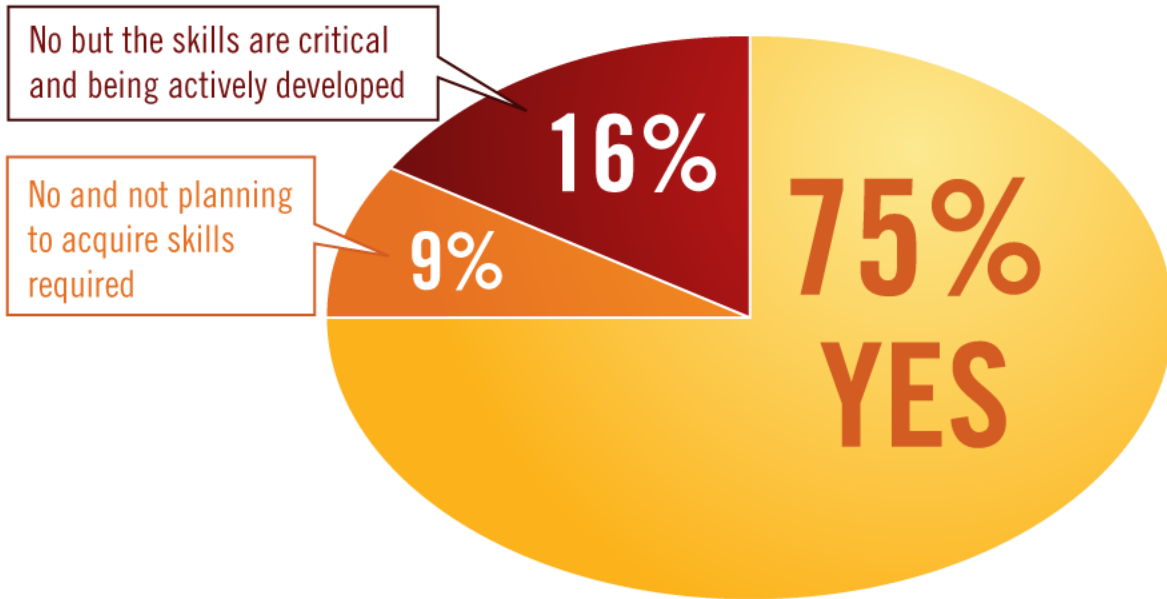
“92 percent of respondents using cloud stated that the infrastructure – servers and software – was important in their selection of a cloud provider”

Knowledge and Skills for Cloud Deployments

The research indicated that there was a very clear focus on developing the skills in-house to deploy cloud solutions, rather than contracting that expertise in via a third-party. This indicates that cloud is both a long term, strategic investment for businesses that requires in-house knowledge to drive the transition over months and years, not just isolated implementations.



Figure 2.3. Whether businesses already using cloud technologies had the necessary skills in place to implement and support cloud (all global respondents)?



“75% percent of organizations globally had the necessary skills in-house to support the move to cloud”

Organizations were also questioned about their knowledge of key industry terms related to cloud. 21 percent of businesses in Europe versus 14 percent in the USA did not understand the difference between cloud computing and Software-as-a-Service (SaaS) at all. Larger organizations (500 employees+) had less of an understanding of the difference between cloud computing and SaaS than smaller organizations. As cloud computing continues to mature and gain adoption, it is critical that more education is provided to ensure the industry fully understands the nuances of the technology.



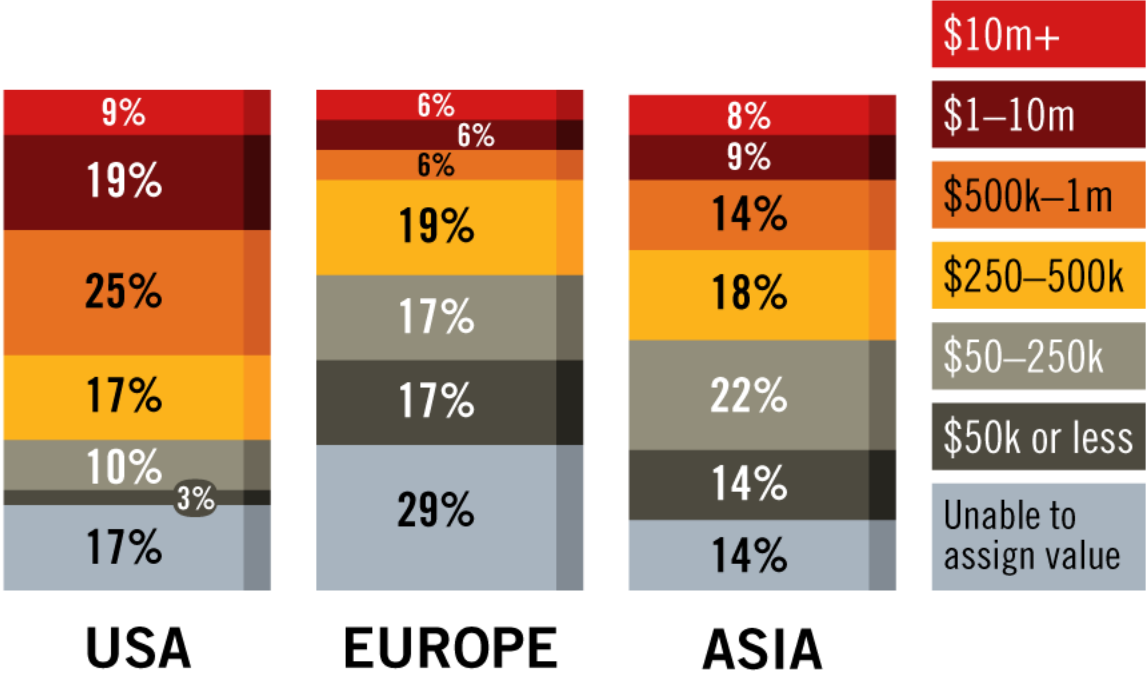
3.0 TRUST IN THE CLOUD

With 37 percent of organizations globally using the cloud in one form or another, the indication is that organizations finally ‘trust’ the cloud and are willing to store mission critical data outside of their own network. Respondents were asked to put a dollar sum on the data they were currently hosting in the cloud with the majority (63 percent) estimating the value of data they store in the cloud to be more than quarter-of-a-million dollars.

“63 percent of businesses globally estimate the value of data they store in the cloud to be over \$250,000”

Of all the regions, the results point to the fact that the US puts most faith in the cloud with 53 percent of businesses willing to store upwards of half a million dollars worth of data in the cloud. This number drops to 31 percent in Asia and 18 percent in Europe.

Figure 3.1. Estimated value of data stored in the cloud?



9 percent of organizations globally stated the value of data was over \$10 million while 16 percent claimed it was between \$1 and \$10 million. Unsurprisingly, larger businesses are storing more data in the cloud with 12 percent estimating that the data they are storing is worth more than \$10 million versus 3 percent for businesses with less than 500 employees.



Respondents were also questioned on the type of information they would be unwilling to host in the cloud. 21 percent of organizations stated they would be reluctant to store customer data in the cloud while 30 percent would be reluctant to store financial data.

Figure 3.2. The single biggest inhibitor to the adoption of cloud (for those considering implementation)



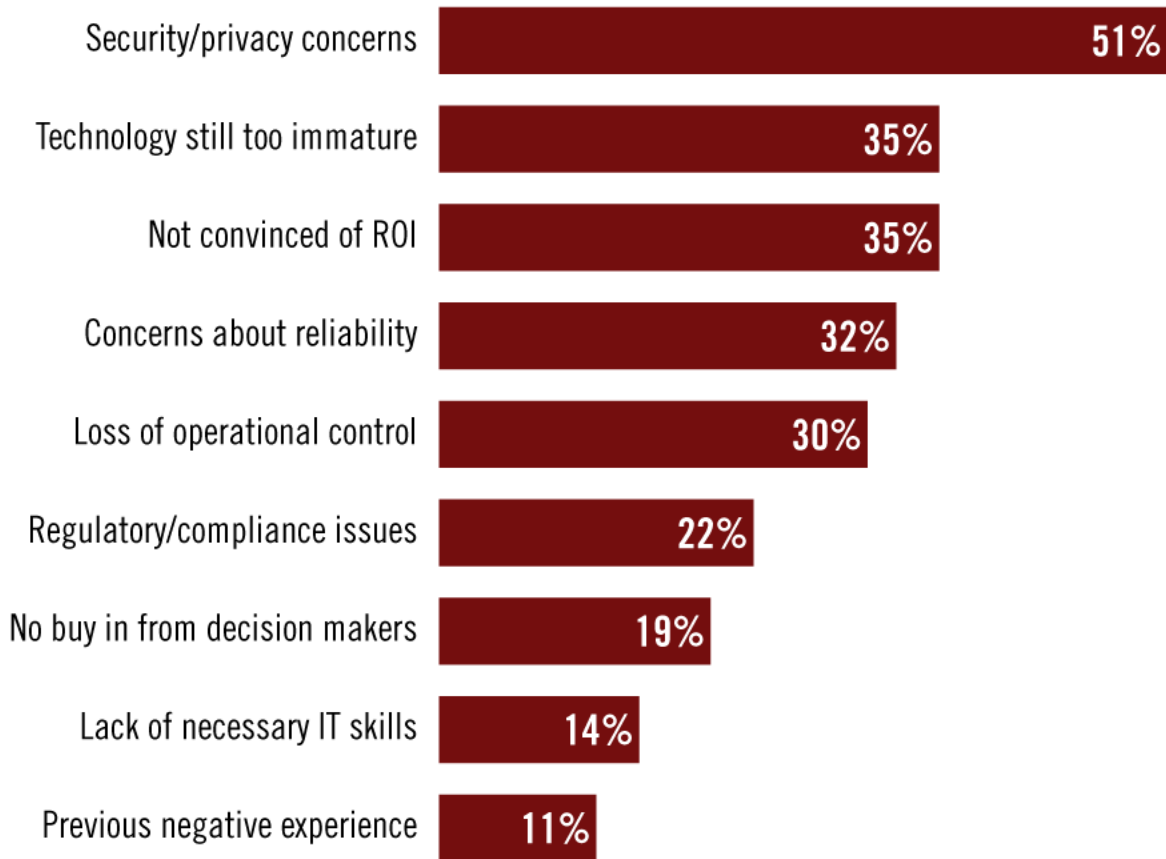
Barriers to Adoption

Despite the increased trust in cloud-based solutions among businesses, there are still a number of significant barriers to adoption for those organizations looking to implement the technology. 23 percent of respondents stated that worries about the reliability of technology was the single biggest inhibitor in making a move to the cloud suggesting that many companies will be waiting for the technology to mature before testing out the cloud. This number drops to 15 percent in Europe and 18 percent in Asia where they are most concerned with ‘fear of the unknown’ (29 percent Asia, 25 percent Europe).

“23 percent of those considering cloud computing stated that worries about the reliability of the technology was likely to be the single biggest inhibitor in making the move to the cloud”



Figure 3.3. Factors influencing the decision to reject a move to cloud computing (for those who've rejected cloud)



For organizations that have rejected a move to the cloud, the majority (51 percent) have done so because of security/privacy concerns. 35 percent stated it was because they weren't convinced about ROI while the same number felt the technology was still too immature. As indicated in figure 3.3, the clear indication is that the technology failing to deliver on its promise is the major concern for businesses and remains a factor in holding back their adoption.

“51 percent of respondents rejected a move to the cloud because of security/privacy concerns”

Again, there were large disparities in the results based on organization size. Security concerns were a bigger factor for organizations of less than 500 employees (67 percent) than those with 500+ (46 percent) in rejecting the move to cloud. Larger organizations were more concerned about the maturity of the technology (39 percent) than smaller companies (22 percent). Loss of operational control is a bigger inhibitor for smaller businesses (33 percent) versus larger businesses (29 percent) while worries over the reliability of the technology are a great concern for larger businesses (36 percent).



25 percent of businesses who have not yet looked at cloud seriously stated that the need to reduce IT costs may prompt them to investigate the suitability of cloud in the future while 18 percent stated they would look at cloud deployments if asked by a business decision maker.

While trust in the cloud is clearly increasing, the factors inhibiting the adoption of the technology for enterprises are the same as they have been for years. This points to the fact that the discussion about cloud IT is not all that different than traditional IT, and that the mystique of cloud computing as a new approach that simplifies everything about IT is not true. While it may centralize the hardware and software to fewer IT providers, the age-old issues of IT that is reliable and secure, while also delivering a balance of performance and power still remains.



4.0 PUBLIC SECTOR

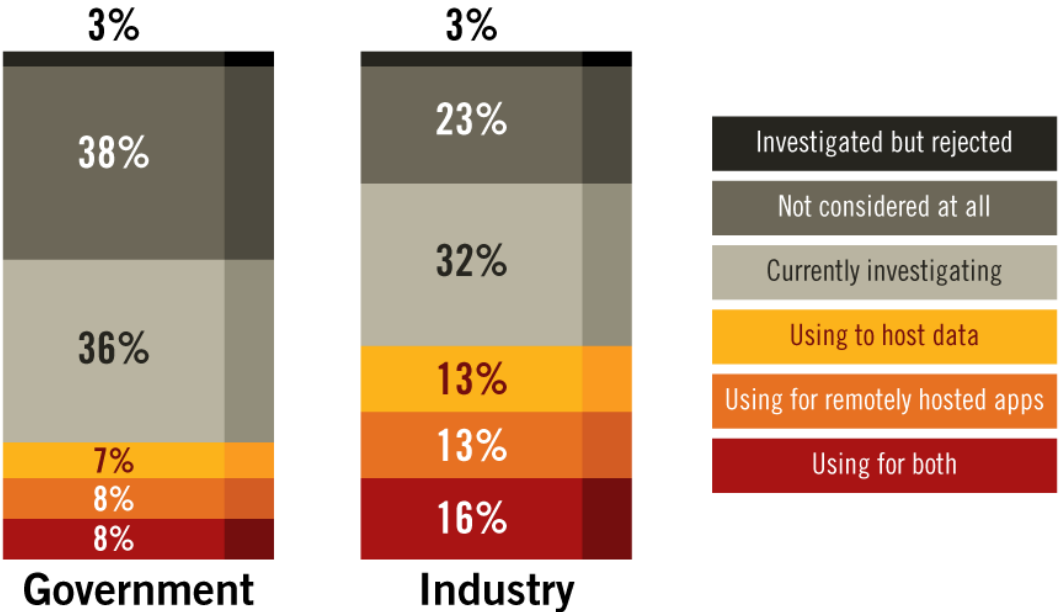
With a series of Government initiatives unveiled in the last 12 months designed to drive the move to the cloud, a key element of the study was to examine attitudes and approaches to cloud computing among public sector organizations across Europe, Asia and the US. With different policies in different regions, there were some significantly different levels of engagement with regards to cloud, as well as obvious differences in approaches between the public and private sector.

Global results indicate that public sector organizations are primarily moving to cloud computing as a way to cut costs, largely driven by local and federal mandates. 32 percent of public sector organizations globally stated that government policies are accelerating cloud adoption versus only 12 percent that indicated it was decelerating adoption. This number is the highest in Asia where 37 percent stated that government initiatives were accelerating cloud adoption.

Despite the introduction of mandates like US Government CIO Vivek Kundra's "Cloud First" policy², requiring federal agencies to move at least one service to the cloud in the next year, public sector organizations primarily find themselves still in investigation mode when it comes to cloud computing. However, with nearly a quarter of all public sector organizations already deploying cloud solutions, the future looks positive.

"23 percent of global public sector IT is in the cloud, while 36 percent are investigating cloud solutions"

Figure 4.1. Public sector organization's position in relation to cloud computing



² Federal Cloud Computing Strategy, Vivek Kundra, U.S. Chief Information Officer, February 8, 2011. <http://www.cio.gov/documents/Federal-Cloud-Computing-Strategy.pdf>



Cloud Deployments

As the public sector navigates this new world of IT, the research revealed that 26 per cent of respondents in public sector organizations globally would get involved with “understanding the infrastructure requirements for cloud” with another 23 percent would have a role to play in short-listing suppliers.

More Education Still Needed Among Public Sector IT on Cloud

57% of public sector organizations globally that have shifted to a cloud deployment model had the necessary IT skills in-house to make that change. By contrast, only 25% of organizations currently investigating cloud computing in the public sector feel that they are in possession of those skills. That is a key area of concern where better education must be provided to ensure those who do deploy cloud are comfortable managing their IT and can reap the most value from it.

Cloud Infrastructure Vital in Public Sector Too

Mapping to the trend seen globally, 86 percent of public sector organizations stated that infrastructure was an important consideration in their move to the cloud. This supports conclusions drawn in the private sector that businesses care about the software and hardware powering the cloud, especially if they plan to house mission critical applications or sensitive data remotely.

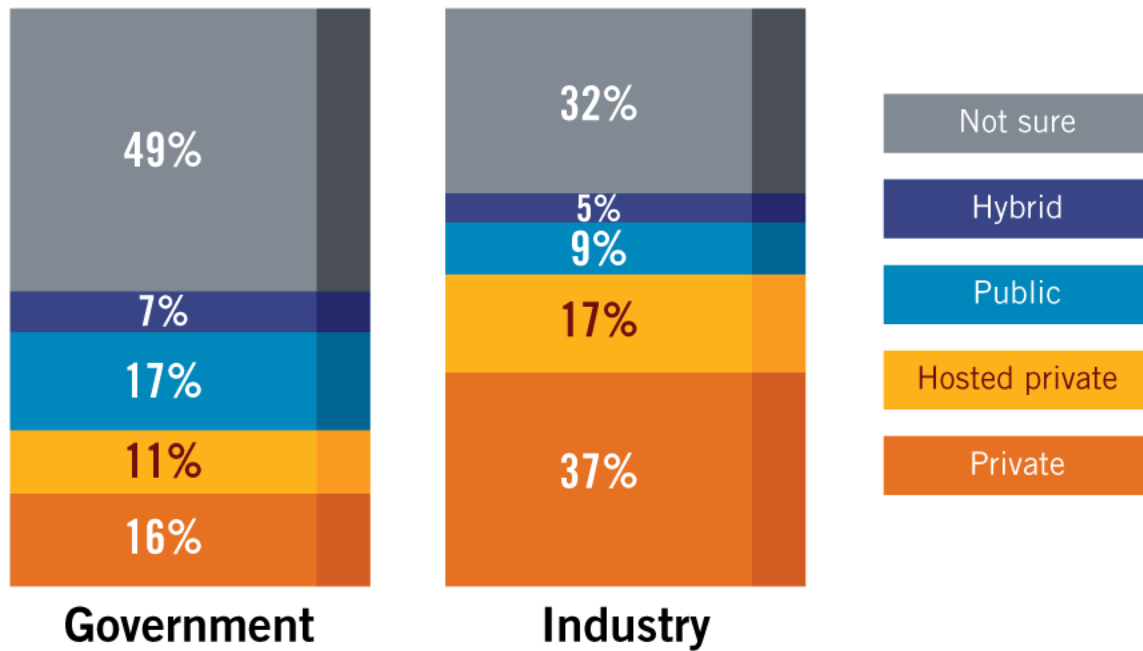
“86 percent of public sector organizations stated that infrastructure was important in their decision to select a cloud provider”

The financial benefits of a move to the cloud are also a significant driver in the adoption of the technology, with 27 percent of public sector organizations viewing the shift as a financial necessity, versus 18 percent in the private sector. Hardware cost savings and flexibility were the two main benefits cited by respondents for a move to the cloud with 41 percent of US organizations highlighting hardware cost savings as a critical issue.

In terms of the specific types of cloud that organizations may look at deploying, the results pointed to an increased willingness among public sector organizations to deploy public cloud solutions as their first implementation of the technology. The number of organizations in the public sector evaluating public clouds (17 percent) is nearly double that of the private sector (9 percent) while public sector organizations are also less focused on private clouds (16 percent vs. 37 percent for private sector organizations). This suggests that, with limited internal IT resources, public sector organizations are willing to look at more wholesale outsourcing options as a method of reducing costs and improving IT service delivery.



Figure 4.2. Cloud model businesses are most likely to move to (among those considering the Cloud)



Deriving value from the cloud

For those organizations deploying cloud, 41 percent are already seeing value from the move versus 63 percent of private sector organizations. Thirty-nine percent stated it was too soon to say, versus 26 percent in the private sector. Examining these numbers alongside data around in-house cloud skills, there is some indication that the lack of cloud expertise in public sector organizations is preventing them deriving the maximum amount of value from the model.

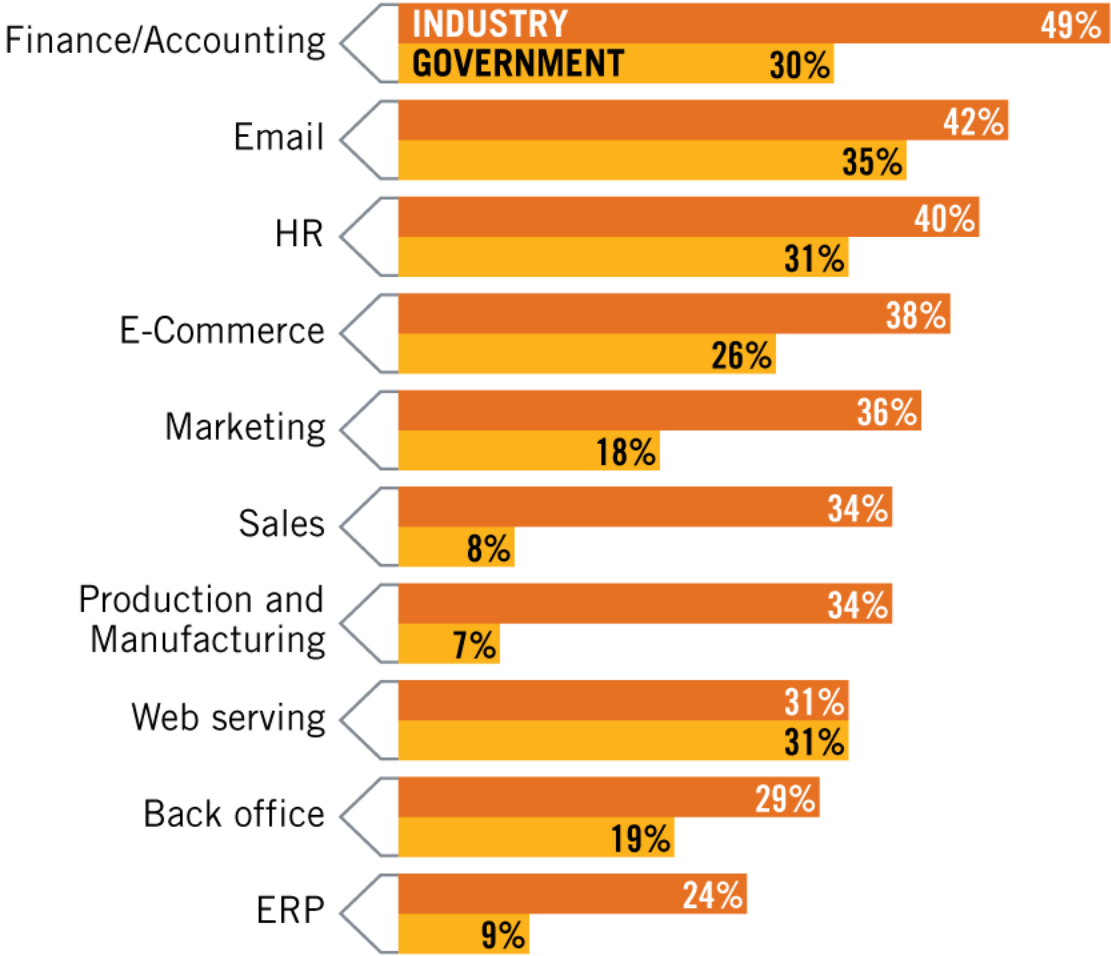
“41 percent of public sector organizations are already seeing value from a move to the cloud”

Application Deployment and Storage of Data

Attitudes towards the cloud differ greatly across regions. For example, one in four public sector organizations in the US and Asia are concerned about storing customer data in the cloud which drops to only one in 10 in Europe. Asia is also much more likely to store their HR information in the cloud, while Europe is more likely than any other region to move back-office applications into a cloud environment. As figure 4.3 indicates, public sector organizations are predominantly moving web serving (35 percent), email (32 percent) and finance/accounting (25 percent) applications into the cloud. Asia follows that trend with web serving (32 percent), email (32 percent) and HR (29 percent) applications proving most popular while businesses in Europe are focused on moving finance/accounting (28 percent), back-office (24 percent), web serving (24 percent) and email (24 percent) applications.



Figure 4.3. What type of applications have been moved to a cloud deployment model





5.0 CONCLUSIONS AND RECOMMENDATIONS

Cloud computing is finally becoming a reality. Businesses are deploying solutions to host store data and remotely access applications and are beginning to see some tangible business value from the deployment of cloud.

There are, however, significant disparities in attitudes, approaches and adoption across different regions, sectors and by size of organization:

- With diverse economic environments, federal mandates and levels of maturity, different geographic regions have very different approaches to cloud and are at different stages in the cloud evaluation and deployment lifecycle.
- The size of the business has a very real impact on how organizations are looking to deploy the technology. While smaller organizations generally have smaller budgets and less resource to draw on than their larger counterparts, their agility has allowed them to more quickly adapt and move to cloud-based technologies.
- And finally public sector organizations have their own set of priorities when compared to commercial businesses. Federal pressure is driving a move to cloud computing, but the knowledge and IT skills in-house still remains a hurdle.

Based on the findings, AMD believes:

- Vendors and customers should approach cloud computing by evaluating the unique workloads being deployed to identify the right technology, and avoid referring to cloud computing as a single, consistent approach to IT
- More education is needed to ensure customers in all regions and sectors are on equal footing with the cloud. This can come in the form of more clear communication from IT vendors about what their solutions deliver, as well as webinars, in-person events, and hands-on engagement about how to improve IT operations in the cloud. AMD is leading in this area by providing a dedicated online resource at www.amd.com/cloud.