



WHITEPAPER

THE REALITY OF CLOUD COMPUTING — HAS IT LIVED UP TO THE HYPE?

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1. INTRODUCTION

Research methodology

Tata Communications commissioned independent technology market research specialist Vanson Bourne to undertake the research upon which this report is based.

During September and October 2014, Vanson Bourne conducted a total of 1000 interviews with senior IT decision-makers in private organisations of 500 employees or more. Respondents also had to be involved in the procurement and decision-making of their organisation's digital strategy. Interviews were held in eight countries:

- UK - 125 interviews
- France - 125 interviews
- Germany - 125 interviews
- USA - 125 interviews
- Singapore - 125 interviews
- Hong Kong - 125 interviews
- China - 125 interviews
- India - 125 interviews

Respondents came from a range of industry sectors, including IT; manufacturing and production; financial services; retail, distribution, and transport; and business and professional services. The public sector was excluded from this research.

Interviews were conducted online using a rigorous multi-level screening process to ensure that only suitable candidates were given the opportunity to participate.

Aims of the research

Cloud computing is now a well-established proposition. For many, it is seen as the de facto standard when commissioning new services and applications, indicating the extensive breadth of cloud service offering and the maturity of the market.

When services were initially offered through cloud platforms, vendors made considerable claims about the benefits: better access to data, easier provision of additional resources as required, a greater ability to allocate spend to capex rather than opex, and so forth. Some of these claims were so substantial that many were sceptical. How could cloud computing possibly live up to this hype?

Despite this scepticism, over the past decade vendors have increased the number of cloud computing propositions they offer and it seems that many organisations have adopted some level of cloud computing in their infrastructures.

But has this adoption been extensive? Will it increase over time? Are enterprise organisations actually realising benefits from their use of cloud computing solutions, and are those benefits as significant as the initial vendor hype suggested?

Could cloud computing solutions be creating benefits that organisations have yet to fully exploit?

Crucially, private cloud platforms have been seen as the default choice of cloud implementation, allowing a migration to the cloud but without necessarily seeing the benefits of a public solution. Will this default choice change in future, potentially to public or hybrid cloud solutions? If not, what is preventing organisations from adopting such solutions and capitalising on further benefits as a result?

This research aims to answer these questions.

2. KEY FINDINGS

Cloud computing has been widely adopted

- 97% of respondents say their organisation has adopted it to some extent
- 84% of those respondents say that cloud computing is already critical or very important to their organisation

Extent of cloud computing use is predicted to increase

- An average of 28% of the compute and data storage in respondents' organisations is in the cloud at the moment
- This is predicted to rise to 43% within five years and 58% in ten years

Cloud computing is an organisation-wide movement

- 68% say that moving to the cloud has involved individuals beyond the IT department...
- ...and 90% say that requests from other departments have influenced the decision to implement the cloud

Cloud computing has resulted in significant benefits being realised

- Over half of respondents suggest that each possible benefit has been achieved in their organisation, the most likely being increased productivity and better access to data
- Around 10% had their expectations exceeded for each benefit...
- ...and around a fifth did not expect to see the benefits that they did
- As a result, 85% say that cloud computing has lived up to the hype...
- ...and 23% say that the hype has been exceeded

Organisations are being prohibited from further cloud adoption

- Only 39% of applications in respondents' organisations on average are ready to move to the cloud at present
- 57% have migrated data back in-house from the cloud, primarily due to long-standing concerns around security and data protection
- As a result of these worries, organisations are primarily relying on using private cloud computing for their future cloud needs...
- ...although 94% say that their organisations would be likely to use hybrid cloud if the connections within the publicly-used internet structure could be made more predictable

3. CURRENT AND FUTURE CLOUD ADOPTION

Current cloud computing adoption

Cloud computing is already widely in use amongst enterprise organisations.

Almost all (97%) respondents report that their organisation has already adopted cloud computing to some extent, and it has become an important part of the infrastructure. Only 1% of those in organisations using cloud computing say that it is not at all important to their organisation, and over a quarter say that it is of critical importance.

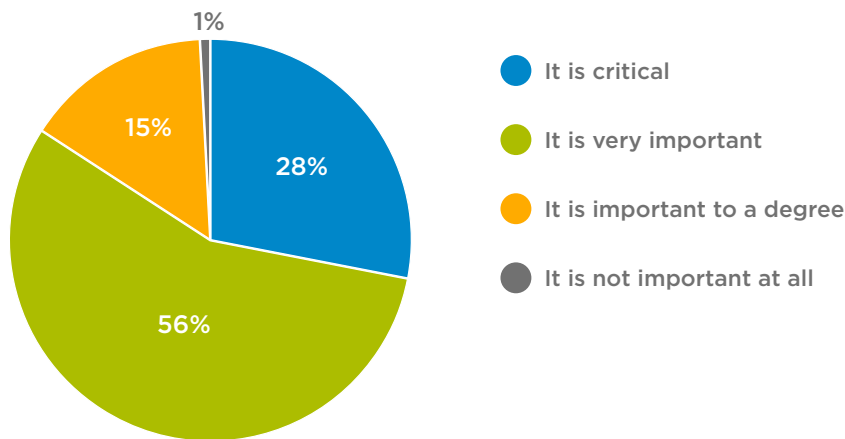


Figure one: How important is cloud computing to your organisation? (The 989 respondents in organisations using or planning to use cloud computing were asked)

This importance is despite the fact that most respondents say that their organisation has been using cloud computing for less than five years. Despite its relative youth, it is already an integral part of how many organisations operate.

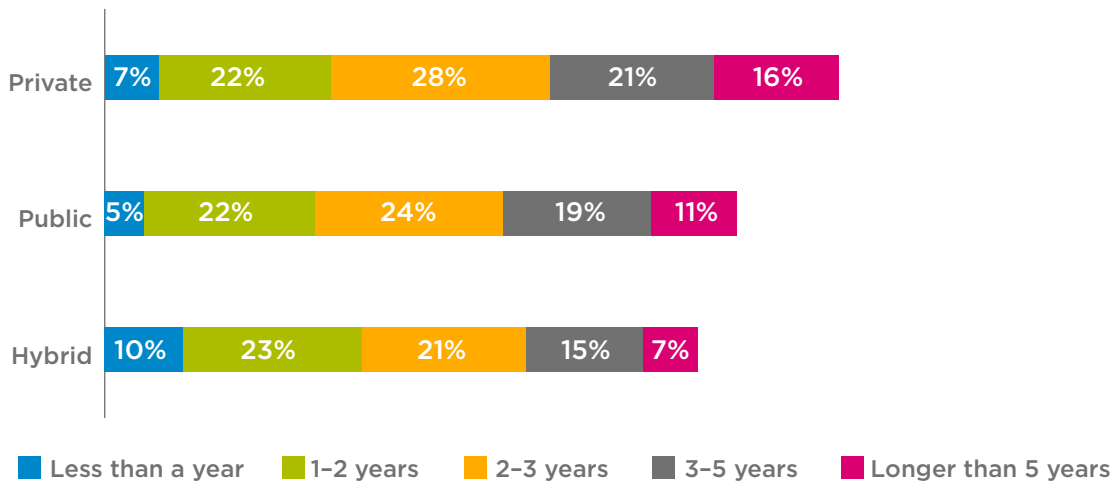


Figure two: How long has your organisation been using each of the following cloud environments? (All 1000 respondents were asked)

Only a minority of organisations have implemented each variety of cloud over the past two years; most have been using each type for longer.

The difference between each type reinforces the idea that organisations have been primarily adopting a private cloud approach during this initial adoption: 37% say that their organisation first began using private cloud three years ago or more, compared to 31% for public cloud and just 22% for hybrid.

In total, 94% of respondents say that their organisation has adopted private cloud, 82% say the same for public cloud, and 75% say their organisation is using hybrid cloud. This suggests that most organisations are currently using multiple types of cloud computing, and confirms the emphasis on private cloud over public or hybrid approaches.

Although 75% are using hybrid cloud, it is likely to have been adopted relatively recently and therefore the approach and benefits are not as likely to be as robust or realised. And the remaining 25% of respondents' organisations are missing out on the potential advantages of this platform.

There may be potential advantages being missed elsewhere. Although most organisations are using cloud computing and have adopted multiple solutions, this does not mean that most of their data is in the cloud at present. On average, respondents say that only 42% of their organisation's infrastructure is virtualised and only 28% of compute and data storage is held in the cloud.

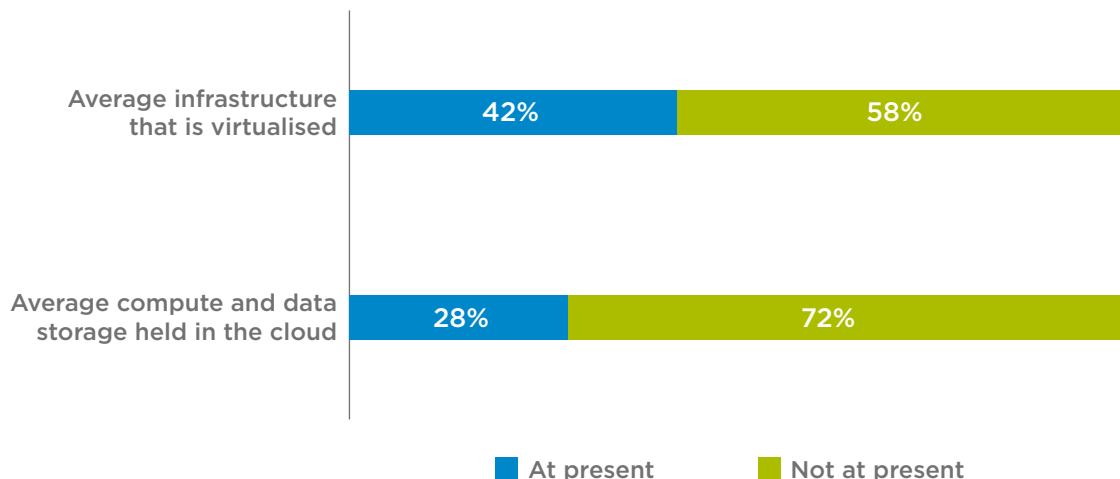


Figure three: Comparison of average infrastructure that is virtualised at present, versus average compute and data storage at present

This means that the cloud is widely adopted, but it is not necessarily widely replacing organisations' existing infrastructures and processes. There may be benefits being realised through cloud adoption, but with only a minority of data in the cloud it is likely that those benefits are not as extensive as they could be.

Future cloud computing deployment

Almost all respondents' organisations have already adopted cloud computing, but few have all of their data in the cloud at present.

Respondents believe that this is likely to change over the next ten years:



Figure four: What percentage of your company's compute and data storage is held in the cloud currently, what percentage will be held in five years' time, and what percentage will be held in ten years' time? (The 989 respondents in organisations using or planning to use cloud computing were asked)

On average, respondents say that 28% of their organisation's compute and data storage is held in the cloud right now, but this rises to an estimated 43% in five years and 58% in ten years' time.

This is significant. It shows that organisations are intending to slowly migrate the majority of their compute and data storage to the cloud over time. What benefits they have already seen from the cloud must be substantial enough to justify further investment and migration of data. It also suggests that organisations will adopt more cloud computing solutions: as different datasets need to be accessed in different ways, it is likely that organisations will look for new solutions that enable them to put data in the cloud that currently resides on-premise.

Although more movement to the cloud is intended, respondents say that at present they are predicting that this will be predominantly through a private cloud methodology.

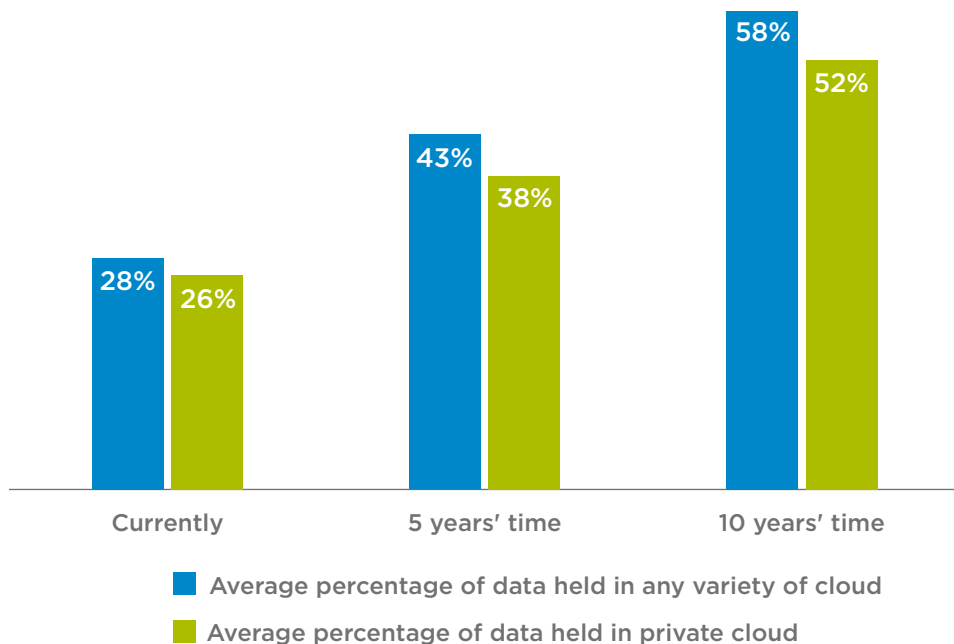


Figure five: Analysis of predicted data being put into the cloud, versus predicted data being put into private cloud (The 989 respondents in organisations using or planning to use cloud computing were asked)

An average of 26% of respondents' organisations compute and data storage is held in private cloud at present; as an average of 28% is held in any type of cloud, this means that only around 2% is held in public or hybrid cloud on average. This is not predicted to change much in future: 38% is predicted to be held in private cloud in five years' time, when a total of 43% of data is believed to be held in the cloud. And respondents believe that 52% of data will be held in private cloud in ten years' time, at which time they believe 58% of data will be in any form of cloud.

Though the extent to which cloud computing is deployed throughout an organisation is increasing, many still rely on private cloud over public or even hybrid approaches. Organisations realise the advantages that private cloud computing is bringing them, but they are not necessarily seeing the benefits from other varieties of cloud computing deployment. They could be missing out on significant further benefits as a result.

4. WHAT IS INFLUENCING MIGRATION TO THE CLOUD?

Traditionally, if an organisation intended to make a significant change or investment in their approach to IT, this would largely be done by the IT department in isolation. Cloud computing breaks this trend: the research shows that it is rare for a move to the cloud to be solely an IT department's doing.

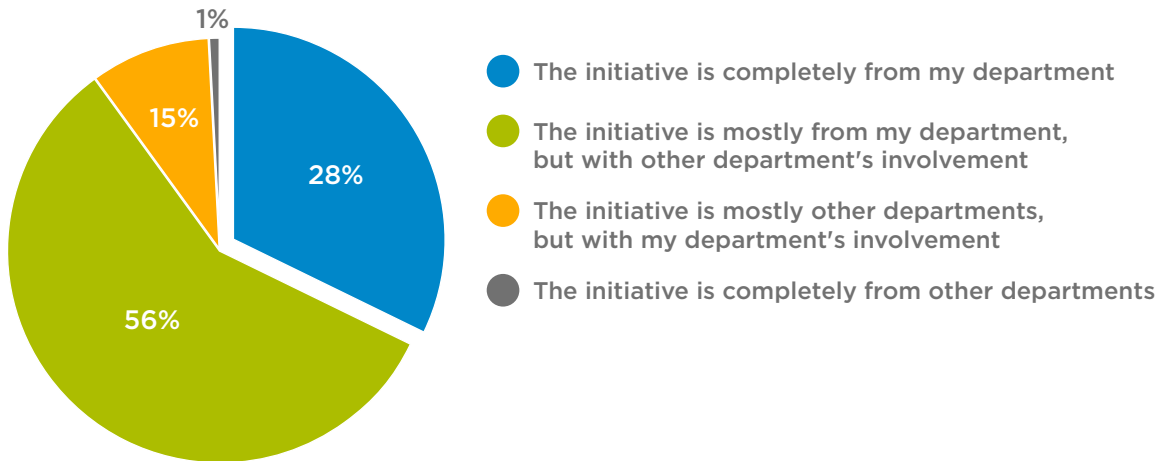


Figure six: Is the move to the cloud more likely to be your department's initiative or are other departments pushing for it? (The 989 respondents in organisations using or planning to use cloud computing were asked)

Moving to the cloud was solely the IT department's initiative in only 32% of respondents' organisations. For 68%, other departments were not only involved in the adoption of cloud computing, but had been pushing for its adoption. Only 1% say that the IT department is not involved at all, meaning that it is very likely that the IT department have been involved, but it is rarely just that department that made the decision on how and when cloud computing is adopted.

Even if other departments have not been pushing for adoption, the needs of other departments have probably influenced the IT department's decision-making when thinking about cloud computing.

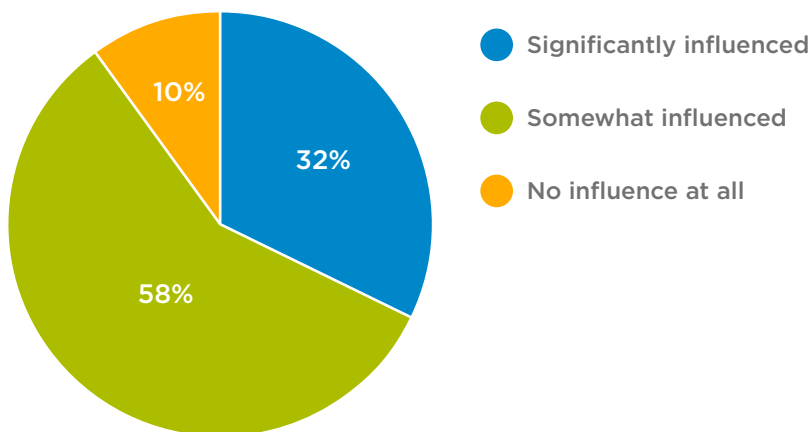


Figure seven: To what extent have requests from other departments to implement cloud services influenced your decision to implement cloud? (The 989 respondents in organisations using or planning to use cloud computing were asked)

Among those in organisations that use the cloud, only 10% say that requests from other departments have had no influence in deciding to implement it. Decision-makers and employees outside of the IT department have recognised the benefits of cloud computing and have actively made requests for cloud solutions to be implemented. A third of respondents (32%) say that requests from other departments significantly influenced their decision to implement the cloud, suggesting that some departments have been extremely vocal about their desire for cloud solutions.

Although other departments are often involved in the decision to deploy cloud computing, such involvement is not often the key driver for cloud adoption.

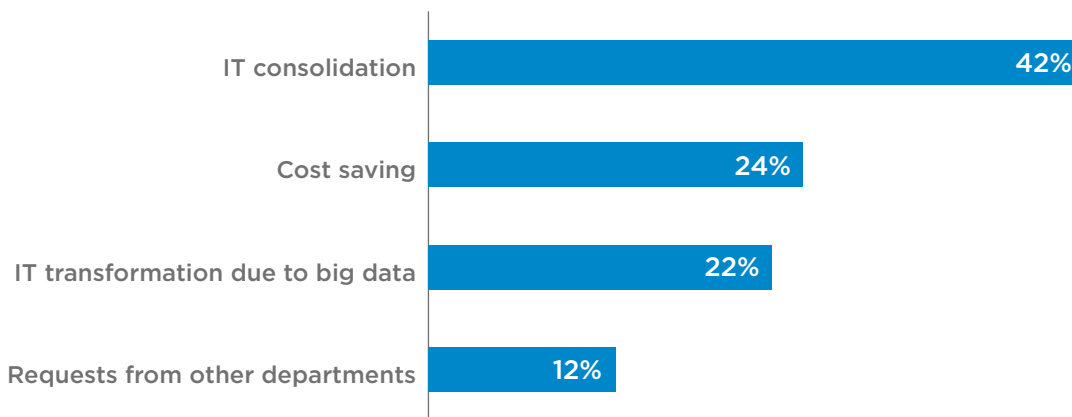


Figure eight: Of the following options which has been the key driver for moving to the cloud? (The 989 respondents in organisations using or planning to use cloud computing were asked)

Only 12% say that requests from other departments have been the key driver for moving to the cloud, the least likely of any of the drivers. Other departments may be vocal in their desire to adopt the cloud and senior IT decision-makers have taken those opinions on board, but they are far more likely to be adopting cloud computing for either IT consolidation (42%) or cost saving (24%) purposes.

The fact that fewer respondents say that their organisation is adopting cloud to save costs than, say, IT consolidation is notable. Budgetary worries are always among the IT department's top concerns and it is often the case that new technologies or policies will be adopted if they support leaner operations. Though cloud computing may help reduce IT spend, it is primarily being adopted to help consolidate the IT estate.

5. HAS CLOUD LIVED UP TO THE HYPE?

The benefits of cloud computing

Adoption of cloud computing solutions in enterprise organisations is already significant, and respondents report that their organisations intend to increase their deployment of cloud computing solutions over the next ten years. Organisations would only be adopting and continuing to adopt cloud computing to this extent if there are benefits to doing so.

And respondents had high expectations when they first began investing in the cloud.

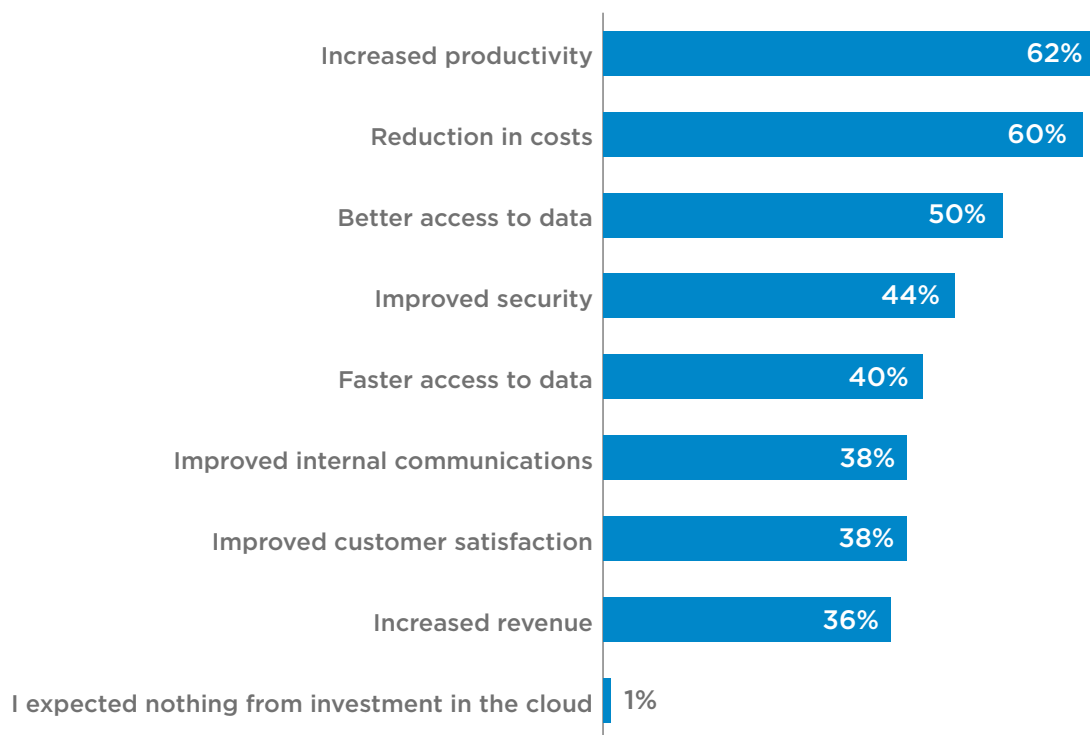


Figure nine: Which of the following did you expect to see from investing in the cloud? (The 989 respondents in organisations using or planning to use cloud computing were asked)

Only 1% had no expectations at all, and half or more expected increased productivity, reduced costs and better access to data. Such benefits are similar to the bold claims made by vendors when cloud solutions were first brought to market; is it the case that respondents had unrealistic expectations that were simply informed by marketing hype?

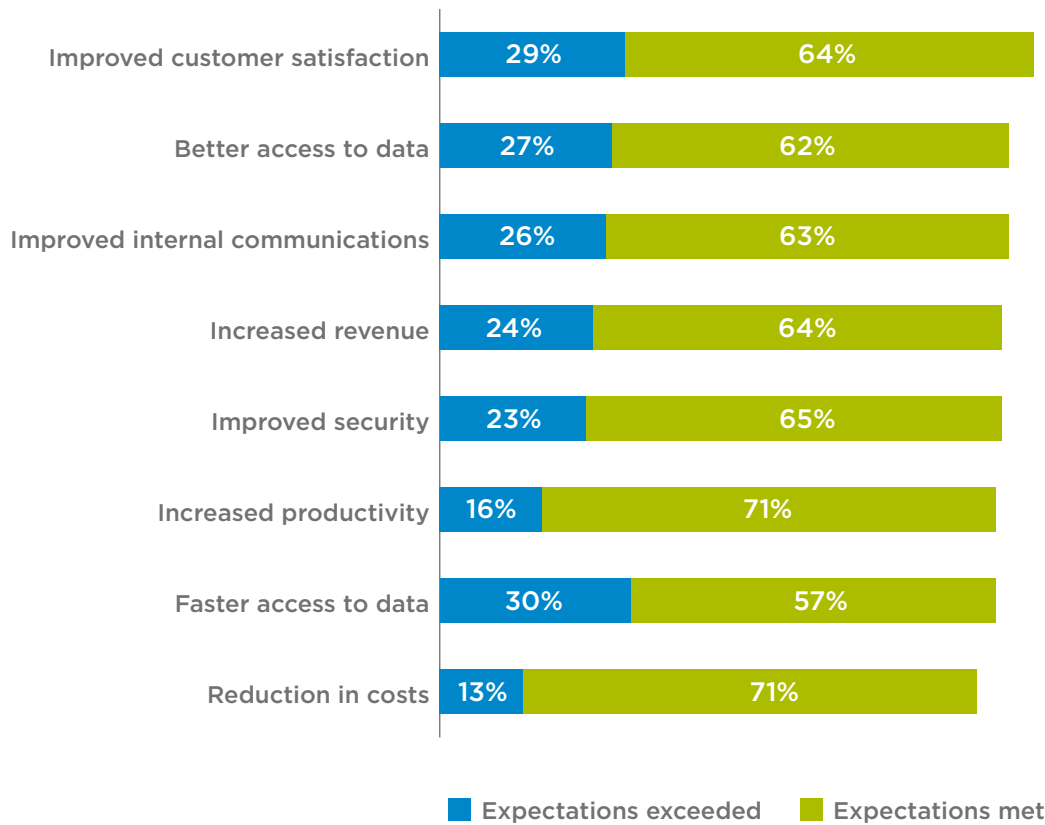


Figure ten: Of those benefits you expected to see, were your expectations met? (We presented each option to all those respondents who previously suggested that they expected each benefit.)

Only a small percentage of respondents who had expected to see each benefit did not. If a benefit was expected, it was very likely to be experienced. For some, their expectations were even exceeded.

Crucially, the research shows that many organisations experienced each of these benefits regardless of whether they were anticipated or not:

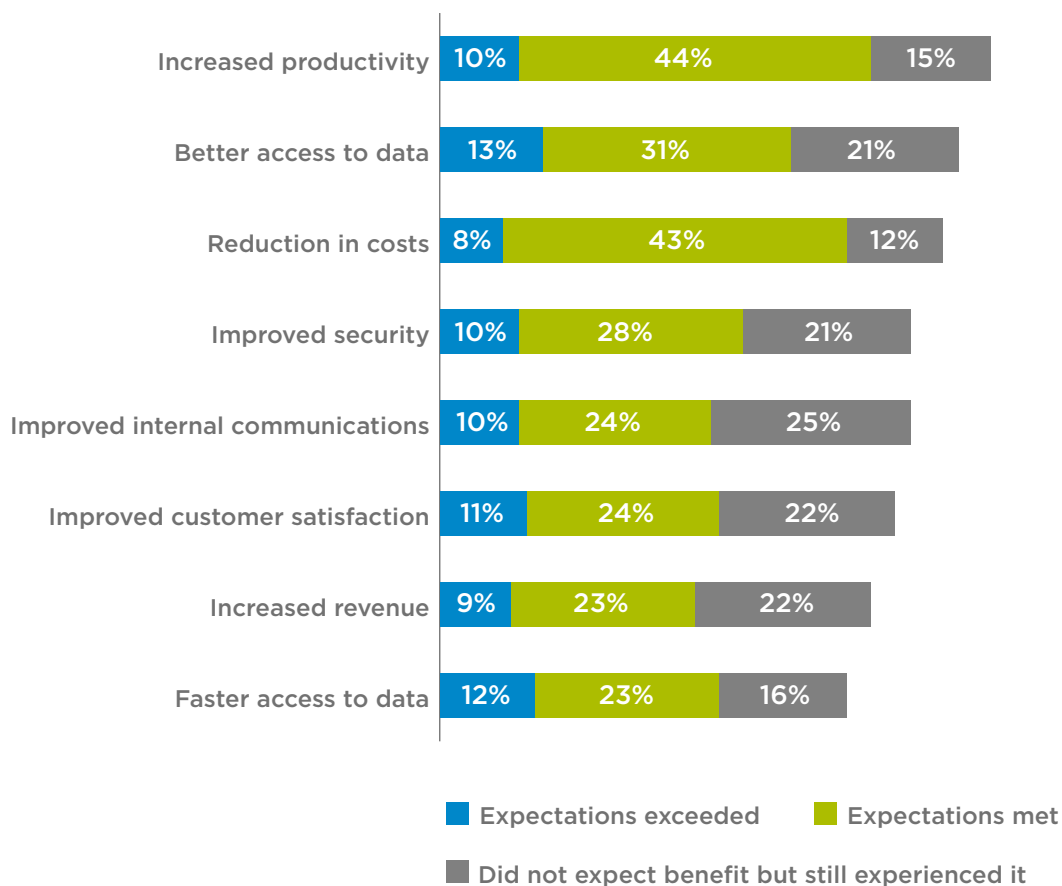


Figure 11: Analysis of benefits achieved through the adoption of cloud computing (analysis of responses for all respondents)

For each benefit, more than half of all respondents in cloud-using organisations say that their organisation experienced them. These benefits are not inconsequential – in any organisation a reduction in costs or increased productivity would be welcome, but in an enterprise-sized organisation where these benefits could be scalable, it could result in them being significant.

Supporting this idea is the fact that in around 20% of cases, the benefits were not expected but were experienced anyway, and that in around 10% the benefits actually exceeded expectations. Cloud computing is proving to be beneficial to enterprise organisations, and for many those benefits are better than they had anticipated.

Cloud computing hype

As so many respondents' organisations have adopted cloud computing solutions, and so many respondents say that their organisation has seen significant benefits as a result, this gives the impression that the extensive claims made about the cloud proposition when it was initially brought to market have held true.

The vast majority of respondents say that cloud computing has lived up to the hype.

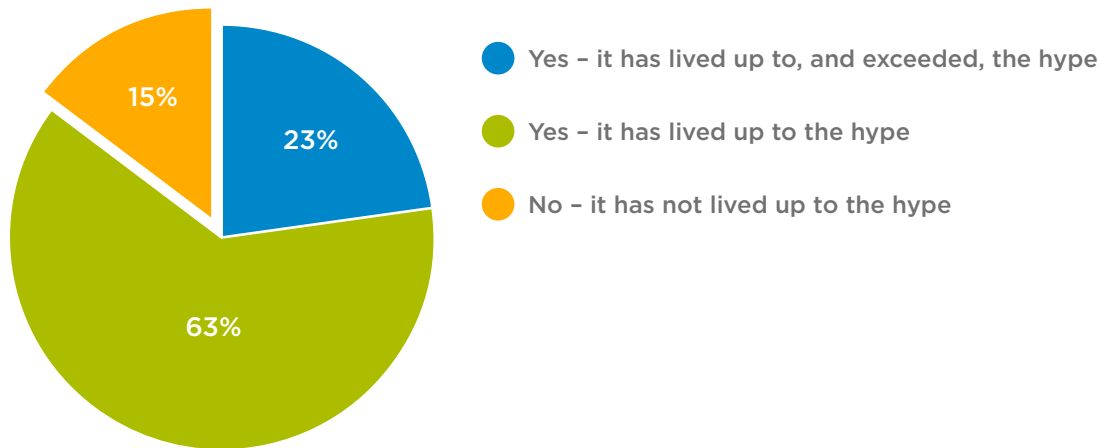


Figure 12: Has cloud computing lived up to the hype? (All 1000 respondents were asked)

Only 15% disagree, meaning that 85% feel that the substantial claims that were widely disputed when cloud computing products were first brought to market were justified. As so many organisations have experienced substantial benefits from their adoption of cloud technologies, almost a quarter of respondents say that the experience of cloud has actually exceeded the hype.

Despite vendors' initial wariness of the claims, the research shows that the cloud computing paradigm has not been an empty marketing term.

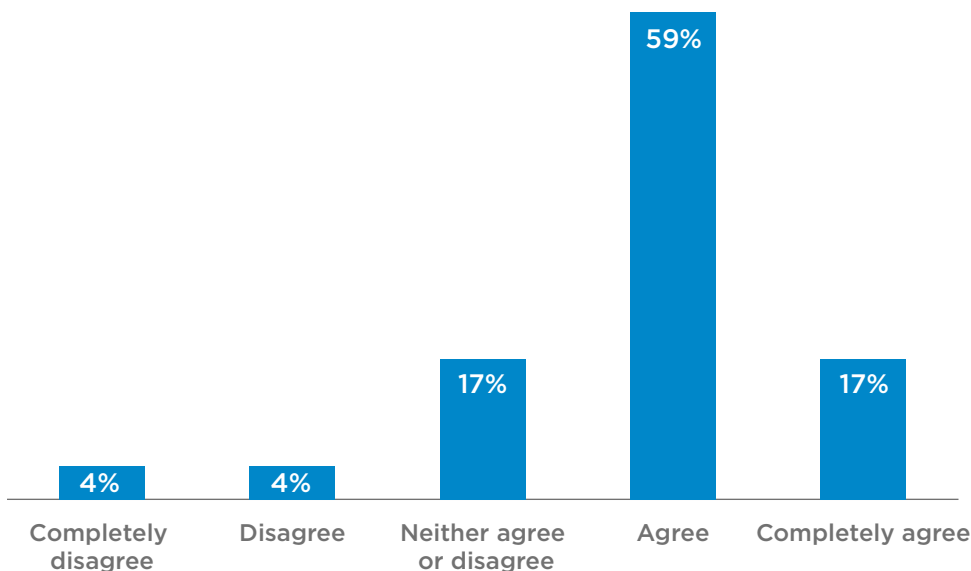


Figure 13: To what extent would you agree that cloud has delivered on its promises? (All 1000 respondents were asked)

Three quarters of all respondents believe that the cloud has delivered on its promises. Just 8% disagree with this to some extent.

Clearly, the cloud is living up to and exceeding expectations, resulting in a very positive impact on how enterprise organisations operate.

The impact of cloud computing

The benefits that organisations have experienced as a result of adopting cloud computing have had a substantial impact on their operations.

Most have seen a positive return on their investment from moving to the cloud.

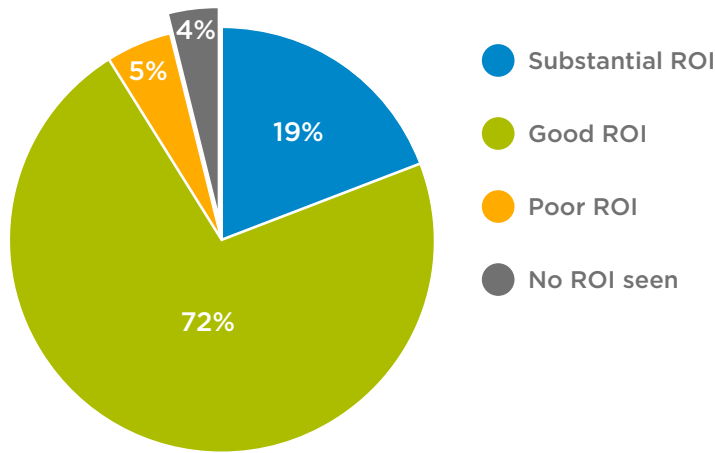


Figure 14: How substantial has the ROI been from moving to the cloud? (The 970 respondents in organisations that are using a type of cloud were asked)

Only 4% have seen no ROI from their cloud investment, and though most say that the ROI they have seen has been good, one in five have had a substantial return on their investment. This echoes the idea that the benefits from cloud computing have been substantial.

Nowhere is this more evident than in the cost savings that organisations have realised as a result of their adoption of cloud computing. On average, respondents expected cost savings of 27%; this is precisely the same percentage that was realised in the average respondent's organisation. 27% is significant in such large organisations, and indicates that savings have been achieved across many different areas.

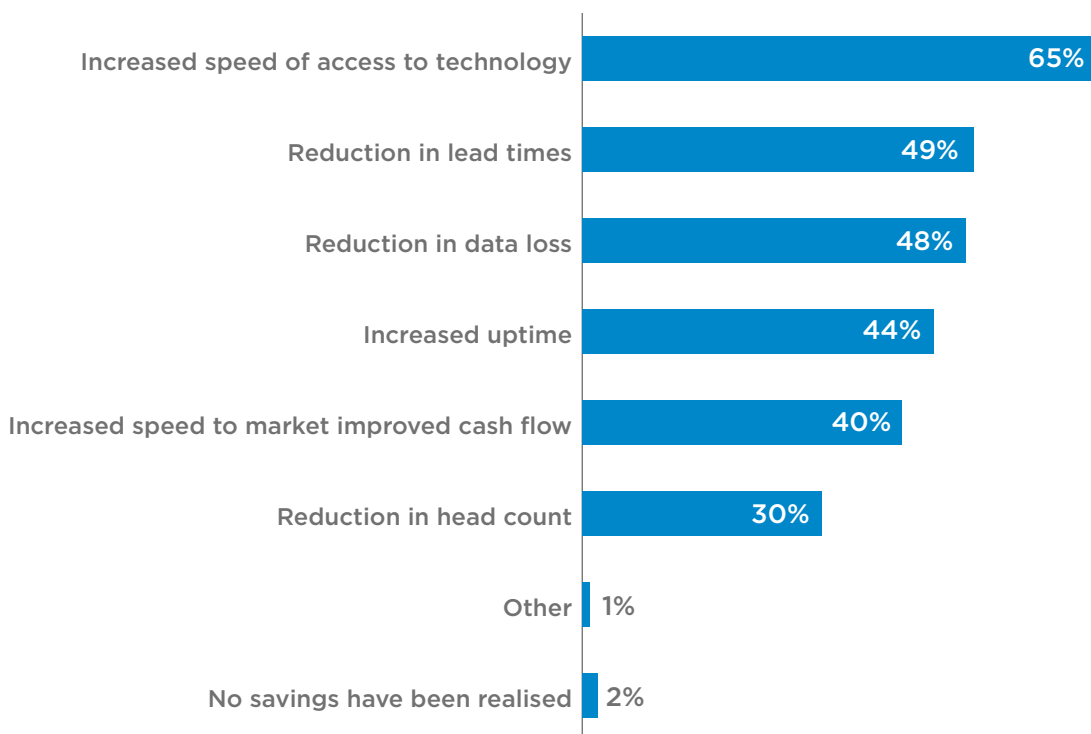


Figure 15: How were savings realised due to your organisation's investment in cloud? (The 970 respondents in organisations that are using a type of cloud were asked)

Just under half say that savings have been realised due to increased uptime and reduced data loss. Cloud use is resulting in data being available far more often, either through a lack of downtime or through less data being lost.

But it is the increased speed of access to technology which the majority cite as a reason for savings being realised. The adoption of the cloud has a knock-on effect: as cloud applications are designed to be interoperable with many other cloud services, they enable easy on-boarding of new technologies as and when they are available. A new cloud-based CRM solution, for example, can easily be adopted and deployed by an organisation, and is likely to be designed to work quickly and efficiently with other solutions that an enterprise will typically use.

Almost half of organisations have realised savings from a reduction in lead times. Cloud computing is enabling them to act quicker and 49% are making savings as a result. However, almost all organisations that have implemented cloud have seen a reduction in lead times; only 7% have seen no reduction.

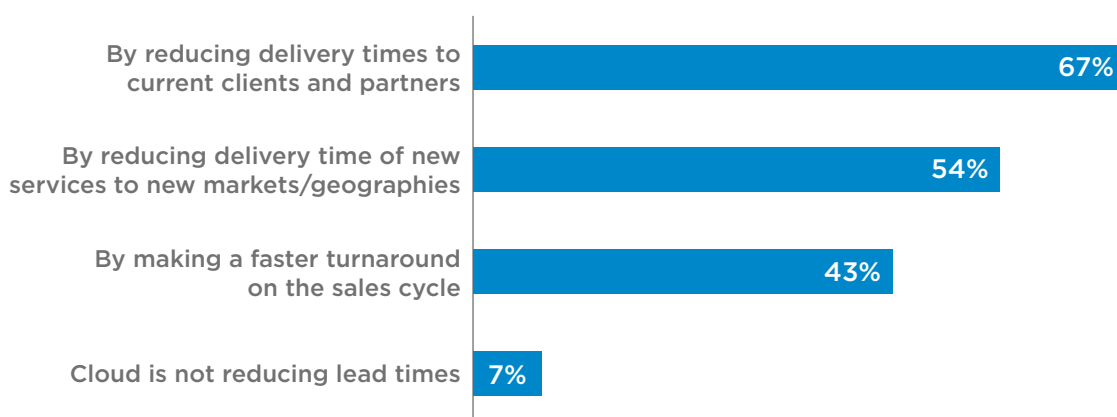


Figure 16: In what ways is cloud reducing your organisation's lead times? (The 970 respondents in organisations that are using a type of cloud were asked)

This disparity between the majority that have reduced lead time versus the half that have realised savings through a reduction in lead times suggests that the cloud may be helping, but it is not necessarily resulting in a realisation of the savings here that it could. Further computer and data storage deployment is likely to help here: as more is put into the cloud, more organisations are likely to see financial benefits from reduced lead times. It also suggests that organisations may not have deployed the cloud as effectively as they could at present. So, despite the many benefits that most have already seen, they will need to ensure that they refine the solutions they are already using.

But for most, a reduction in lead times is a benefit even if it has not resulted in a saving. And it is delivery of services where lead times are most likely to be reduced: the majority say that the cloud has created a reduction in the delivery time to clients and partners (67%) and of new services to new markets (54%).

All of these benefits, improvements and impacts on respondents' organisations reveal why many intend to increase their cloud use over the next ten years. Cloud computing is proving to be immensely beneficial to the average enterprise organisation, hence why most are looking to use it more in future.

6. WHAT IS PROHIBITING CLOUD ADOPTION?

Despite the many benefits that enterprise organisations have already seen from the adoption of cloud computing and their intent to use it more extensively, a number of factors are holding them back from further adoption.

Application readiness

Moving applications to the cloud is not a simple exercise. Many organisations rely on programs that have been heavily modified, are bespoke, work with legacy infrastructures, or that simply have not been updated for some time. Such applications are difficult to migrate, potentially harming an organisation’s ability and desire to put more of their data storage and compute into the cloud.

Respondents say that this is happening in their organisations. Only 1% say that all of their applications are ready to move into the cloud.

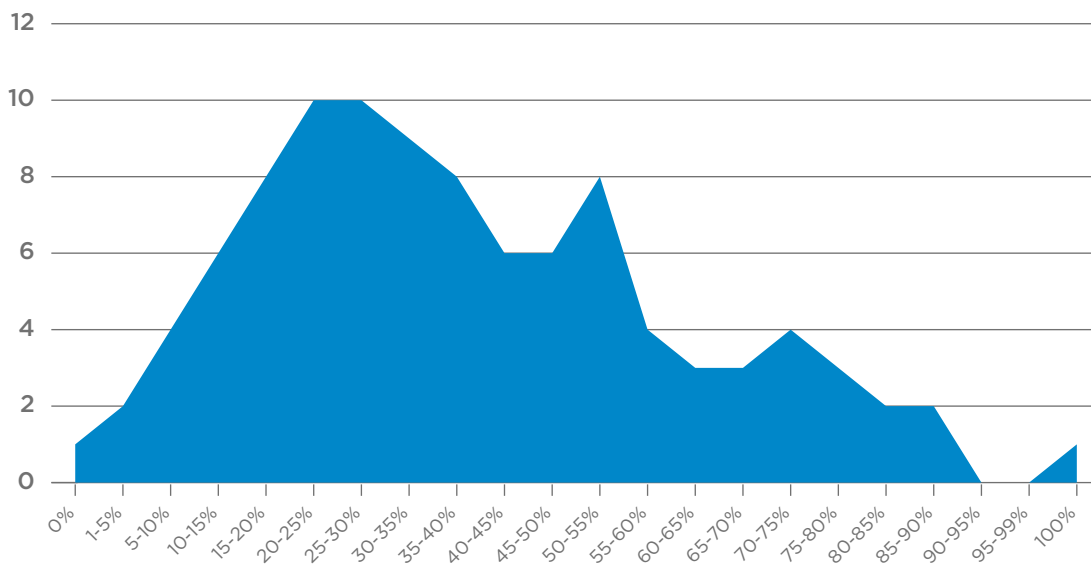


Figure 17: What percentage of your applications are currently ready to move to the cloud? (All 1000 respondents were asked)

On average, only 39% of the applications in a respondent’s organisation are ready to move to the cloud right now.

If organisations want to put the majority of their compute and data storage into the cloud in ten years’ time, work will need to be done in the interim to make these applications ready to move. Cloud vendors may be able to assist with this, but it is still likely to cause a bottleneck in an enterprise’s ambitions to use cloud more extensively.

Security concerns

As the cloud is a relatively new platform, it is inevitable that some organisations will have deployed cloud services, reconsidered, and brought that data back on-premise.

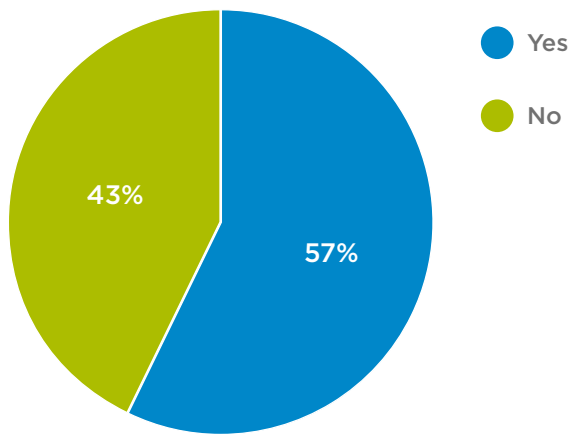


Figure 18: Has your organisation ever migrated data back in-house from the cloud? (All respondents were asked)

Many report that this has happened in their organisation. Over half have said that they have migrated data back in-house from the cloud at some point, indicating that the initial cloud services they deployed potentially did not meet all their needs or expectations. It also suggests that some migrated to the cloud before being fully prepared.

But there are specific reasons why data was migrated back in-house:

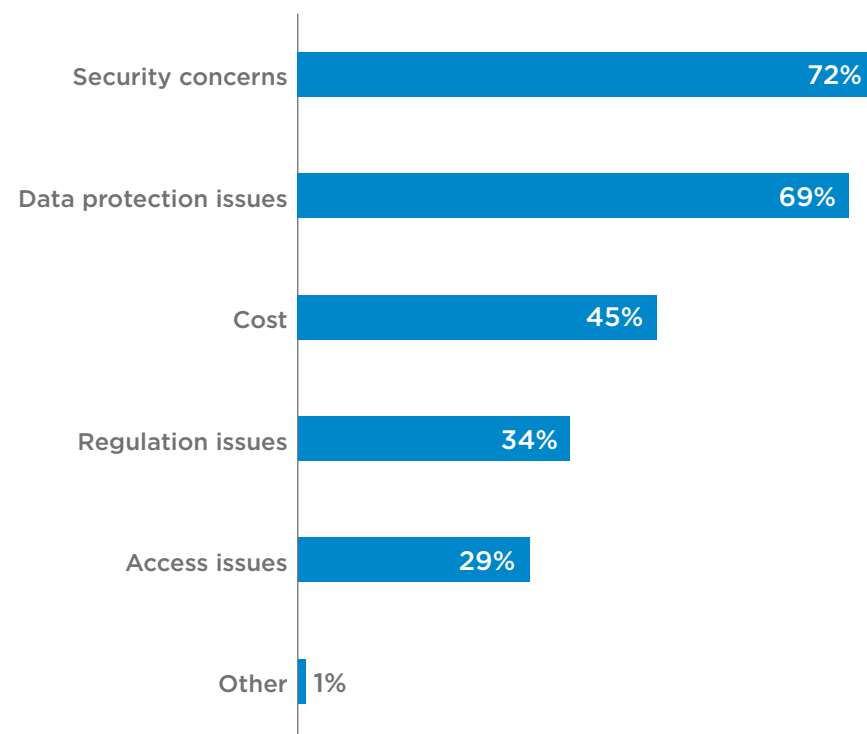


Figure 19: What were the reasons for this migration back in-house? (The 572 respondents in organisations where data has been migrated back in-house from the cloud were asked)

Although cost and access issues have been issues for a minority, over two-thirds migrated data back in-house due to either data protection issues or security concerns.

This echoes the main widely discussed concerns about cloud computing. Migrating compute and data storage away from corporately-owned servers is an act of faith in the robustness of a cloud vendor’s solutions. Data kept in-house is often perceived as being safer and more secure: it is on local servers, is not subject to the unpredictability of the publicly-used internet structure, is protected behind firewalls, can be monitored against security breaches and is held in accordance with local laws. Once that data is migrated to the cloud, it could be held anywhere in the world and is subject to the security provided by the vendor rather than the organisation.

This was a major point of concern when the cloud was first introduced, and the research shows that it has been such a concern that most organisations have stopped using at least some of the cloud services they have adopted. Despite the fact that cloud adoption has been extensive, it has not always been successful for all respondents’ organisations. Enterprises may have overcome those security concerns to begin adopting the cloud, but many have withdrawn services due to those concerns. Cloud vendors still need to prove the robustness of their solutions.

Data sovereignty

Much like the worries around security, there was much scepticism about where data would be geographically located once deployed to the cloud. Enterprises are subject to local laws governing how and where data is stored, and many were concerned that data in the cloud could theoretically be held in many different servers across the globe.

This is a concern which still persists. Almost every respondent in organisations that use the cloud report that it is a consideration to some degree.

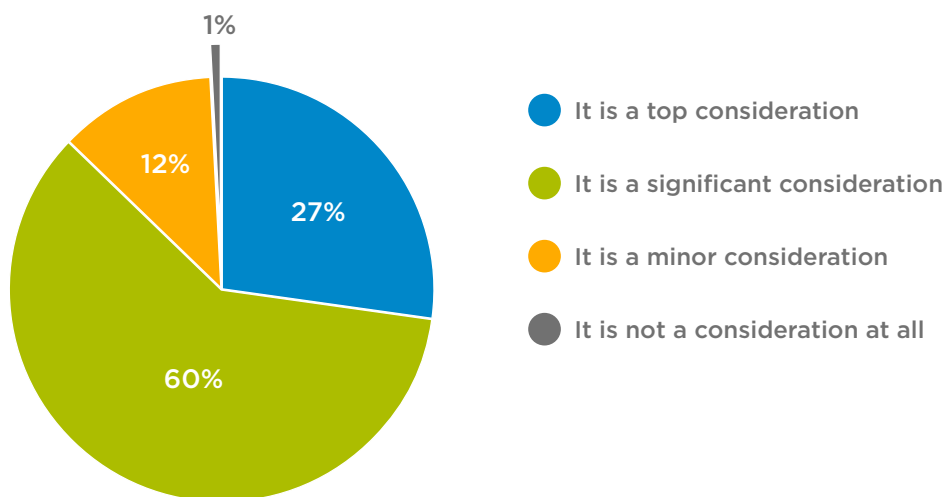


Figure 20: Is data sovereignty a key consideration when moving workloads to the cloud? (The 989 respondents in organisations using or planning to use cloud computing were asked)

Six in ten say that data sovereignty is a significant consideration, and more than one in four say that it is a top consideration.

Despite the cloud being adopted extensively, the location of data is still a concern. This may be why less than half of an average organisation’s compute and data storage is in the cloud at present – the data still on-premise is potentially subject to greater data protection legislation.

If they are to implement cloud computing further, enterprises will need continuing reassurance on how and where their data is being held once it is in the cloud.

Reliance on established cloud implementation types

A key finding from the research is just how reliant respondents' enterprises are on private cloud computing. Though respondents say that their organisations are very likely to increase their deployment of cloud computing over the next decade, on average private cloud is likely to account for the majority of this use, both at present and in future.

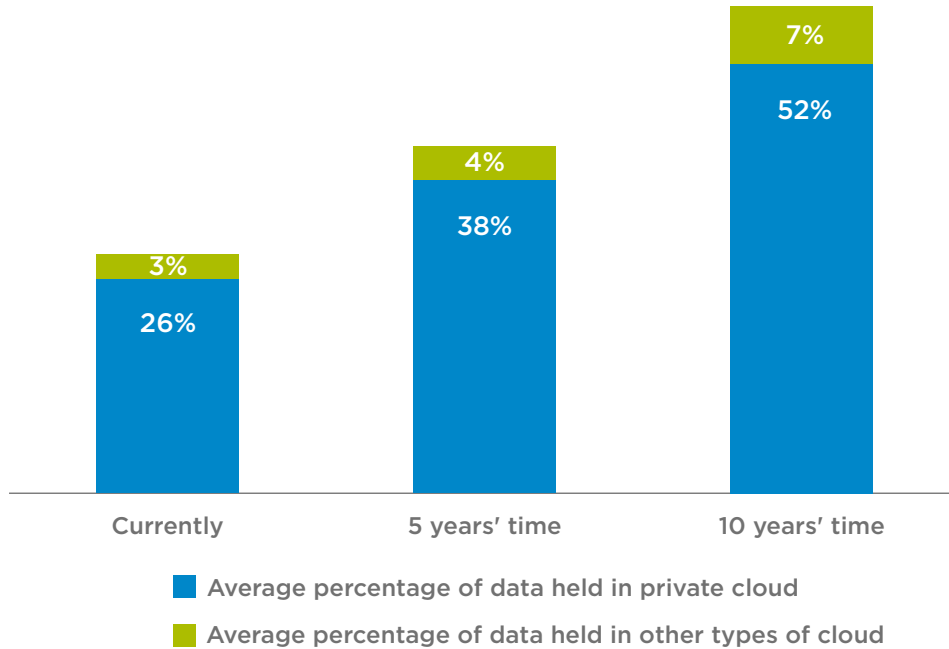


Figure 21: Analysis of predicted private cloud use versus use of other cloud types over the next ten years

There are a range of reasons why enterprises might be relying on private cloud solutions over either public or hybrid. Chief among these reasons is the security concerns outlined above: as most have brought some cloud solutions back on-premise, most likely due to security or data protection concerns, these issues will be a key consideration when deploying further.

Private cloud has traditionally been seen as the easiest way to deploy sensitive data securely, hence the predicted future reliance on that type of implementation.

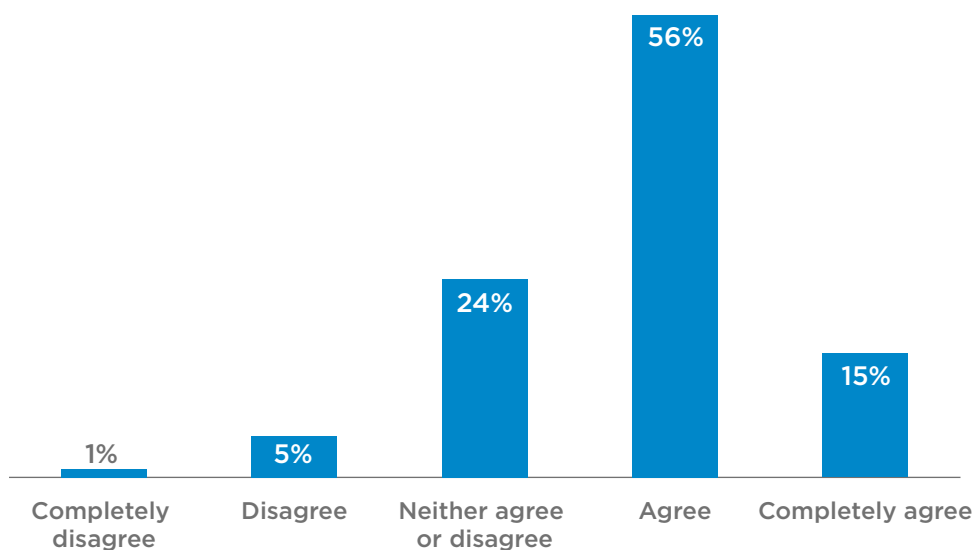


Figure 22: Do you agree that private cloud addresses security concerns better than public cloud? (All respondents were asked)

71% of respondents agree that private cloud addresses their security concerns better than any other form. As private cloud computing has become the go-to method for migrating to the cloud, this conservative approach either suggests that organisations have come to rely on this solution or have been sold on the advantages of other deployments.

It does also suggest that enterprises are simply not exploring other methodologies with the potential to adopt them extensively in their infrastructures. They may be aware of those other implementations and might have experimented with them, but their intent is to predominantly use private cloud computing as they move forward. Although they may view private cloud as being better at addressing security concerns, this does not necessarily mean that it is better in every instance; it is entirely possible that being focused on private cloud means that enterprises are missing out on the benefits of other deployments.

Hybrid cloud is a good example. Although 75% of respondents say that their organisation has adopted hybrid cloud as part of their infrastructures, the data shows that organisations are far more likely to be using private cloud for the majority of their cloud-based compute and data storage. Hybrid cloud presents many benefits to organisations in addition to those already realised through the use of private cloud, but the focus on private cloud means that these additional benefits are not realised.

Although private cloud’s perceived security advantage is one of the reasons why organisations are not adopting hybrid cloud, there may be other reasons. One of those is the fact that adoption of a hybrid cloud approach requires a reliance on the publicly-used internet structure which can be problematic.

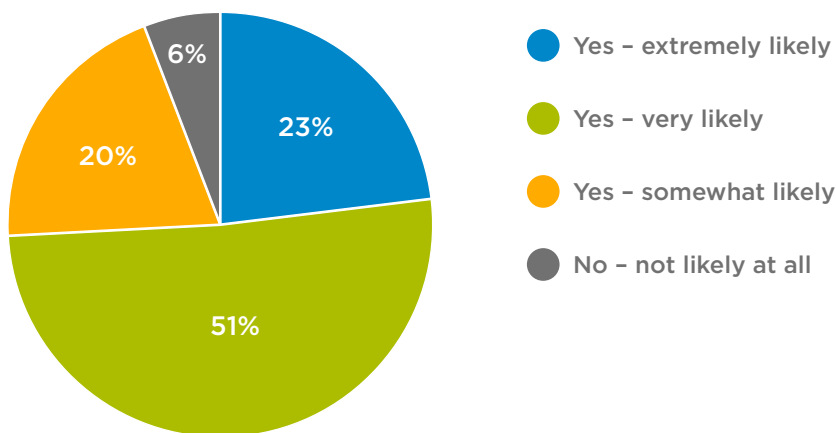


Figure 23: Would your organisation be more likely to use hybrid cloud computing if the connections within the publicly-used internet structure could be made more predictable?

Respondents recognise this problem. 94% say that their organisation would be more likely to use hybrid cloud computing if the connections within the publicly-used internet structure could be made more predictable. And almost three quarters (74%) say their enterprise organisation would be very or extremely more likely.

The data shows that there is a desire amongst respondents’ organisations to potentially adopt other forms of cloud computing. But they are used to using private cloud computing and are wary of the perceived drawbacks of other implementations, such as the reliance on the publicly-used internet structure.

Dependence on the established private cloud methodology amongst enterprises may result in a cloud strategy that is not as extensive or as beneficial as it could be. The research suggests that it may be advantageous for enterprises to consider their perceived disadvantages of other implementations, such as hybrid cloud, and to see if these problems can be overcome in order to realise significant additional benefits.

CONCLUSION

For most, cloud computing has lived up to the hype. In fact, the benefits and advantages that it brings to enterprise organisations has resulted in a quarter of respondents saying that cloud computing has exceeded the hype. Many have not only seen expected benefits from their organisation's adoption of cloud, but have had those expectations exceeded, which shows how valuable a proposition cloud computing is to enterprises.

As a result successful cloud adoption thus far, most respondents say that their organisation is looking to implement cloud computing more extensively over the next ten years. Enterprises are hoping to capitalise on the benefits they have already seen and extend them further.

Though this shows a positive movement towards putting their entire infrastructure in the cloud in future, most organisations are undertaking this planned implementation conservatively.

The majority of respondents say that their organisation's future cloud adoption is likely to be centred on the tried and tested private solution. Relatively little compute and data storage is planned to be deployed through either public or private cloud methodologies.

This presents enterprises with a risk. Though there are plans to implement cloud more extensively, the data suggests that organisations believe that all data can be migrated to the cloud in the same form and format. This may not be true, especially as it is likely that the data and applications yet to be migrated are more sensitive or complex.

In addition, different implementations offer different benefits. Relying solely on private cloud implementations runs the risk of not seeing every possible benefit of the platform.

If senior IT decision-makers in enterprise organisations want to keep having their expectations exceeded by cloud computing, they need to adopt the most suitable cloud computing solution for each data or application type. Private cloud may not always be the most appropriate for each purpose, yet the research shows that enterprises intend to migrate more of their data and compute to private cloud over the next ten years.

Enterprise organisations should explore new platforms and consider how the potential problems of each variety — such as hybrid cloud's reliance on the unpredictable connections in the publicly-used internet structure — can be overcome. Cloud computing has already resulted in significant benefits to organisations; presuming that a similar level of benefits may be realised through using the same methodologies may be a mistake.

Understanding the benefits of alternative cloud implementations will be crucial to organisations continuing to enjoy the success they have already seen from their current cloud adoption.

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