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# The impact of Cloud on IT

## How very complementary

Andrew Buss and Dale Vile, Freeform Dynamics Ltd, July 2011

*We're finally starting to see a more sustained adoption of Cloud in some organisations, but what impact is this having on the IT department and the way it operates?*

### Key Points

#### **Cloud is complementary to existing IT infrastructure and service delivery concepts**

As Cloud services gather momentum, investment in internal IT infrastructure is continuing, and even accelerating. More extensive use of virtualisation and the move to better management is helping traditional IT become more efficient, responsive and reliable, essentially taking on many of the attributes of Cloud. Few are contemplating a wholesale move into the Cloud, with the result that when Cloud is adopted it needs to integrate and interoperate with the existing IT infrastructure.

#### **External Cloud services will co-exist with existing third party services in the market**

Traditional third party services - hosted infrastructure, managed services and other forms of outsourcing – are used widely today. While these will remain relevant for the foreseeable future, the adoption of Cloud services will displace a proportion of this activity. Traditional hosting and managed services providers are already starting to work Cloud options into their service portfolios, and the market will increasingly be defined by players who adopt an inclusive approach.

#### **Cloud will change the skills required to deliver IT services**

The adoption of Cloud further drives the emphasis of IT delivery from managing individual pieces of technology to focusing on the service actually provided to the business, however that is achieved. This reinforces the ongoing trend towards adopting an end-to-end service delivery approach. From an IT skills perspective, this increases the demand for IT professionals that are comfortable working across traditional operational silos and domains of expertise. The key to managing IT performance will increasingly be insight into how internal components and external services work together.

#### **Cloud may make life easier in some areas, but also creates challenges elsewhere**

Although Cloud is often sold on the basis that it offers a simpler way to deliver IT services, it is not a magic silver bullet. Cloud creates a number of challenges of its own on the way, and these are accentuated when it's put together with traditional IT. Improvements in provisioning and operating services are countered by the challenges of implementing security and information management across in-house and (often multiple) service provider environments, and making sure the network communications are up to the task.

#### **Without integration, Cloud is more plug-and-pray than plug-and-play**

For many, the attraction of Cloud services is the ability to select a service, pay for it and get going. This may work for a limited deployment of Cloud, particularly for small-scale rollouts or where the applications are mainly stand-alone and independent. Once Cloud becomes a core part of the business then architectural challenges arise that need time, planning and investment to solve. This negates the "easy on ramp" advantage claimed for Cloud over traditional IT applications and services, and essentially places Cloud on a level footing with the rest of IT.

*The study upon which this report is based was independently designed and executed by Freeform Dynamics and executed in collaboration with The Register news site. Feedback was gathered via an online survey of 128 IT and business professionals from the UK, USA, and other geographies. The study was sponsored by Microsoft.*



**Microsoft**

## Introduction

With all the hype that's been going on surrounding Cloud and how it will revolutionise the world, it would not be unreasonable to think we'd all have shut down and retired our 'old' IT infrastructure and migrated to some form of Cloud already.

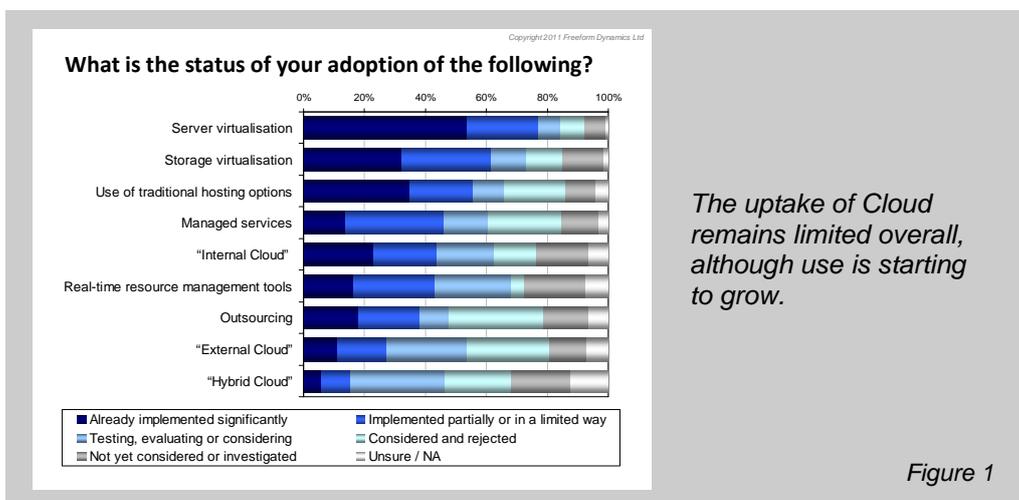
The reality is that Cloud adoption for most companies remains limited, and while we have started to see a willingness to accept and even embrace Cloud, it is seen as complementary to existing, more traditional options<sup>[1]</sup>.

The aim of this report is to review how the adoption of Cloud services in such a heterogeneous manner affects how companies think about delivering IT services, the impact on people and process, how IT is architected and delivered, and what impact Cloud has in terms of making things either more easy or difficult.

At this point, it is worth pointing out the nature of the study we are reporting here, which used an online survey to capture responses to the questionnaire. This will have led to a degree of 'self-selection' in the respondents. The sample is therefore undoubtedly skewed towards those with an interest in or knowledge of Cloud computing in general, leading to an under-representation of those who have less of a specific interest in the topic. It is therefore not possible to make statements about absolute levels of adoption or penetration, but it does allow us to gain insights into what is happening in relative terms.

## Cloud adoption has still to gain mass acceptance

Despite the amount of noise around Cloud, our previous research has shown that Cloud adoption remains quite limited overall while the widespread use of external services such as hosting, managed services or outsourcing continues. We therefore expected this survey to show that the adoption of Cloud is still quite low key in relative terms, and this was indeed the case (Figure 1).



This incremental adoption means that Cloud will generally be part of a greater whole. The IT environment will most likely be a heterogeneous mixture of traditional on-premise systems and third party services with which the various forms of Cloud need to interact and interoperate.

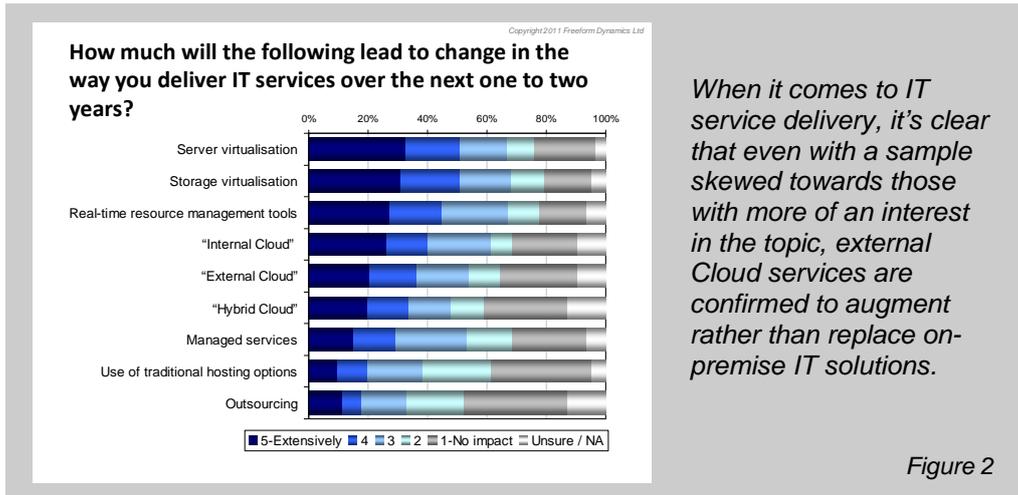
It's worth pointing out at this stage that 'Internal Cloud' (a.k.a. 'Private Cloud') - that is when internal IT systems form highly flexible and dynamic pools of resources within the on-premise infrastructure - is the most widely utilised type of Cloud. But it's also clear that for many companies, 'Cloud' in this context has little meaning or relevance because they consider this as little more than well managed and optimised IT. As one respondent noted, for example:

*"We've used 'internal dynamic IT' for most of our systems for years, but it's not 'Cloud'."*

As Cloud becomes a more important part of the mix, it has the potential to lead to significant changes in the way that companies approach IT. We can look at this across three distinct areas. The first is how Cloud impacts on service sourcing and delivery, the second is how Cloud changes people and processes, and the third deals with how Cloud fits with existing architecture.

## Cloud rebalances the makeup of external services

When it comes to the choice of how to deliver IT services, on-premise (i.e. on-site internal) solutions are the preferred choice, and it's clear that they will remain so for some time. The biggest change that is anticipated is that internal IT will become more dynamic as the use of 'Internal Cloud', which is essentially a dynamic form of on-premise IT, grows. This will be aided by the increasing adoption of processes and tools to enable real-time resource management (Figure 2).



The main area where Cloud is likely to result in a significant shift in IT service delivery is in how, and in what form, external services are sourced and architected. These third party services are already widely used, with hosting, managed services and outsourcing being the most important. The outlook going forwards is that these traditional third party services, while they will remain relevant, will be displaced to some degree by externally hosted Cloud offerings, which in themselves are essentially a sophisticated form of outsourcing.

This shift is leading to substantial changes within the service provider partner community that organisations work with. This does not necessarily mean that the mix of third party providers used today will radically change – indeed we are already seeing many established providers adapt and offer Cloud solutions in addition to their existing services. This is good news for customers as more options will be available come contract renewal time or when new projects are considered.

## Cloud mixes up the skills required by IT

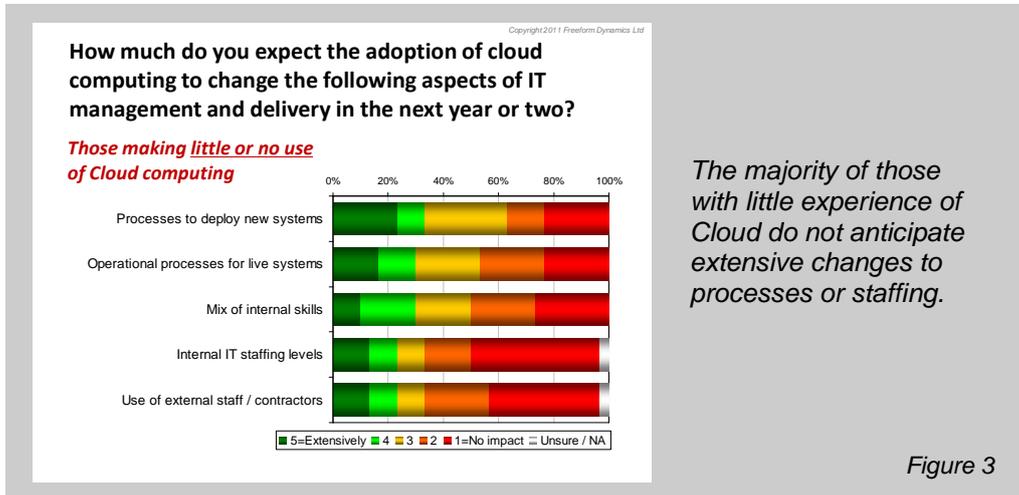
Given that on-premise IT remains the preferred approach, albeit looking more Cloud-like over time, it is clear that the internal IT infrastructure and operations staff are not going away any time soon. But the changes do mean that there could be an impact on IT in terms of how it is resourced and how systems and services are provisioned and managed.

According to one respondent:

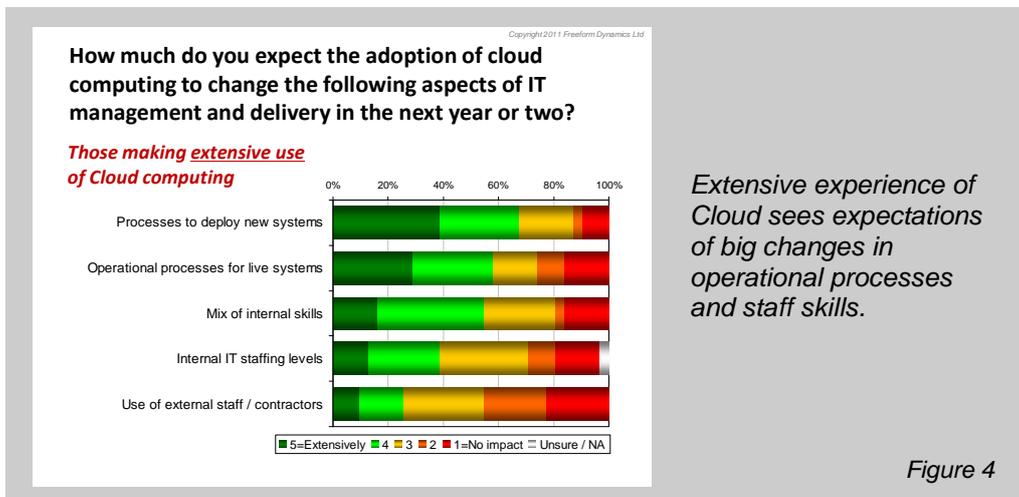
*"There will be more focus on architecture, governance, and external resource management. Staffing and skill needs will be brought on and off as required, limiting the need for as many full time employees."*

But is this viewpoint representative of the whole, and how does this change in the light of experience? We've seen that Cloud has had quite a limited adoption so far. Because of this, it helps to separate the views of those who have extensive experience of Cloud from those who do not yet use Cloud much at all. This is where the aforementioned sample bias works in our favour, as it provides us with a significant number of early adopters.

We would expect those with little or no experience of Cloud to naturally think that Cloud will have a fairly limited impact on their IT service delivery in the near term, as they are less likely to be planning widespread implementations at this point – and this is indeed what we see. What also emerges at this low level of Cloud use is that many feel that there will be less of an impact on staffing levels and the use of contractors/professional services than on the operational processes and internal skills. Having said this, the overall impact is felt to be fairly minor (Figure 3).



The same general pattern emerges with increasing use of Cloud, but changes are anticipated to a much greater degree, especially for processes and skills. A notable difference is that there is an increase in the degree to which internal staffing levels are considered to be impacted (Figure 4).



This backs up the view expressed above that when Cloud is used extensively, some structural changes are likely that reduce to a degree the overall numbers of dedicated IT staff, with more use made of specialist skills on contract as required. The reasoning here is that Cloud potentially shifts the emphasis from routine administration (provisioning, patching, etc) to project-based activity that can be better sourced on-demand.

It's also apparent that Cloud use leads to different, and more varied, skills, as reflected by the following comment:

*“IT is becoming more flexible and service/ business oriented. The need for intelligent, flexible and responsive staff is growing and single product specialists are a thing of the past”.*

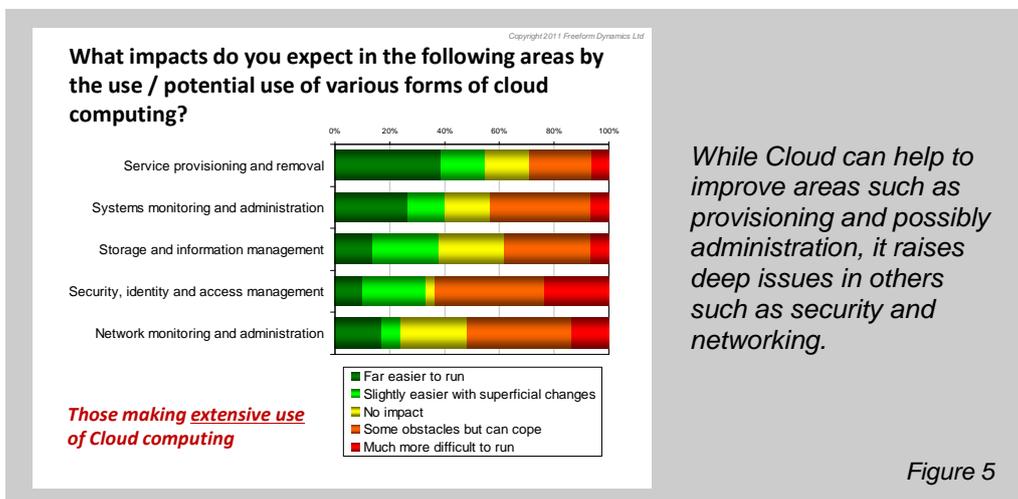
## Provisioning improves but security and communications suffer

We've seen that Cloud is likely to have a big effect on processes and management. Much of the attraction of Cloud has been based on the notion that it simplifies things and makes IT easier to deploy and manage. Analogies are frequently made to IT services in the Cloud being made available in much the same manner as turning lights on and off, or dimming them to suit the mood.

However, some of our survey respondents were sceptical of this, as one of the comments shows:

*“Operational processes will become more complex despite the efforts of vendors to simplify management, at least in some areas. Expectations are being driven by non-sensical 'cloud marketing'.”*

If we look a bit deeper, the issue is whether the changes that Cloud brings help, or - as the respondent views it – hinder things. The reality that emerges is that when it comes to Cloud, optimising management and operational processes becomes a balancing act. Improvements can clearly be seen, particularly in service provisioning, and systems monitoring and administration; but what stands out is that many view Cloud management as a mixed bag overall and a serious obstacle when it comes to dealing with security and networking in particular (Figure 5).



If not thought through, hosted Cloud services have the potential to elevate, rather than reduce, both risk and cost. This pain is clearly reflected in another comment we received:

*“We are finding that the changes are being developer lead. They believe that the freedom to create and delete workloads in the Cloud using a credit card is a good thing. They feel 'in control' and Cloud is very good at giving that illusion. Security, visibility, availability, BC and DR are subjects they ignore over the ease of deployment and perceived levels of control.”*

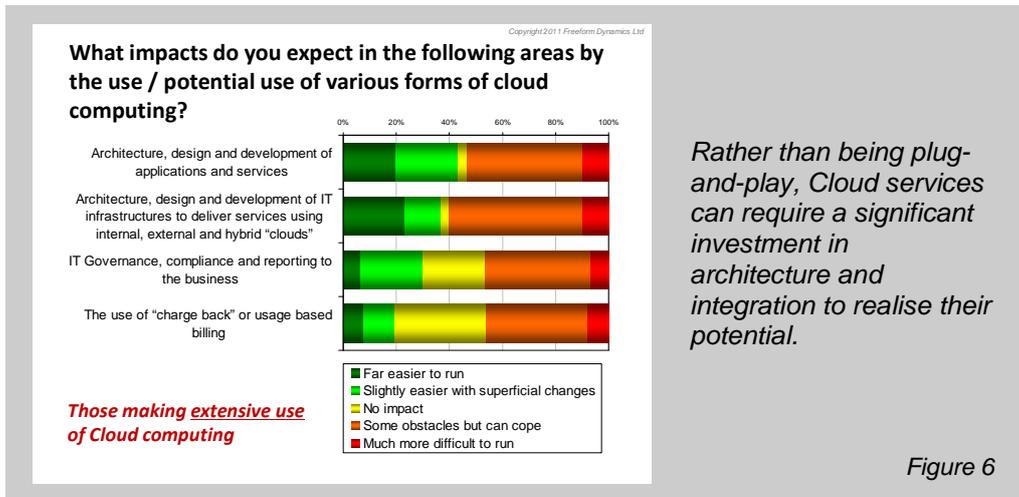
We would add information management to that list, which is arguably outside of the IT operations discussion, but the challenge of making sure everything remains protected and compliant as information is spread across on-premise and service provider data stores is likely to fall into the lap of the IT department.

Pulling all this together, it is clear that those with experience of Cloud feel that it is no walk in the park when it comes to process and management. Do things improve when we look at how Cloud is architected and integrated into the business and existing IT infrastructure?

## Cloud is not a plug-and-play proposition, but requires integration

A popular vision of Cloud that many vendors are all too happy to push is that it is as easy as whipping out the credit card to be up and running in no time at all. While this may be achievable for standalone services that are more utility-like in nature<sup>[1]</sup>, it's clear that when it comes to the broader

use of Cloud within the business – i.e. where Cloud services need to interact and interoperate with existing services and infrastructure - it raises more issues than it solves (Figure 6).



The good news is that very few respondents feel that things would be much more difficult to run when architecting for Cloud. The bad news is that most feel that Cloud actually makes a lot of things somewhat more difficult than it is with existing solutions, or at best does not really offer a tangible improvement. Few think that Cloud is a step change forwards in ease of implementation

As with any IT implementation, getting Cloud services to work with the business requires a proper understanding of the problem to be solved, selecting the appropriate solution (and/or provider), and implementing it effectively.

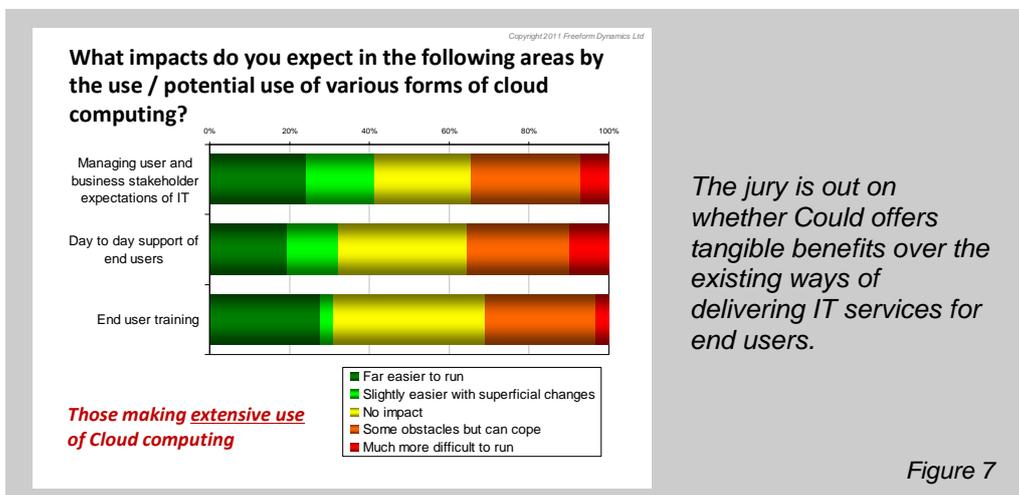
Implemented in the right way, however, Cloud can encourage a more disciplined approach to distributed computing that can pay dividends, as one of our respondents has seen:

*"Removing dedicated programs and replacing them with web based services has eliminated a lot of the hassle of keeping systems working."*

### The bottom line: Cloud does not "change everything"

As with most things in IT, the real crunch point with Cloud comes down to how the business uses and values the service being provided and whether Cloud adoption can noticeably improve things.

When it comes down to the impact of Cloud on users and the business, the view of those who use Cloud extensively is that there doesn't seem to be a major shift on balance in what users expect of IT or how they are trained and supported when Cloud is factored into the mix (Figure 7).



In one way, this is a good result for Cloud in that it can slip in fairly seamlessly with how IT is run today and not massively disrupt things. But viewed another way this demonstrates that Cloud doesn't "totally change everything" as many advocates would have us believe. Managing expectations when adopting Cloud will therefore be a contributor to overall acceptance:

*"IT runs well but, as with ALL areas of business - not only IT - some things could be improved. Managing user / business expectations becomes ever more complex."*

## Discussion

Despite all the Cloud hype of the last few years, we are still very much at the beginning of the mainstream adoption of Cloud. Real world use remains low, but awareness is building and adoption is starting to grow as services have evolved and matured.

It is clear from this study and previous research<sup>[1]</sup> that there are no widespread plans to move completely away from an internal IT infrastructure. Indeed, changes and improvements to this are seen as having a more significant impact on IT operations going forward than a move to external Cloud services. Of course, some companies may find that they can pull off a wholesale move into the Cloud in order to drive improvements and cost savings around IT service delivery, but this tends to be a small minority of small businesses. Cloud will therefore be adding to, rather than replacing, the existing ways of delivering IT services for the vast majority of organisations.

Where external Cloud is really starting to see traction is in the evolving use of third party services. Infrastructure hosting, managed services and outsourcing are mature and established ways to help develop and deliver IT, but it is expected that part of this activity will naturally migrate to more Cloud-like options over time. This is already leading to big changes in the service provider landscape, and providers that ignore the significance of Cloud may find their customer base shrinking as the market evolves. By the same token, however, pure-play Cloud providers that are not able to offer more fixed contract based options alongside dynamic/elastic Cloud offerings will be increasingly challenged as the market matures.

But one of the biggest lessons from the study is that Cloud will result in a need for a mix of skills. Some of this may come about through a change in structure with fewer full-time staff and more use made of specialist contractors, but in many cases it will be about developing staff to move away from single-technology silos and to become business-aware and skilled in a broader range of technologies and disciplines.

The key to success in the future will be managing the increased complexity that Cloud brings from the further distribution of activity between on-premise and multiple hosted domains, and across different types of architecture. IT professionals with an ability to help manage operations across a wide range of in house components and external services – including communications, security, compliance, integration, resilience, recovery, troubleshooting, support and quality of service – will be in particular demand.

The bottom line is that when it comes to management, despite the many claims that Cloud can simplify operations, the reality is that Cloud is a mixed bag. It can offer improvements in provisioning and general operations, but this has to be balanced with the challenges that arise from making it integrate well and safely with existing infrastructure. Evaluating Cloud purely on the basis of the former will lead to a biased and unrepresentative picture of the impact that Cloud will have on operations, both in terms of risk and cost.

In conclusion, Cloud does bring a number of potential benefits to the table, but without taking an objective and pragmatic approach to investigating the overall impact on IT service delivery, it risks adding to the complications rather than removing them.

## References and Further Reading

### 1. Cloud Computing Checkpoint

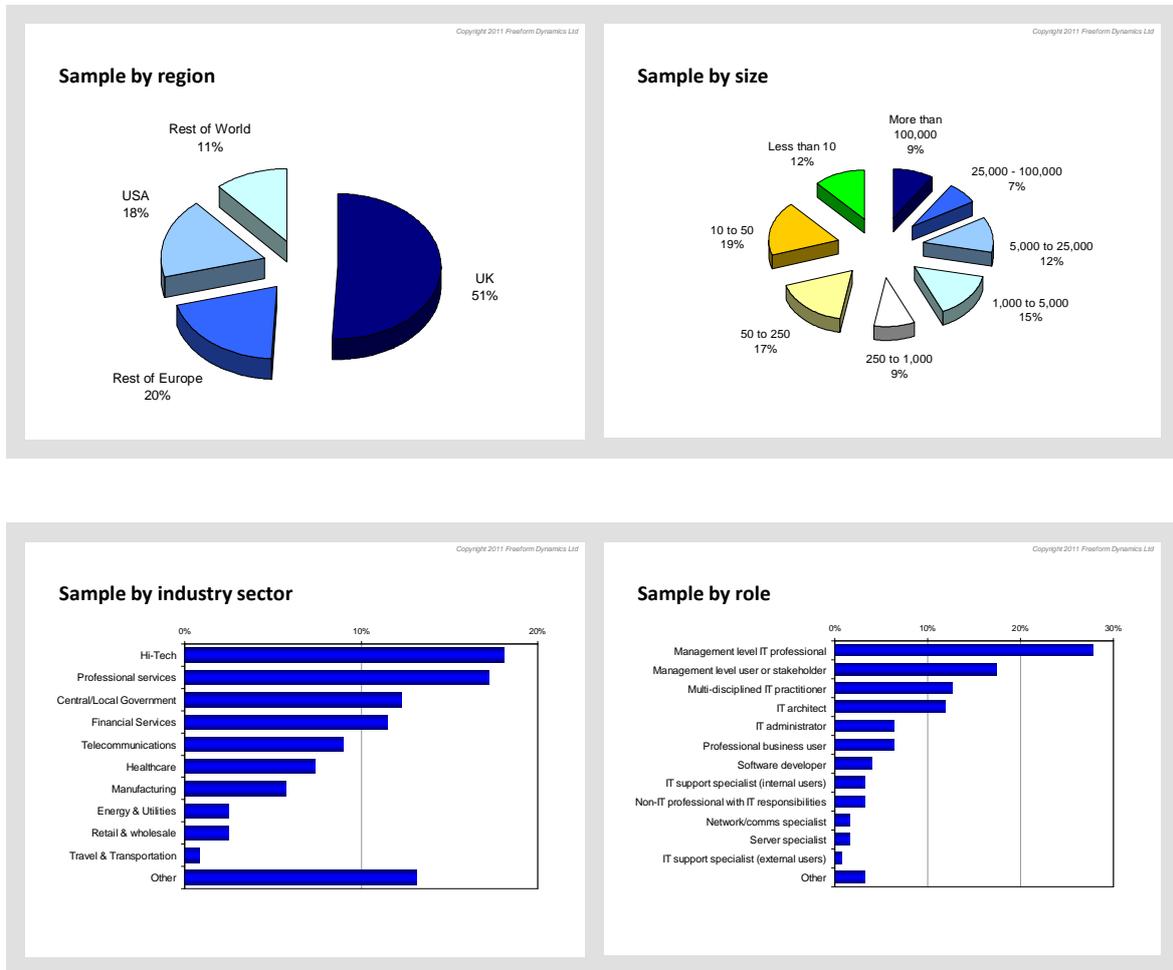
*First signs of more general mainstream acceptance?*

<http://www.freeformdynamics.com/fullarticle.asp?aid=1344>

## Appendix A: Study Sample

The study upon which this report is based was independently designed and executed by Freeform Dynamics and executed in collaboration with The Register news site. Feedback was gathered via an online survey of 128 IT and business professionals from the UK, USA, and other geographies.

The sample distribution was as follows:



### A note on methodology

The online survey methodology used to capture data in this study will have led to a skew in the sample due to the principle of 'self-selection'. Put simply, this means that those with more of an interest in or knowledge of Cloud computing are more likely to have participated. Conversely, those who know less or care less about Cloud will be underrepresented. It is therefore not possible to make statements regarding absolute levels of market penetration and activity from the data.

However, the insights presented in this report, which are all based on relative observations, are not affected by this limitation.

## About Freeform Dynamics



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As part of this, we use an innovative research methodology to gather feedback directly from those involved in ITC strategy, planning, procurement and implementation. Our output is therefore grounded in real-world practicality for use by mainstream IT professionals.

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