Inside Track Research Note

In association with

Cloud computing reality check

An objective review of the promise and practicalities

October 2016

About this Inside Track

The research upon which this Inside Track is based was independently designed and analysed by Freeform Dynamics Ltd. Data was gathered from 223 UK-based IT professionals via an online survey completed in October 2016. A range of industry sectors was covered, with a focus on large and medium-sized organisations. The study was sponsored by E.ON.

Introduction: Is cloud really a kind of magic?

Many have positioned cloud computing as the future of all IT. As part of this, advocates, evangelists and those with a commercial interest give the impression that cloud is universally cheaper, more flexible and delivers greater scalability.

For many years now, we at Freeform Dynamics have been advising business and IT professionals to be wary of this kind of generalised rhetoric. Sure, the right cloud service can be great when aligned with the right requirement and implemented responsibly. But with such a diverse range of offerings in the market, from myriad providers with varying degrees of robustness and maturity, it's easy to get caught out.

Against this background, making decisions around cloud, particularly in relation to a service that your business will rely on, requires the same disciplined approach as you would apply to any other significant technology investment.

This principle came through very strongly in a recent research study in which 223 UK based IT professionals gave their views on technology-related decision-making in general. The main findings of the study are outlined in our report entitled "IT Decision-Making in the Digital Age". The document you are reading now is a drill down looking at more detail of the views we gathered on cloud in particular.

Cloud decisions require the same disciplined approach as you would apply to any other technology investment.

A quick look at cloud-related activity

While our introductory comments above were intended to set a down-to-earth tone, this should not be taken as in any way dismissing the importance of cloud. Indeed, the first finding we shall look at from the research tells us that various forms of cloud service have already found their place in the enterprise IT landscape, with activity set to continue growing (Figure 1).

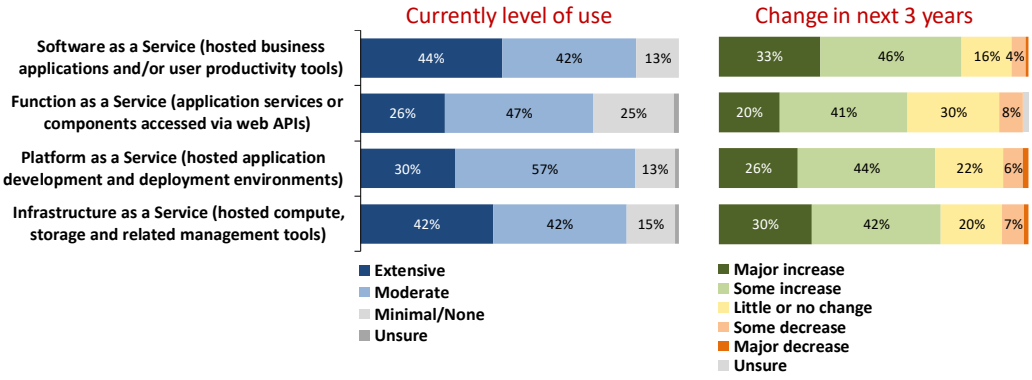

Figure 1

How would you describe your use of the following types of cloud service?

Apart from illustrating the market momentum, this chart is a useful reminder that 'cloud' doesn't translate to just one kind of service. In the crudest sense, we can align services with different layers in the traditional systems stack, from 'Infrastructure as a Service' (IaaS) at the bottom (which loosely maps onto the hardware layer), through 'Platform as a Service' (PaaS) in the middle (the middleware, database, utilities and tools layer), to 'Software as a Service' (SaaS) at the top (roughly equivalent to the application layer).

Cloud doesn't translate to just one kind of service.

In this particular study, we also included reference to 'Function as a Service' (FaaS) in acknowledgment of the degree to which many providers are now making specific functions available via web service APIs (Application Programming Interfaces) for developers to embed in custom applications. Examples here include payment

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functions, mapping services, programmatic access to social networks, and even commercial transaction capability.

Of course even the above is a huge simplification of what's on offer in the cloud space. Within each of the categories we have mentioned, you will find hundreds, sometimes thousands, of providers, each often delivering a portfolio of solutions. More of what that means a little later.

In the meantime, from an adoption perspective, the emphasis at the moment is at the top and bottom of the systems stack as we can see – i.e. SaaS at one end (convenient access to turnkey applications) and IaaS at the other (open access to compute and storage capacity). The frequently proprietary nature of PaaS and FaaS means they are a little behind at this point in time.

What's driving and inhibiting cloud adoption?

One person's driver is another person's inhibitor. Other's don't care hugely one way or the other.

When Freeform Dynamics started researching cloud 6 or 7 years ago, we quickly discovered the importance of avoiding too many assumptions on drivers and inhibitors. We found that if you ask questions in an open and objective manner, you invariably find that the same factor can be viewed as a positive by one person, while at the same time being seen as a negative by another. Furthermore, some of the supposed drivers and inhibitors frequently reported in the press are actually not that big a deal for many organisations. The results of our latest study are totally consistent with this (Figure 2).

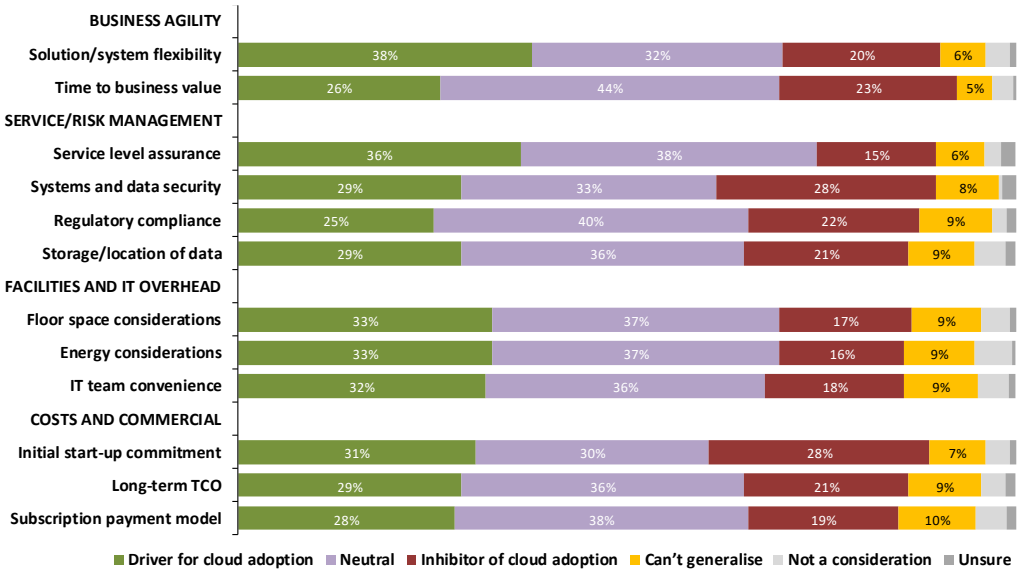


Figure 2

Generally speaking, do you regard the following as drivers or inhibitors of cloud adoption?

So why do perceptions vary to the degree we are seeing here? Well, the first factor on the list provides us with a good illustration.

Many services live up to the flexibility promise, others don't.

Many services live up to the flexibility promise, allowing you to scale up, scale down, discontinue and so on, and only ever pay for what you use. Other services, however, work on quite a different basis; indeed, the words 'rigid' and 'uncompromising' spring to mind when you look at the terms of service frequently offered.

As a simple example, it is actually quite common for providers to lock customers into fixed term 'ratchet-style' contracts, allowing commitments to go up, but never down, and imposing costly penalties for early cancellation. And when the renewal date

If you have fairly fixed and predictable requirements, flexibility may not be a big consideration.

comes around, you are then forced to commit for a minimum of another year, making it very difficult to extract yourself from the arrangement at a convenient time.

Add technical constraints to this kind of commercial rigidity, particularly in relation to less mature services, and it's easy to see why some say that a move to the cloud actually undermines flexibility. However, if you then consider that many organisations have fairly fixed and predictable requirements, the whole notion of flexibility in such cases isn't that relevant, which explains the group in the middle.

It is beyond the scope of this document to go into this level of discussion for the other factors we see listed on Figure 2, but to give you a feel for what's behind the variation in each, here are some quick high-level thoughts on each category.

If you skip upfront work, as cloud arguably encourages you to do, you may end up with lots of silos of capability that only partially meet business needs.

Business agility

We have already mentioned solution/system flexibility. Alongside this many highlight rapid adoption capability as a big cloud advantage, and this can mean a shortening of time to business value. For others, however, especially for more complex/critical applications, the impact is not that significant because most of the time and effort during a software or service implementation, for example, is concerned with requirements analysis, then application development, customisation, configuration and/or integration. And if you skip this upfront work, as cloud arguably encourages you to do, you may end up with lots of silos of capability that only partially meet business needs. You then need to go back and implement properly to unlock the full value, which can ultimately take longer.

Service/risk management

If the location of the provider's datacentre puts you out of compliance with data sovereignty regulations, other advantages are quickly undermined.

Use of cloud services, particularly from one of the larger more established players, can often represent a great way of reducing risk. It's hard to compete with the level of security and scalability offered by a competent provider with a hyper-scale, state-of-the-art datacentre. But if the location of that datacentre puts you out of compliance with data sovereignty regulations, or connectivity constraints threaten user response times, then those advantages are quickly undermined. From a security perspective, many make the point that large service providers in particular may implement all of the latest best practices, but represent a much more prominent target for cyber criminals, so the risk is ultimately greater. The reality, however, is that it's impossible to generalise in this whole area - it depends on the nature of the provider and the service, and how what's on offer compares to what you can achieve in your own environment.

Facilities and IT overhead

Sunk costs, committed spend, volume-based pricing on energy, etc, sometimes means it makes sense to keep things in-house.

Moving applications and workloads out of your own environment into the cloud can clearly help from a facilities and utilities perspective if you are short of space in your datacentre, or finding it hard to keep up with energy related needs. However, when you bear in mind the investments you have made and any future expansion plans, and consider sunk costs, committed spend, volume-based pricing on energy, etc, it can sometimes make better economic sense to keep things running in-house. And when it comes to IT team convenience, while pushing a discrete workload into the cloud can be regarded as one less thing to worry about, if that now means managing security, access, compliance, quality of service, troubleshooting, support and other functions across boundaries, IT's job could easily become harder.

Cloud services can reduce start-up costs and commitments, but longer term TCO can sometimes become an issue.

Cost and commercial

Many argue that doing away with the need for capital investment and hardware/platform provisioning and configuration can reduce start-up costs and commitment from a budget perspective. Countering this are some of the contract commitment considerations mentioned above, and the fact that much of the implementation effort is still required anyway. Then, however, there is the simple fact that some cloud services are actually extremely expensive compared to on-premise alternatives when you look at the cost of ownership over an extended period. Again, it's impossible to generalise here; it really depends on the service and how you are using it, but clearly some are already finding that long-term TCO can be an issue. Finally, depending on how you budget, the subscription payment model may actually be a disadvantage. Rightly or wrongly, many organisations still prefer a Capex-based approach with a preference for asset ownership.

Some have been seduced by the 'instant on' nature of cloud services.

The overriding message from all this is that it really is impossible to generalise when it comes to cloud drivers and inhibitors, so each decision needs to be approached and each option evaluated on a case-by-case basis.

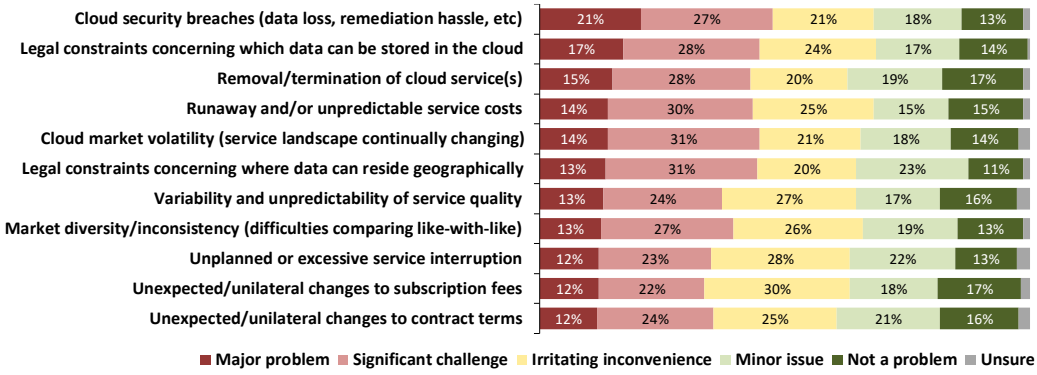
The consequences of getting caught out

Unfortunately, some have been seduced by the 'instant on' nature of cloud services and haven't necessarily conducted the level of due diligence they ought to have. In other cases, business people have led the charge to the cloud, not knowing what they don't know, and inadvertently ending up with a service mismatch. Overriding all of this, we then have the genuine difficulty of dealing with what is still a relatively immature market, in which things are constantly changing and it's often very difficult to compare like with like. Put all this together, and it's understandable that a whole range of issues and pitfalls were highlighted by research participants (Figure 3).

A range of pitfalls lie in wait for the unwary.

Figure 3

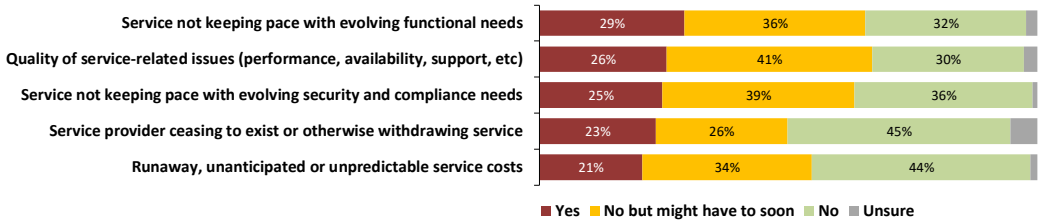
How much of an issue are the following based on your experience of cloud to date?



And if you think of signing up to a cloud service as being akin to getting married, as both parties continue to change over time, irreconcilable differences often arise which ultimately lead to divorce (Figure 4).

Figure 4

Have you ever had to discontinue use of a service provider because of the following?



Considering cloud in a broader perspective

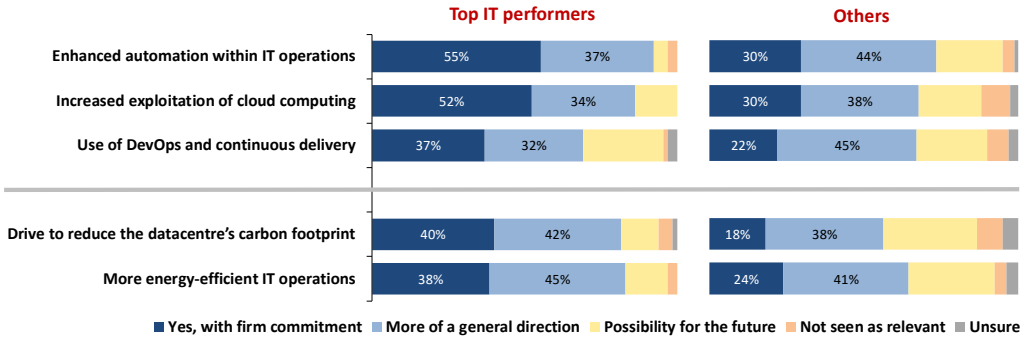
Those achieving better performance are balancing their investments across a range of initiatives.

The research actually covered a lot more than cloud, e.g. as part of the study we asked respondents to tell us how well they were delivering against key indicators on an IT performance scorecard. You can see more details of this in the section entitled 'About the Research', which is included at the end of this document. Suffice it to say for now that this allowed us to identify a group of high achievers that we labelled 'Top IT Performers', and studying the behaviour of these yielded some interesting insights.

Firstly, corroborating the notion that appropriate use of cloud services can create significant business value, our Top IT Performers are noticeably more active in this area. However, the data suggests that this is not at the expense of investing in the on-premise IT environment. Those exhibiting a higher level of achievement are also much more likely to be enhancing IT operations through increased automation (Figure 5).

Figure 5

Do you have strategies or programmes in place to drive or encourage the following?



In addition, to driving both the cloud and automation agendas, Top IT Performers are more likely to be committed to other improvement initiatives. Activity here ranges from optimising IT service delivery through DevOps and continuous delivery, to driving greater efficiency within the datacentre in areas such as energy management.

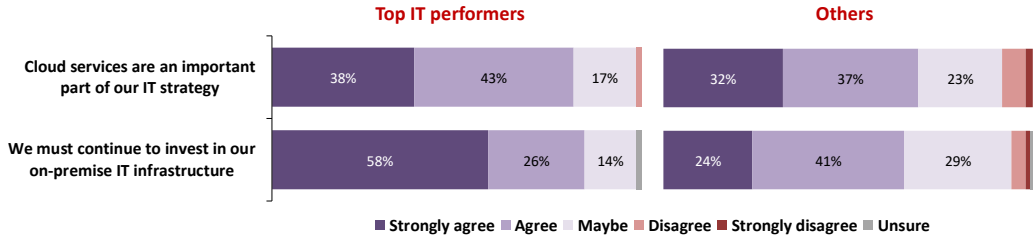
Top IT Performers highlight the need for continued investment in on-premise infrastructure.

The ultimate goal is sustainable performance

To finish off our discussion, let's highlight a combination of a warning and an imperative. Firstly, while Top IT Performers stress the importance of continued investment in on-premise infrastructure, indications are that some 'Others' have taken their eye off the ball here (Figure 6).

Figure 6

How much would you agree or disagree with the following statements?



The picture we see here is arguably understandable. If you are having trouble delivering, or are under pressure to do more with less, it can be tempting to run to the cloud as a quick fix. The more experience you gain with cloud services, however, the more you realise it's only part of the equation. The lesson here is therefore that when it comes to optimising service delivery in a sustainable manner, it's important to acknowledge that the centre of gravity for IT will remain on-premise for the foreseeable future. As a result, investment in your datacentre remains critical.

For the foreseeable future, the datacentre will remain key to sustainable delivery.

Final thoughts and recommendations

Whether you should or shouldn't be using the cloud is a question to be asked on a requirement-by-requirement basis.

While we have tried to provide a flavour of the kind of challenges that can arise with cloud services, our aim has not been to discourage you from going down this route, but to make sure that as you travel along your own cloud journey, you do so in full awareness of the things to look out for.

The question of if and when

Whether you should or shouldn't be using the cloud is a question to be asked on a requirement-by-requirement basis. Bearing in mind all of the factors we have discussed, you will undoubtedly find that it makes absolute sense in some situations, but is a total non-starter in others. In between it will be a judgement call.

As you make decisions in this space, something to think about is the way things will change over time.

As you make decisions in this space, something to think about is the way things will change over time. Being able to rapidly spin up a few servers in the cloud for software development, testing and piloting purposes can be really useful, but the provider's commercial model may make scaling up into production cost prohibitive. As a simple example, charges relating to data transport, DR/recovery arrangements, archiving and so on, can be an issue if the application is processing large volumes of data.

Another reason for pulling an application back in-house is the need to deal with evolving regulatory requirements and/or to make it easier to apply your corporate policies and controls in a coordinated and integrated manner. Of course this can work in the opposite direction too. If you have resisted using the cloud for a particular application because the provider you were considering did not have a datacentre in your region or country, if they later open a local facility, that may prompt a cloud migration.

Hybrid is the future

The aim is not to shift everything into the public cloud, but to have the freedom to run applications wherever is most appropriate.

Looking forward, the real aim for the vast majority of organisations is not to shift everything into the public cloud and shut down your datacentres, but to have the freedom to run applications wherever is most appropriate – on-premise or hosted – and migrate freely as required over their lifetime.

The big requirement here is for what many refer to as a 'hybrid-cloud' architecture. It is beyond the scope of this document to go into detail here; suffice it to say that with the right platform software and tools, you can construct a private cloud environment that allows you to enjoy pretty much all of the flexibility, scalability and efficiency benefits of cloud, but on-premise. Solutions available today increasingly enable you to not just migrate things back and forth between public and private clouds with ease, but to apply policies and controls consistently as you do so, and maintain constant visibility of what's running where so you can manage and optimise continuously.

The next-generation datacentre

Minimisation of energy costs and consumption is key to achieving datacentre efficiency.

Hybrid-cloud architecture is just one aspect of the next-generation datacentre. The same goals of holistic management, visibility and optimisation apply equally to the facilities side of the equation.

Minimisation of energy costs and consumption, for example, is key to achieving datacentre efficiency, and effective management of power distribution and related

backup/fail-over measures within the facility are critical to minimising outages as a result of localised overload and other failures.

Modernisation of the datacentre power-infrastructure is important to get reconfiguration of the power supply off the critical path when installing, upgrading or moving IT equipment.

Modernisation of the datacentre power-infrastructure to create a more flexible environment is then important to get reconfiguration of the power supply off the critical path when installing, upgrading or moving IT equipment. This is a huge consideration as older servers and storage devices are replaced by the latest generation of kit that packs everything into the available space more densely.

Playing the flexible cloud game

If you zoom out and look at all this from a bigger-picture perspective, pretty much all of the technology, tricks and methods used by cloud service providers to create a robust, flexible, efficient and scalable environment are now available in an enterprise datacentre context. And the good news is that whether it's workload management and migration, compute, storage and network optimisation, or taking energy efficiency to the next level, many of the latest solutions and practices are already proven by those running public clouds.

As time goes on and your own datacentre becomes naturally more cloud-like, the differential between the hosted and on-premise worlds will increasingly shrink.

The upshot is that as time goes on and your own datacentre becomes naturally more cloud-like, the differential between the hosted and on-premise worlds will increasingly shrink. Does that mean that you will ultimately never have a need for public clouds? Almost certainly not – there will always be situations in which the right provider can deliver incremental benefits. The choice of public versus private cloud will become a lot less stark and persistent, however, making it easier to change and optimise things on an ongoing basis, and to correct mistakes should you miss something when conducting due diligence or if a provider lets you down.

The bottom line

Use cloud where it makes sense, but continue to invest in your own datacentre.

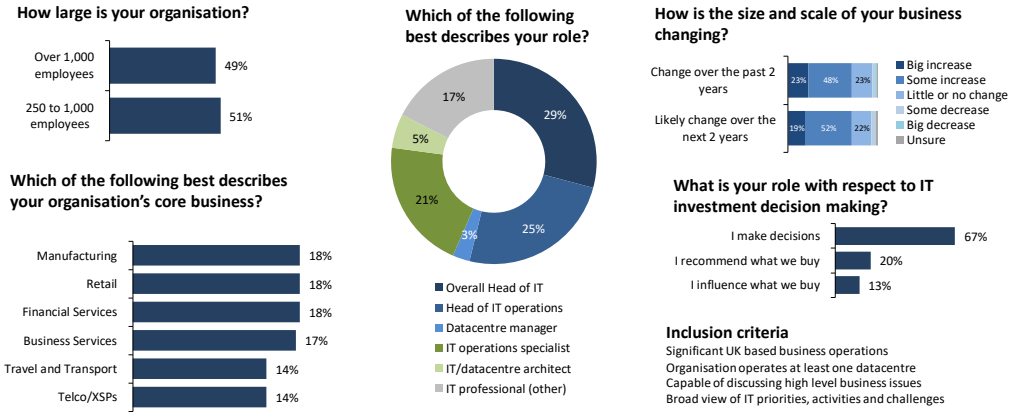
The overriding message we would like to leave you with is that cloud is an extremely important development in the IT industry, but it isn't some kind of magic – it's just a different way of delivering IT services. The trick is applying the appropriate level of discipline and due diligence when making decisions, then use it where it makes sense, and avoid it where it doesn't. In the meantime, make sure you continue to invest in your on-premise infrastructure as the chances are you are going to be needing it for the foreseeable future.

About the Research

The research upon which this Inside Track is based was designed and executed on an independent basis by Freeform Dynamics. Data was collected from organisations with significant operations in the UK via an online survey. The study which was completed in October 2016 was sponsored by E.ON.

Figure 7

Overview of study sample



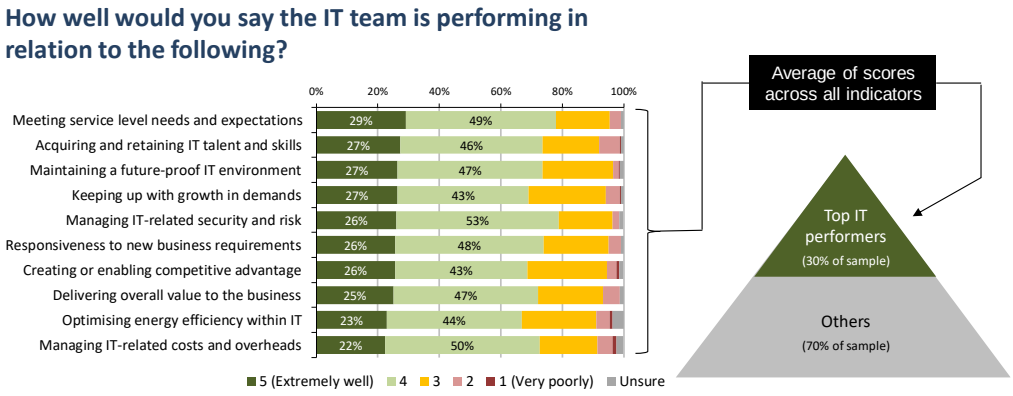
Please note that the online methodology used in this study is subject to self-selection bias, so we can expect the data to be skewed towards those with significant knowledge and experience of IT datacentre operations and cloud.

The performance scorecard and Top IT Performers

During the research, respondents were asked to tell us how well they were delivering against key indicators on an IT performance scorecard. This allowed us to identify a group of high achievers that we labelled 'Top IT Performers' (Figure 8).

Figure 8

Definition of Top IT Performer group based on IT delivery scorecard



As part of our analysis, we examined the behaviour of the Top IT Performer group so we could study their behaviour and gain some insights into traits associated with a particularly positive outcome.

About Freeform Dynamics

Freeform Dynamics is an IT industry analyst firm. Through our research and insights, we aim to help busy IT and business professionals get up to speed on the latest technology developments, and make better-informed investment decisions.

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