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CLOUD *for* BUSINESS

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Storing data in the cloud can unlock great potential for many businesses, but some remain sceptical about security issues

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Cloud shines bright with silver lining

The cloud has gone from a misty concept to a solid platform essential for growth and stability in a global economic climate still coughing and spluttering its way out of recession

◆ OVERVIEW

● KATE RUSSELL

Executives around the world are under pressure to innovate or die, with the value of information and security among the top priorities for all businesses.

Adoption of cloud technology is important where there's elastic demand, helping businesses map their metabolism and only pay for computing resources as and when they need them.

Retail is the perfect example of this, with seasonal impacts during the so-called golden quarter between October and December and huge online events such as Black Friday when demand is off the scale, playing havoc with fixed infrastructure arrangements.

> "At last we are close to technology actually enabling business, to the point where it is already no longer just the domain of techies

Shop Direct, which includes the £800-million online brand Very.co.uk, has committed heavily to a hybrid cloud infrastructure that allows it to react quickly to market changes, scaling seamlessly through the peaks and troughs of the year, and offering a much improved customer experience.

Andy Wolfe, Shop Direct's chief information officer, says: "We operate in a very competitive market and therefore we are constantly looking for ways to differentiate ourselves from the competition, which results in high demand for IT change, especially in areas like mobile. We need to be able to spin up development and test environments very quickly. IT capacity can't be the bottleneck in driving change or innovation."

The results speak for themselves in a language any shareholder can understand: increased site availability from 57.47 per cent in December 2012 to 99.99 per cent in 2013-14; record order rates with more than a quarter of a million page impressions per minute on Very.co.uk on Black Friday; and an increase in trade of 4 per cent over Christmas 2014, including sales via mobile devices of 45 per cent.

Hospitality is another industry undergoing a major digital transformation. For next generation travellers the journey begins online and thanks to social hubs, such as TripAdvisor and Booking.com, buying decisions are heavily influenced by consumer opinion. To keep a pace of this change, hotel chain Marriott International is migrating a significant portion of its core IT systems and applications to an open cloud platform over the next few years to offer faster digital services to web-savvy guests and discern insights about them from its more than 4,000 properties across the globe.

This kind of activity marks another strong growth area this year – analytics as a service (AaaS), where large or complex data sets are analysed using cloud-hosted services. Information is the new gold, but it isn't just about understanding data. Service industries in particular need to deploy that understanding rapidly on a mass scale.

How many times have you stood on a platform wondering when your delayed train might make an appearance and grumbling to anyone who'll listen about the lack of information coming from station staff? National Express Rail now uses mobile technology and real-time data analytics to distribute that information as it's called for through the cloud.

These infrastructure changes are often not so much about cost-saving as driving up the value of customer experience and providing more flexible working conditions. Although from a provider's perspective, intense competition in infrastructure as a service (IaaS) is making it a race to the bottom in terms of price, causing some players to exit gracefully cloud-left.

But as Windows 2003 soon moves to end of life on July 14, the challenge to migrate and modernise will naturally push a lot of businesses towards the cloud rather than shifting sideways to the current version of Windows Server 2012 R2. This is no bad thing as businesses at all levels are now experiencing cloud technology as a powerhouse tool for developing new strategies, forging closer ties with customers, and tapping into the expertise of employees and partners. For these reasons it is pretty much a staple in the startup culture, radically reducing the barriers to entry in any sector.

"At last we are close to technology actually enabling business, to the point where it is already no longer just the domain of techies, but now truly accessible to the business and business users. Cloud and the transformation to digital services has been the catalyst," says Chris Chant of cloud consultancy Rainmaker Solutions.

Perhaps one of the most striking commitments to cloud comes from the public sector. Launched in 2012, the UK government's G-Cloud initiative is at the heart of the "cloud first" ICT strategy.

At the Cabinet Office, Stephen Allott, crown representative for small and medium enterprises (SMEs), explains: "The G-Cloud digital marketplace is the stand-out reform for getting full value from SME suppliers. With a £600 million a year run rate and 49 per cent going to SMEs, it's a revolution. Both central government and the wider public sector can buy from thousands of SME suppliers in minutes rather than months.

"Compliant by default procurement is the new standard. Plus the G-Cloud is a shop window for British SMEs globally. The US recently acknowledged that the Crown is five years ahead in digital government and the G-Cloud is one of our key platforms in that."

While security remains a concern for any business, the most recent iteration, G-Cloud 6, is the first to use the government's 14 cloud security principles to enable buyers to assess the security of suppliers' services. For most this is likely to go a long way towards allaying fears of moving to the cloud.

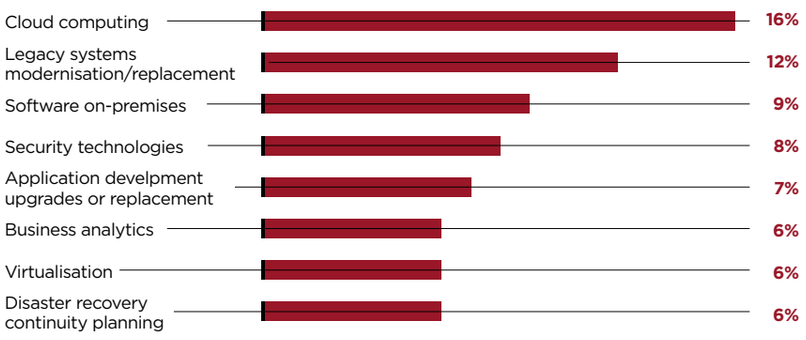
Work still needs to be done to address the migration of workloads transparently from one cloud service provider to another, without experiencing any down time. This requires applications to be designed accordingly, using open source, open stack technology which we're also going to see a lot more of this year.

For Doug Clark, IBM's UK and Ireland cloud leader, it's a winning move for business. "Not all clouds are created equal. What defines the winners is an agility and flexibility that comes with a cloud built on 'open standards'. This allows organisations to pick and mix the elements they need to build solutions, to meet the specific needs of their business and consumers, and that can be continually improved," he says.

This movement towards open standards will prove a real leveller as well as an enabler. Niche developers from small companies will be able to work together, bundling their skills like fusion cookery. The result will be plug-and-play, hybrid applications that potentially deliver true innovation, rather than just the press office's interpretation of the word, and can constantly evolve to meet the ever-changing demands of the digital consumer.

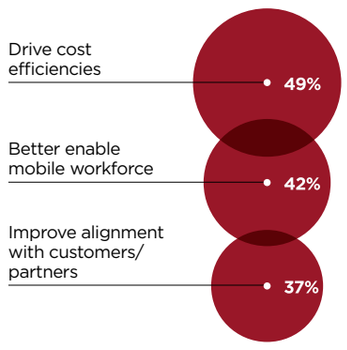
Getty Images

WHAT IS THE SINGLE MOST IMPORTANT PROJECT THAT YOUR IT DEPARTMENT IS WORKING ON RIGHT NOW?



Source: *Computerworld 2015 Forecast Study*

TOP 3 WAYS BUSINESSES ARE USING THE CLOUD TO DRIVE TRANSFORMATION



Source: *KPMG Cloud Survey Report*

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Decoding mystery of app creation

Cloud-based drag-and-drop app building tools are described as digital LEGO, but what business benefits do they offer?

◆ **APP DEVELOPMENT**

● **CHARLES ORTON-JONES**

Can't code? Doesn't matter. If you want to build an app these days you can create the whole thing using a cloud-based service. Drag and drop. Click and scroll. And hey presto! You'll have an app without ever seeing a line of code.

More and more companies are building their apps this way. Cloud-based creation tools such as BuildFire, Como, Mobile Roadie, Mendix, Fliplet, Kony, AppsBuilder and AppGyver are hugely popular.

Yet there are critics, who defend the noble art of hand-coding. For example, Richard Fisher, senior mobile application developer at digital agency Blonde, calls cloud-based app creation tools "venus fly traps that lure you in with no hope of escaping once you are hooked". Pascal Cans, product manager at Genymobile, says he's seen many examples of companies "frustrated by the limits of toolkit developments", leading to innovations being abandoned.

> **The ability to create apps without knowing any code means non-technical staff can get involved**

So are codeless drag-and-drop tools all they are cracked up to be? Let's start with the benefits. The first plus is that these online tools cut costs. No developers to pay. Those folk can cost £600 a day.

App building tools make the process faster. When cosmetics brand Kao built its sales-order entry app for salons it used Mendix to handle integration with its SAP system. Estimated build time was 30 days with hand-coding. With Mendix it fell to two days.

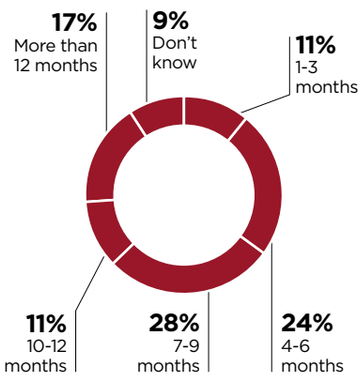
The ability to create apps without knowing any code means non-technical staff can get involved. This is a big deal. Matthew Baier, chief operating officer of built.io, which created the AppGyver app development tool, says: "If you come across an inefficient, manual or paper-based process and have an idea for a small app that could solve said problem, what are the chances of getting the app developed in an average business today? Hint: slim to none in most cases.

MOST USED ENTERPRISE CLOUD APPS

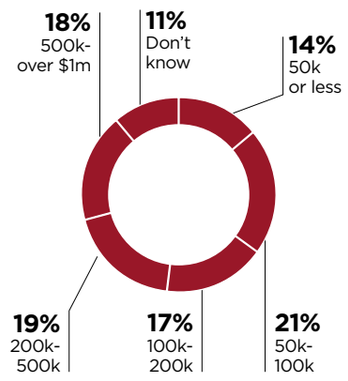
1 **Facebook** Social
2 **Google Drive** Cloud storage
3 **Google Gmail** Webmail
4 **Twitter** Social
5 **iCloud** Cloud storage
6 **Google Docs** Productivity
7 **YouTube** Consumer
8 **LinkedIn** Social
9 **Dropbox** Cloud storage
10 **Microsoft OneDrive** Cloud storage
11 **Salesforce** Customer relationship management/sales force automation
12 **Cisco WebEx** Collaboration
13 **Evernote** Productivity
14 **RingCentral** Telecom
15 **Okta** Security

Source: *Netskope Cloud Report* 2015

TIME IT TAKES YOUR ORGANISATION TO DEVELOP AND DEPLOY A MOBILE APP



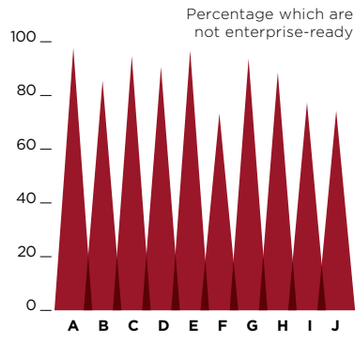
HOW MUCH DOES YOUR ORGANISATION SPEND TO DEVELOP AND DEPLOY A MOBILE APP ($)?



Source: Kinvey 2014

CLOUD APP BUSINESS USAGE

		Number of apps per enterprise
A	Marketing	67
B	Collaboration	43
C	Human resources	38
D	Productivity	36
E	Finance/accounting	31
F	Cloud storage	28
G	CRM/SFA	25
H	Software development	25
I	Social	18
J	IT/application management	16



Source: CMSWire 2015

"However, if an individual or team can drag and drop their way to a mobile tool that addresses the problem without undermining the company's IT policies, suddenly the situation becomes a win-win."

This is happening a lot. Companies are developing a whole suite of in-house apps, helping everyone from field agents to back-office staff, to sales reps and the finance team, using bespoke apps.

Then there's the issue of multiple devices. When developing an app you'll need to test it across umpteen screen-size variations, manufacturers and operating systems. Will it work just as well on an Android 4.2 HTC phone, as a Galaxy phablet? Or an iPhone 6 Plus? And Windows phones?

When there is a software update or new phone launch you'll be in a mad rush to update the app. But use an app builder like Kony and you can relax. Your app will be updated automatically and tested for validity on all popular devices. It's a massive boon.

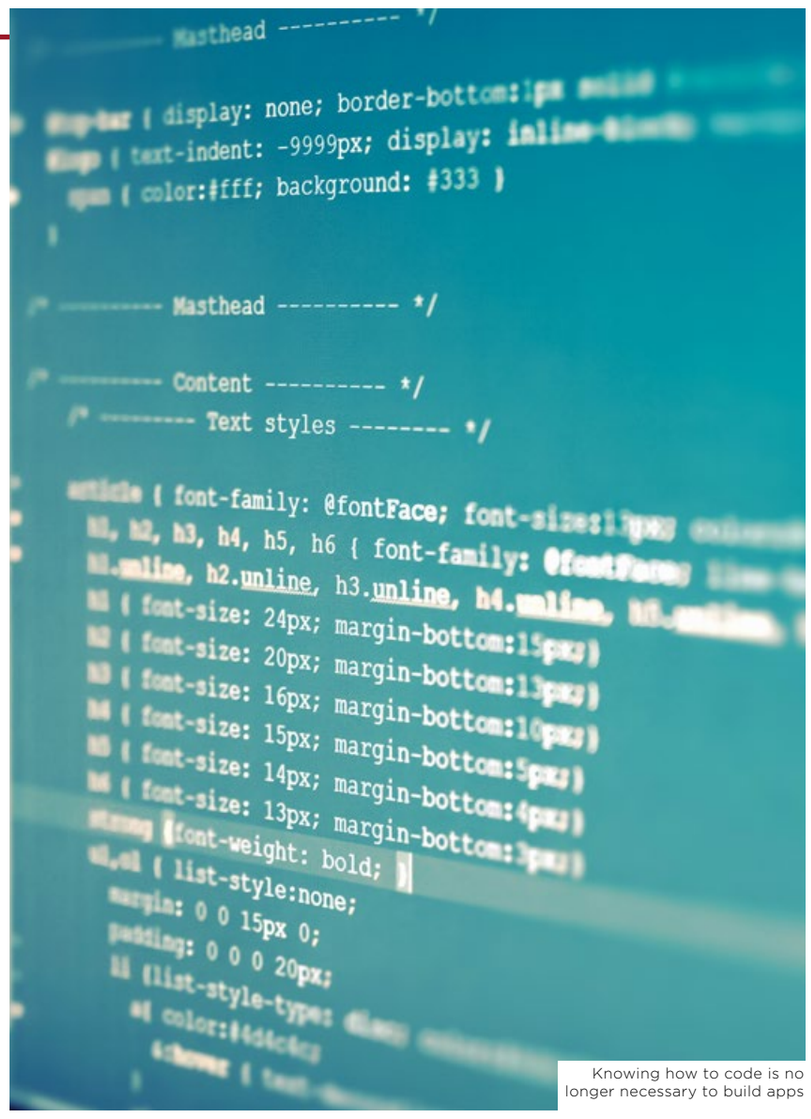
A cloud-tool will have an army of developers working on each module. Kony alone has hundreds of engineers, who've launched thousands of apps. Beat that.

Last: the simplicity of drag-and-drop tools means you can play around. Prototype all you want. Cathal McGloin, vice president mobile platforms at Red Hat, says: "Drag-and-drop tools promote idea generation, allowing organisations to test drive concepts. They can also help to kick-start a mobile initiative by allowing the organisation to generate some early successes that gain the attention and support of senior management."

Convinced? Chris Beavis, chief executive of app consultancy Goldfinch Digital, expresses the views of the anti-camp. "It's akin to the difference between building something with LEGO or carefully sculpting it from clay. Using Lego is fine if your building something simple or generic, but ultimately you're still building with the same bricks as everyone else and the moment you need a different brick you're stuck," he says.

Another problem. You can't fix bugs yourself. Yasir Ahmad of Kotikan warns: "The problem for developers is that there is little control over these online tools' quality control. Will they have tested every possible permutation of features? Will it be worth their while fixing bugs that only a small number of developers are using? It puts you far more at the mercy of someone else's code, bugs and all."

Security is an area of contention. You'll hear both sides claiming to be better. Ken Munro of ethical hackers Pen Test Partners warns security is opaque if you use a cloud-based tool. He says: "If the platform generates bad code, the user would not have a clue without testing it afterwards. Even if it is confirmed to be bad, there may not be a way to fix it without the platform itself being updated."


Knowing how to code is no longer necessary to build apps

App creators often demand excessive permissions on the phone, leading to reduction in vigilance. "This will get people into a mindset where they blindly accept permissions from apps and open themselves up to data loss," says Mr Munro.

On the plus side, the restricted nature of drag-and-drop tools means staff can't introduce their own vulnerabilities. Paco Hope, principal consultant at Cigital, says: "If rapid app development frameworks include only properly secure choices, then they make apps more secure. Non-coders are the ones most in need of frameworks that get security right by default."

The drag-and-drop advocates have one big advantage. As more and more corporations embrace cloud-based tools, those platforms will grow in reliability and sophistication.

For simple apps there does seem to be a consensus that cloud-based tools are wonderful. The debate is now over whether the most complex apps can be done with low or zero-code too.

The future? The hunger for corporate apps means if drag and drop continues to boom it may simply free up coding engineers to work on the most difficult app challenges. An industry growing this fast can deliver prosperity for all.

Metalogix

The Clouds Are Settling In
We Are Past the Tipping Point!

A year ago the forecast would have stated 'It's all cloudy on the adoption front'

Yet, in 2015 it is clear that organisations are now dependent and not just whistling at the cloud, as enterprises race to migrate and host their collaboration platforms, social media marketing and business process applications in a dedicated cloud or hybrid or on-premise infrastructure.

What is driving this gold rush to the cloud? It's the business need for continuous, always-on access to content that drives over $2 trillion in workforce productivity via Content Collaboration Platforms such as SharePoint, OneDrive for Business, Box, Dropbox and Google. Now that the cloud is settling into the IT enterprise, we forecast the top four priorities for cloud Service Operation management that organisations will need to weather the change in this new environment.

THE KEY CLOUD SERVICE OPERATION PRIORITIES:

1. **SPEED:** Accelerating migration speed and non-disruptive collaboration movement and reorganisation of the content to the cloud.

2. **ACCESS:** Easy to implement permission and compliance administration – which groups and individuals should have access to share or edit what content and how to ensure against data loss protection (DLP) which is required to avoid internal inadvertent and malicious insider threats - especially prone in the cloud.

3. **PROTECT SENSITIVE CONTENT:** Detecting, classifying and locking down sensitive content that contains personally identifiable information (PII) to meet GDDR, ISO27001, ISO27018 and HIPPA regulations.

4. **OPERATIONS:** Managing your cloud assets like an IT business application – provisioning, licensee utilisation, backup and archiving just like we did successfully back in the mainframe days.

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As the Cloud era rolls in, speed, security and operating these services as an operational imperative, will become a priority on the management heat index to support work forces productivity gains for the business and satisfy users service levels.

As such, we will see an evolution in service operations management methodologies like we saw in the last great IT transformation, from mainframe to PC, as IT professionals look to software providers to automate the top four service operation priorities. By targeting and automating these priorities, businesses will harness the most in work force productivity without compromising content security or slowing down operations during this blustery transformation to the cloud.

- Steven Murphy
CEO
Metalogix

Cloud of mistrust in the air

Storing data in the cloud could unlock potential for many businesses, but some remain sceptical about security

◆ **SECURITY**

● **DAVEY WINDER**

When it comes to security, there is a cloud of mistrust hanging over the boardroom. Survey after survey reveals that security, or rather the perceived lack of it, is the single biggest factor preventing business from migrating to the cloud. But how accurate is this perception?

Jamal Elmellas, technical director at secure cloud provider tolomy, points to recent research from the Cloud Industry Forum (CIF) which highlights the discrepancy between perceived threat and actual risk.

"CIF surveyed 250 senior IT and business decision-makers in the UK with 61 per cent reporting concerns over data security," Mr Elmellas says. "Only 2 per cent had experienced a cloud-related security breach."

The consequence of this conflation is twofold in that businesses not only miss out on the budgetary benefits of the cloud, but also quite often remain less secure than had they actually migrated there.

Security provider SecureData's cloud services director Alan Carter argues that too many businesses are "guilty of an overinflated view of their own capabilities" where the on-premise physical server room is seen as inherently secure in a way that virtualised servers cannot be. This represents a "cloud equals danger" mindset that is as outdated as it is misguided.

"Cloud services are, by definition, more abstracted and intangible," says Scott Nicholson, information assurance and security manager at cloud integrator Adapt. "Yet in reality, a provider that specialises in delivering cloud services is likely by definition to have stronger security and operational controls, and more experience than an IT department functioning as a single business unit."

> **When it comes to security, the cloud changes nothing and the broad brush strokes of a secure environment remain the same no matter where the canvas is hung**

Not that this means the cloud is concern free, but most concerns are actually the same as apply to on-premise networks – breach, denial of service and malicious insider risk.

Perhaps the most relevant when it comes to the cloud is the small matter of personal data; specifically the consents obtained and where the data is stored. Especially so in the light of the upcoming European Union Network and Information Security cyber-security directive and the General Data Protection Regulation, both of which are set to be fully implemented by 2017. These specify that organisations have to handle EU citizen personally identifiable information securely or face a fine of up to 5 per cent of global turnover in case of breach.

"Businesses using cloud services have to know where consumer data is being stored and how it's protected," warns Keith Bird, UK managing director for security vendor Check Point. Most of these concerns can be dealt with by the use of a hybrid model where personal data is stored within a private cloud within the European Economic Area.

"As most cloud providers are based in the United States there are particular issues with processing of personal data by those providers," says Richard Nicholas, an IT lawyer at Browne Jacobson. "In addition to ensuring US providers have safe harbour certification, the certificate should be checked to ensure it is up to date and that the cloud provider commits in its contract to comply with the safe-harbour principles for the term of the contract."

Regulation and compliance remain a bigger cloud hurdle than security FUD – fear, uncertainty and doubt – and this is most evident in certain industry sectors. ICT solution provider NTT Communications undertook research which revealed that 87 per cent of financial service companies and 63 per cent of retail distribution and transport companies didn't plan to migrate their most important applications to the cloud due to security, governance and compliance concerns.

Clive Gringras, head of technology and a partner with international law firm Olswang, advises that players in these heavily regulated sectors need to "engage with their regulator to ensure it appreciates the benefits of cloud computing and is not allowing old rules to unnecessarily hinder a move to the cloud". Furthermore, Mr Gringras insists that a stock cloud provider answer of "it's for you to determine whether we fit within your regulatory regime" is simply not acceptable.

So how should a cloud service provider be answering the compliance question? This rather depends if you are asking it of the right provider in the first place, as there are those that will specialise in particular industry sectors and therefore be familiar with regulatory nuances.

"Customers should ask the cloud service provider if it has any big-name clients running mission-critical applications in the cloud and for demonstrable evidence on how regulatory needs are met," says tolomy's Mr Elmellas, who doubts there will be any real traction in the finance sector until cloud solutions emerge that are built around specific financial regulatory requirements and markets. "Financial services in general have some of the most talented security resources on the planet," he says, "so it's not the resource that's the problem, it's the way in which risk is reported and managed."

Retail is dominated by Payment Card Industry Data Security Standard compliance, and any gaps between the standard and the capabilities of technology inevitably increase risk. "The latest versions of the standard have started to address cloud-specific concepts so the gap is closing," says managed hosting and cloud provider Memset's security manager Thomas Owen, who also warns that the extreme cost-focused nature of retail also means regulatory concerns often get steamrollered anyway.

Ian Tomlinson, chief executive of cloud-based retail technology vendor Cybertill, is well placed to comment on the security fears of the sector. "There is some reluctance through disruption to service, but resistance to this is waning," he says. "A critical point that does affect retail is the geographical location of the servers hosting the software applications in the cloud."

This need not be a barrier to adoption though, as Luke Forsyth, vice president in the information management services practice at business advisory firm AlixPartners, points out. "While many of the security challenges of cloud computing can lay in the geographic distribution of information resources," he says, "retail organisations have some natural advantages because these are familiar challenges as the nature of their business has often required a large number of locations."

Ultimately, when it comes to security, the cloud changes nothing and the broad brush strokes of a secure environment remain the same no matter where the canvas is hung. But how can you best mitigate risk when migrating from on-premise to the cloud? Whenever the phrase "top tips" pops up above the parapet, having a handy acronym to call on is always useful. In the case of securely migrating to the cloud that acronym is **ATMOSPHERE**:

Accreditations: ascertain any accreditations that your proposed service provider holds, specifically ISO 27001 (the internationally recognised standard for information security) and ISO 27018 (the new cloud data privacy standard).

Tools: do your research and you will find there are plenty of tools to help you remain secure during a cloud migration, everything from risk auditing through to encryption key management.

Monitoring: Regularly monitor and audit any externally provided services, and ensure strong access controls to your data with sufficient logging to reveal when your data has been accessed and by whom.

Onus: contractually agree areas of responsibility between your organisation and service provider to reduce any potential disputes; ensure service levels are defined, agreed and monitored throughout the migration.

Specialise: if your industry is highly regulated or has particular security needs, perform due diligence and find a cloud provider that specialises in your sector.

Policy: following a policy-based separation of duties is key to migrating data safely to the cloud, preventing 'privileged status abuse' and advanced persistent-threat-style attacks.

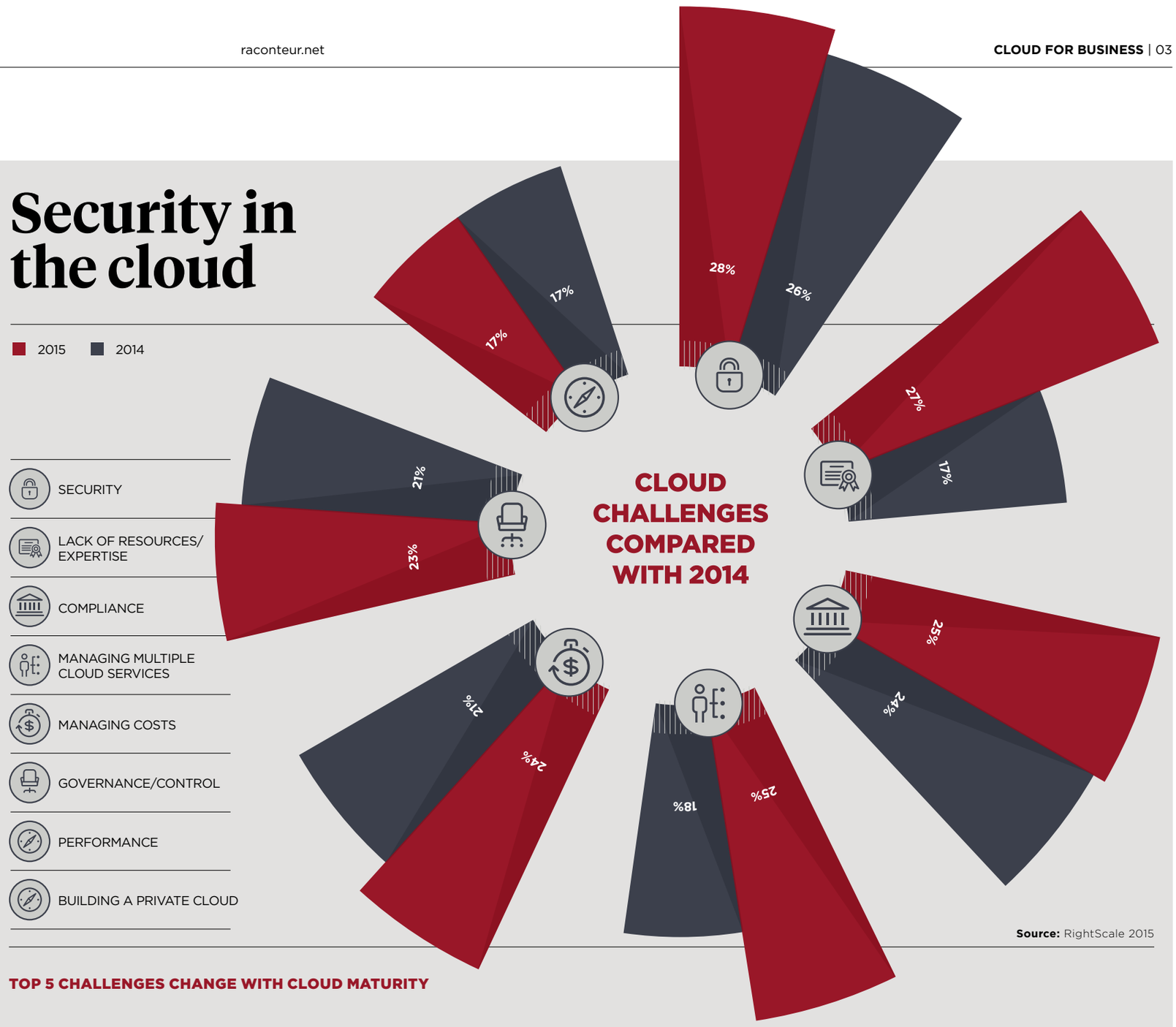
High availability: ensure you have high availability baked into the cloud infrastructure with a secure back-up and recovery solution, should the worst happen during the migration process.

Environment: be aware of where your data is being hosted and stored – is it offshored or is multi-tenanted hosting provided, if so with which other organisations and what are their related threats?

Risk assessment: audit the sensitivity of your data, any regulatory considerations and the requirements for access to that data; once you properly understand the risk and operational needs, identifying appropriate cloud security controls becomes much easier.

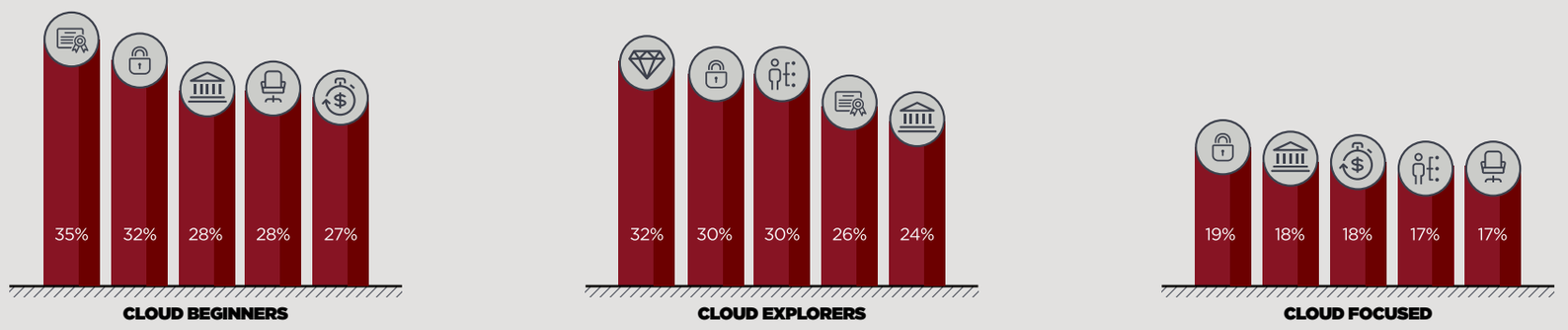
Encryption: the best way for companies to remain secure and compliant with most data residency laws is to encrypt data held in the cloud environment with encryption keys that are unique to specific jurisdictions, and are controlled from those jurisdictions.

Security in the cloud



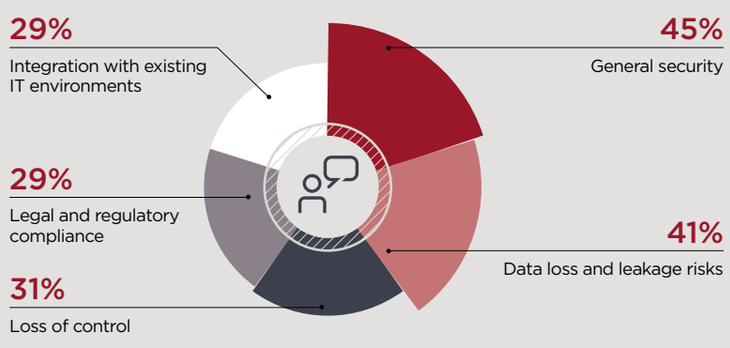
Source: RightScale 2015

TOP 5 CHALLENGES CHANGE WITH CLOUD MATURITY



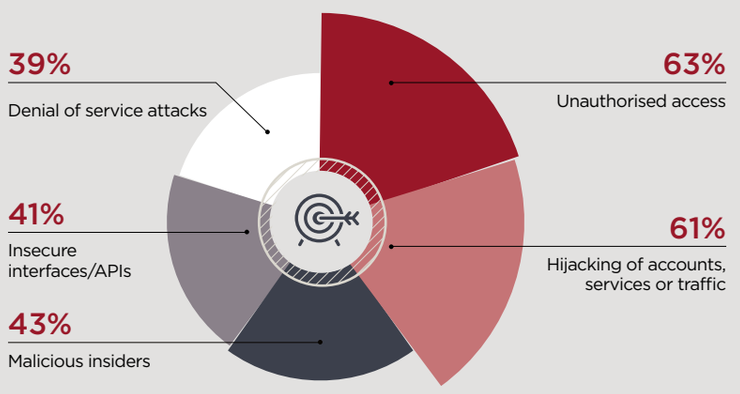
Source: RightScale 2015

CHIEF INFORMATION OFFICERS' SECURITY CONCERNS



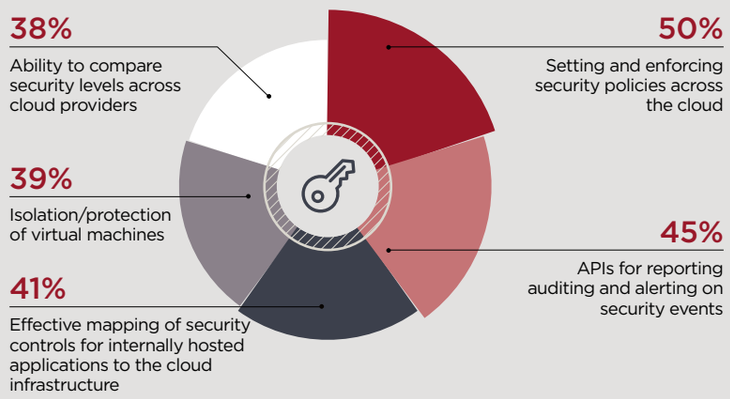
Source: CIO Insight 2015

TOP 5 PUBLIC CLOUD SECURITY THREATS



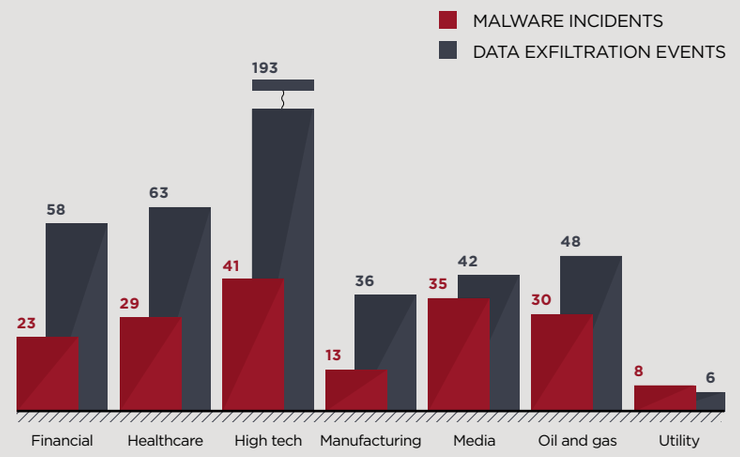
Source: CIO Insight 2015

CIOs' PREFERRED WAYS TO IMPROVE CLOUD SECURITY



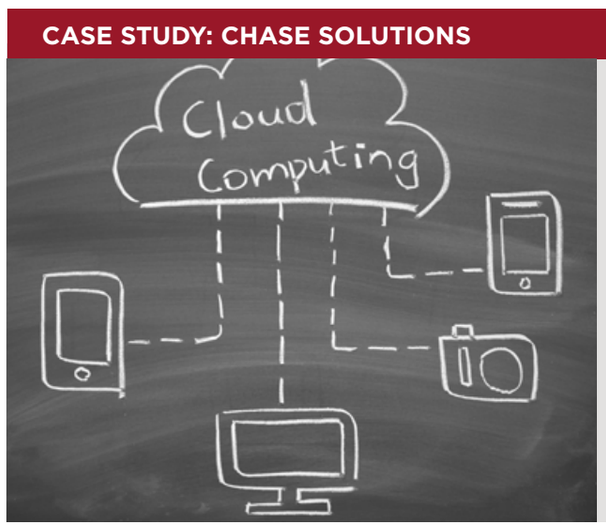
Source: CIO Insight 2015

HIGH-RISK BEHAVIOUR IN THE CLOUD (NUMBER OF INCIDENTS IN Q2 2014)



Source: *Skyhigh, Cloud Adoption & Risk Report* 2014

CASE STUDY: CHASE SOLUTIONS



Chase Solutions is a field services organisation working with utility companies, banks and debt collection agencies across the UK. With 30 full-time staff based at its headquarters in Blackburn, Lancashire and a network of some 600 field agents, it needed to find a flexible hosted desktop solution to enable its management to work smarter while on the road.

Mindful of the need to meet the strict security and legal compliance requirements of both clients and industry regulators, the search led to cloud services provider iomart.

Chase Solutions knew that a hosted desktop would be the perfect technology, allowing management to work on the road without having any important data actually held on the devices they were using.

"The whole solution is hosted in iomart's cloud in their fully compliant and accredited data centres," says Michael Wolfenden, Chase Solution's director of operations. Far from being worried about negative security implications of such a move, the cloud has actually strengthened the security posture of the company.

The laptops used by the regional managers have a minimal operating system based on Linux that is securely configured to only allow access to the cloud environment via thin client software VMware Horizon. Being "thin client" means that only screen images, keyboard and mouse instructions are transmitted between the laptops and the cloud. No data leaves the iomart data centre and therefore there is no risk usually associated with laptops and data stored on their internal drives.

Steve Riley, the consultant responsible for the IT systems that Chase uses, says: "All clients' data is stored securely at iomart's data centre and because no data is stored on the laptops the regional managers are using, they don't have to be encrypted." As a result of moving to the cloud, Chase Solutions says the management team now has much better control and visibility of its IT system. "It means that when Chase responds to a tender for work we can now tick every box with regards to security," Mr Riley concludes.

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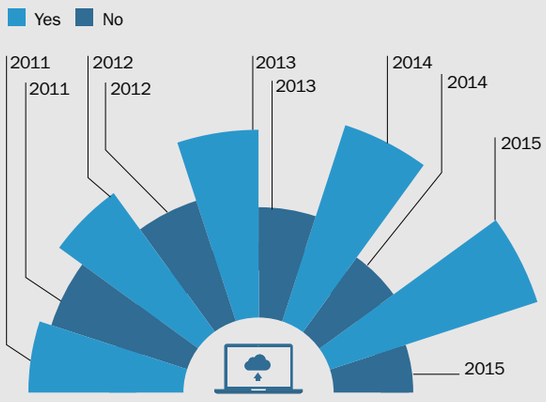
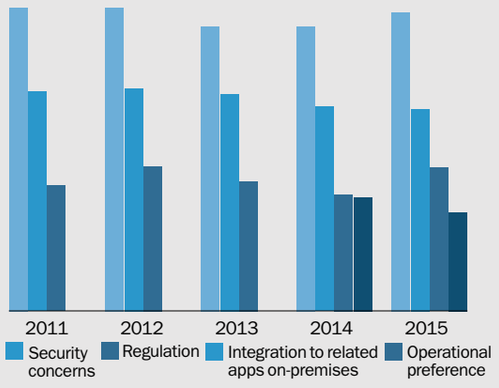
COMMERCIAL FEATURE

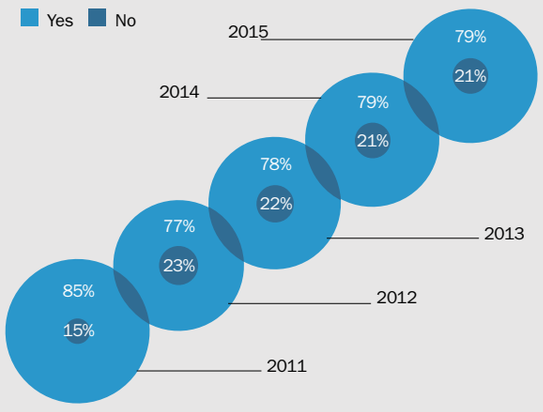
Does your company have any hosted or cloud-based services?



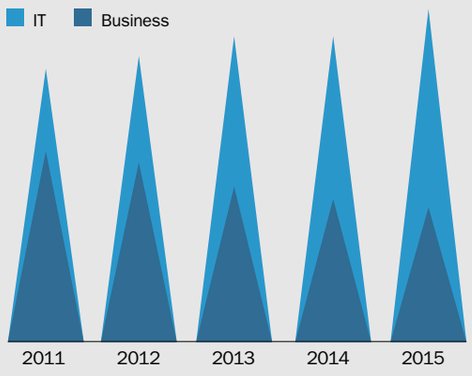
Why are you required to store data in a specific location?



Does your company include considerations for cloud services within its wider IT strategy?



Is cloud adoption driven within your business principally by the IT function as a technological strategy or by business on an operational needs basis?



EMBRACE THE CLOUD AND ALL IT HAS TO OFFER

*A survey by **Ingram Micro Cloud** and the Cloud Industry Forum reveals the critical role cloud is now playing, and identifies soaring adoption over the past five years*

Apay Obang-Oyway
General manager, Northern Europe

The benefits of the cloud are huge and they are now seen as having strategic importance. In 2011 only half of firms used cloud services. Now 84 per cent do. Four out of five adopters are using more than one cloud service.

The value and importance of cloud can be evidenced by the recent results from Microsoft who showed great third-quarter results in their cloud business boasting almost 50 million users among business subscribers.

The growth of cloud is down to more than a desire to cut costs or convenience. Yes, cloud delivers both of these. But the survey highlights a clear change in the role of cloud. When asked whether cloud adoption is driven by operational business needs or as a technological strategy, the latter outstripped the former. The cloud is now being seen as a transformative technology. It can revolutionise business models.

"The cloud is about delivering competitive advantage," says Ingram Micro Cloud general manager Apay Obang-Oyway. "It enables organisations to drive greater innovation faster, have greater ability to collaborate and gives access to a global talent pool at a fraction of the cost.

> **Small and medium-sized businesses should demand to work with partners that truly understand their industry and business to ensure the right value is being derived from cloud**

"Just consider the amount of computing you can rely on to deliver innovative solutions. Historically, small businesses could not develop enterprise-class capabilities such as mining vast sums of data to help produce insightful information without having large and costly systems in-house. Today small businesses can have access to an enterprise-class business intelligence capability to make smarter business decisions at a fraction of the cost. You can use cloud to reach a majority of the global population, to collaborate, innovate, and deliver both internally and with your customers. It changes everything."

There is, however, still a lingering reticence preventing full-scale adoption among organisations. When asked what is the biggest inhibitor to moving apps or infrastructure to the cloud, 35 per cent of companies named security and privacy issues. When asked for their motivation for storing data in a specific location, security once again topped the bill, with 74 per cent cited as their reason.

The survey also reveals that security concerns rose slightly over the past year. It is clearly an issue the whole industry needs to address.

"There's no doubt companies realise they can't delegate security," says Raj Samani of Intel Security. "If they thought they could blindly assume their cloud provider was protecting their data, that myth has been destroyed. What we tell everyone is that they have a duty, a legal duty, as well as a business requirement, to find out precisely what cloud services they are using and from whom. Assuming you are in the clear is not acceptable."

Ignorance is commonplace. Mr Samani agrees with this analysis: "I was at an event and asked the audience how many used Salesforce.com. Almost every hand went up. Then I asked if they knew where their data was stored. Not a single hand went up. Not good enough. It's a requirement of principle 7 of the Data Protection Act."

A lack of familiarity with cloud is partly to blame. So what can be done to solve the security conundrum? Mr Samani offers this advice: "Start by assessing your risk appetite. If you are hosting publicly accessible pdfs for wide distribution, then Dropbox is OK. If you are hosting five million confidential health records, then you need security commensurate with that data."

Transparency is the key. You need full visibility on all aspects of your cloud provision.

Due diligence will be needed. Mr Samani adds: "If you are handing over the keys to your kingdom to a cloud supplier, then you will really need to do the same due diligence as you would for M&A. Ask how long has your supplier been in business? What is their business model? How financially secure are they? And make sure you understand their security set-up. Do they have the right certification?"

As a master cloud service provider, Ingram Micro Cloud has strong views on how best to approach cloud. Mr Obang-Oyway says: "It is important to choose a technology delivery partner who is more than a generalist. Small and medium-sized businesses (SMBs) should demand to work with partners that truly understand their industry and business to ensure the right value is being derived from cloud.

"Partners who have specialisms will be important to this fast-changing world. If you are in professional services, you need a cloud provider who understands the particular requirements of your industry. They will grasp concepts such as keeping data in certain geographical locations and helping you certify data is secure for compliance purposes."

This is a key point. Half of cloud users, says the survey, have a location-specific requirement because of regulation. Only a switched-on cloud provider will ensure full compliance.

Companies also urgently need to research what extra cloud services they can leverage. "There are so many wonderful applications," says Mr Obang-Oyway. "With cloud, small and medium-sized businesses can have the same capabilities as those of bigger enterprises.

"Consider the concept of social, mobility, analytics and cloud – SMAC. These four megatrends are driving innovation for businesses allowing them to achieve greater innovation and a more intimate customer and talent management process that delivers superior value creation for all stakeholders. For example, in the field of business intelligence there are data analytics capabilities which can produce extraordinary actionable information. Too many SMBs are still underutilising these applications."

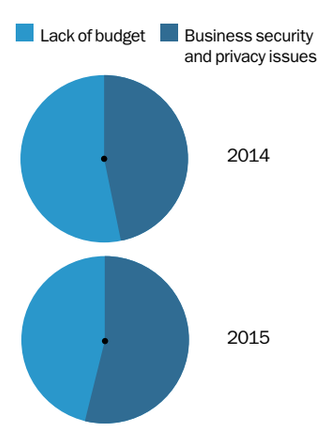
The key to exploring the very best in cloud applications is to make sure you pick a provider with a deep knowledge of the full field of options and the ability to deliver whatever you need.

Ingram Micro Cloud takes the very best cloud services from the world's leading cloud service suppliers and provides packages for reseller partners to provide to their customers. It is a model which ensures users get the best possible mix of services, at the best value, while working with industry specialists in their area. With 20,000 employees, Ingram Micro has the size and buying power to give reseller partners and their end-users the optimum cloud experience.

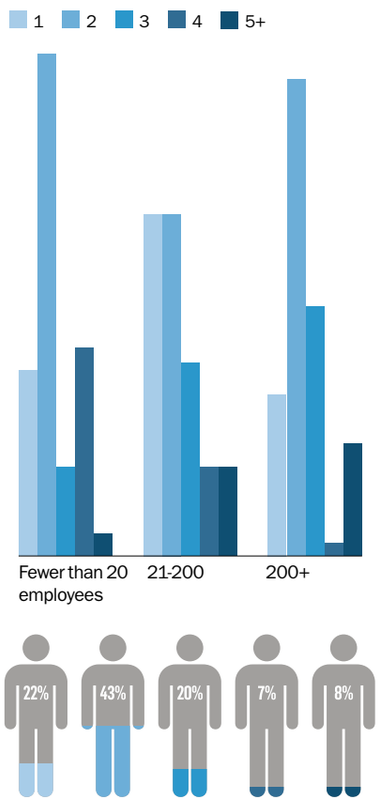
Mr Obang-Oyway concludes: "We are seeing more and more businesses embrace cloud as the core part of their business strategy. What we need now is to help resellers provide their SMBs with the cloud services that truly enable their strategies. When you start to see what cloud can do for you, the possibilities are limitless."

For more information on Ingram Micro Cloud visit www.ingrammicrocloud.co.uk follow @IMCloud_UK or call 0871 973 3060

What have been the biggest inhibitors to moving more apps and /or infrastructure to the cloud?



How many different cloud-based services does your company use?



Total percentage of companies
Source: Cloud Industry Forum White Paper 15, *Cloud Adoption and Trends 2016*

Virtually perfect for startups...

The cloud can help newcomers compete with established players and provide affordable, scalable resources to build a profitable business

ENTREPRENEURS
DAN MATTHEWS

Getty Images

There's an old joke poking fun at startups' lack of personnel. Some clients come in for a meeting and are greeted by a secretary, she takes their coats and they sit. She says the owner will be along shortly and leaves the room only to return two minutes later hand outstretched – "Hi, I'm the owner," she says.

Historically this near-complete lack of human resource has been one of the major barriers to small businesses. Not only did it inhibit progress, but it was also abundantly obvious to partners and clients that you were a tiny business, not an established entity, and therefore desperate for their patronage.

Today, it's less clear. The internet, first, and now the cloud have wrecked our ability to tell, within reason, if a business is big or small just by its output. One-man and one-woman bands can achieve baffling amounts of work in a normal working day.

Xavier Colomes, an online marketing consultant trading under the name Conversion Garden, says his businesses could not function without the cloud's properties, which allow him to access work in any location and all but prevent catastrophic data loss through hardware damage, theft or loss.

He explains: "I split my time between the UK and Spain, and I simply wouldn't be able to run my business without cloud-based tools. They underpin the vital processes that make my business work.

"I use an online time-tracking system for project management, I store my business-critical files in Google Drive and Dropbox. I also use cloud-based accounting software, QuickBooks Online. It allows me to access my invoices and estimates instantly, gives clear visibility of cash-flow status and what I can do to improve it, and also helps me collaborate with my accountant.

"There are pragmatic benefits too. My laptop is basically the portal to my business, but if I lost it or if it was stolen, my revenue and client relations wouldn't be in jeopardy because they have zero reliance on hardware."

In the very earliest days of the cloud, people worried about security, they still do to a degree, but chaperoning a precious laptop home on the train feels a lot more exposed than housing all your data in secure and anonymous server rooms ruled by large and serious systems and processes.

Most startups have weighed these two scenarios, or versions of them, and decided the multinational company with layers of management and a large security budget is probably more reliable than an individual meandering home after five pints of lager.

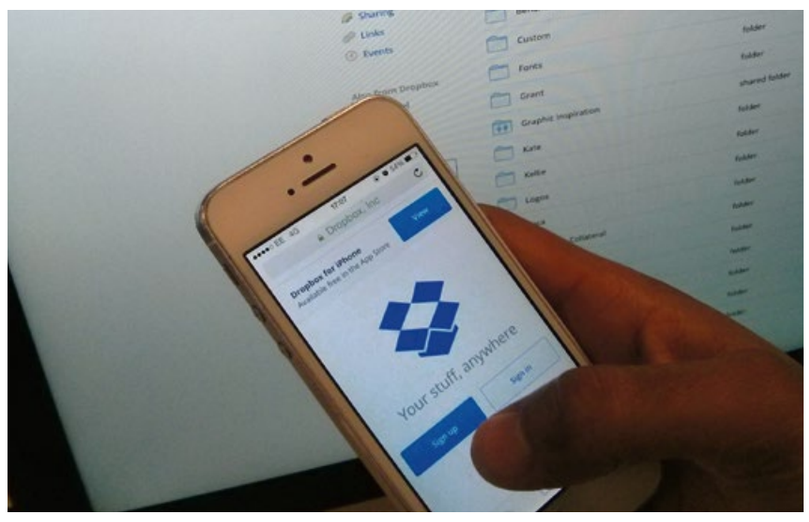
Security concerns aside, the life-giving properties of the cloud – its ability to bring together business operations at a single access point – have triggered a huge escalation in new businesses. Politicians will tell you the meteoric rise in startup numbers is down to them, but really it is the cloud.

And how. According to Startup Britain, 581,173 businesses were founded in 2014, sharply more than the previous year's 526,173, which in turn rocketed passed 2012's 484,224. According to Companies House, in the four weeks of February this year alone, 51,596 new companies burst into being.

"Perhaps the key benefit of the cloud is its ability to level the playing field. By removing much of the initial up-front costs, the cloud allows small and medium-sized businesses to compete with their larger rivals – and in some instances to surpass them," says Ian Stone, managing director UK and Ireland at Anaplan, a cloud-based business planning platform.

"With less infrastructure and fewer internal processes, startups and SMEs [small and medium-sized enterprises] have always been considerably more flexible and agile than their market-leading competitors.

"In contrast, larger enterprises retained their dominance by relying on infrastructure, scale, access to multiple markets and superior technology. The arrival of cloud computing has eroded these advantages, so it's no surprise that large companies are beginning to become concerned."



The cloud is good for security and it certainly helps startups grow, but it can also facilitate the sort of administration that prevents them falling over too. Finance and accounting are two enduring bugbears for entrepreneurs down the ages and, while accounting is still not fun, it's a lot easier than it used to be.

> **Politicians will tell you the meteoric rise in startup numbers is down to them, but really it is the cloud**

According to Rich Preece, country manager at Intuit UK, cloud-based financial management software is about to take off in a big way. He cites statistics from the International Data Association forecasting that, by the end of next year, half of all SMEs will be using it.

"The insight you can get from dedicated cloud accounting software means SME owners can also make strategic financial decisions, such as looking at a healthy pipeline and deciding it's time to pay staff a bonus or plough some more investment into R&D," says Mr Preece.

"At the other end of the scale, they could avoid a nasty surprise by realising they need to bring in some new customers quickly before it's too late."

Sharon Davidson, founder of Aresko, which provides consultancy services to the NHS, says settling invoices in a timely fashion is vital to her cash flow, and that cloud-based business and e-invoicing platform Tradeshift provides assurance in this area.

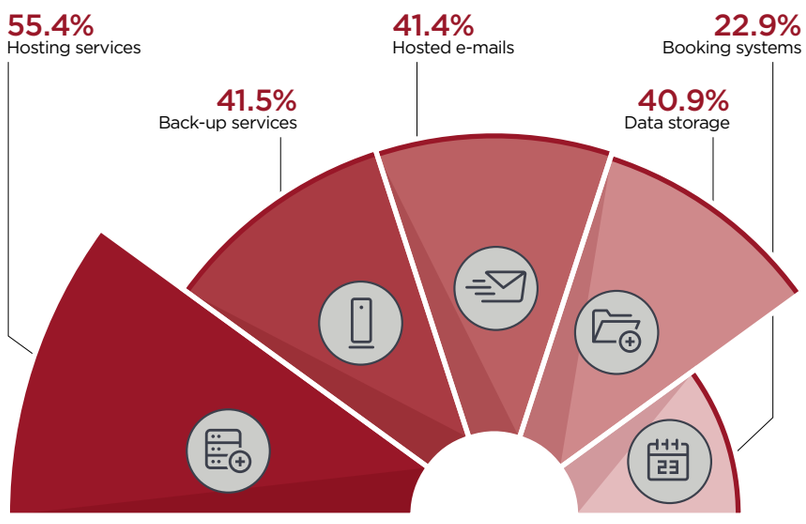
"Previously I would have to raise the invoice, send it in and sometimes chase it. Whereas now, I raise the invoice, it goes by the cloud system and I have all the updates I need. Messages come in – signed off, paid and it's perfect," she says.

Ms Davidson's example shows it's not just super-high-tech companies that can benefit from the cloud. Old business models work just as well, including bricks-and-mortar high street shops. Number Six, a high-end men's fashion retailer based on Brick Lane in East London, swears by Vend point-of-sale and retail management software.

Owner Jake Hardy says: "The best thing about Vend, for us, is that it is cloud based and therefore accessible from anywhere I am, whether at home, on my phone or on holiday. I can quickly oversee what we have sold and what our margins are in real time. I can also quickly and efficiently restock products."

With cloud technologies such as these taking the strain off startups, it's anyone's guess how many new businesses will be encouraged to pop up in 2015, certainly way over 600,000 if the current trend continues. As cloud technologies improve and more people adopt them, the playing field between newbies and the big dogs just gets more even by the day.

CLOUD USE BY UK SMALLER BUSINESSES



Source: Towergate 2014

It's the cloud at your service

Available on demand via the internet, cloud services offer a comprehensive business menu

◆ CLOUD SERVICES

● CHARLES ORTON-JONES

BaaS – back-up as a service
Everyone needs to back-up. The problem is doing it on schedule and keeping the back-up drives safe. If your office burns down the back-ups may go up in smoke. So send back-up data to the cloud. That's BaaS.

CaaS – communications as a service
Companies spent a fortune on bulky switches to handle telephone calls. Now CaaS offers phone calls, instant messaging and video conferencing without expensive hardware. Plug in internet-enabled handsets and devices, and configure via a web browser. Skype is a CaaS.

DaaS – desktop as a service
Staff want to work on any device from any location. DaaS means they can summon their personal desktop, with all files, wherever they want. Windows, Mac or Linux desktop is virtualised and hosted in the cloud.

DBaaS – database as a service
Not to be confused with DaaS. Database as a service means using a cloud-based database, leaving administration to the vendor. DBaaS users can focus on their job, knowing database duties, including scaling, have been delegated.

HaaS – hardware as a service
Don't buy your hardware, just rent it. HaaS leases what you need when you need it, leaving maintenance to the supplier. HaaS includes servers, printers, desktops, anything physical. Companies with temporary needs, such as events firms, are enthusiastic users.

IDaaS – identity as a service
IT departments issue passwords, set access rights and monitor network usage. IDaaS is a cloud-based identity management service, which provides prebuilt modules for all identity requirements.

IaaS – infrastructure as a service
Servers, storage and networking can be leased pay as you go on the cloud. IaaS means no capital outlay. Pay for what you need. As you grow, more infrastructure can be utilised. IaaS is a core element of cloud computing.

PaaS – platform as a service
When hardware and software come together on the cloud you get PaaS. Providers offer a supportive environment for clients to build, test or run their own applications in the cloud. It's usually depicted as a layer above IaaS and one below SaaS.

SaaS – software as a service
Dropbox, Gmail and YouTube are examples of SaaS. Users access a full service, hosted on the web. Maintenance, capital expenditure and development are done by the provider. SaaS is the complete cloud offering.

STaaS – storage as a service
The cloud is ideal for data storage. Rather than keep data on premises, users send it to their STaaS provider. Cost, scalability and convenience are big pluses. Downside? For large-scale STaaS you'll need serious broadband cpacity.

COMMERCIAL FEATURE

KASHFLOW IS KING FOR SMALL BUSINESSES AND ACCOUNTANTS

Small businesses are the lifeblood of the UK economy and yet many are putting their future at risk by failing to organise finances properly

John Coldicutt
Chief marketing officer

KashFlow

Just under 600,000 new businesses started life in 2014, but in the same year more than 200,000 bit the dust.

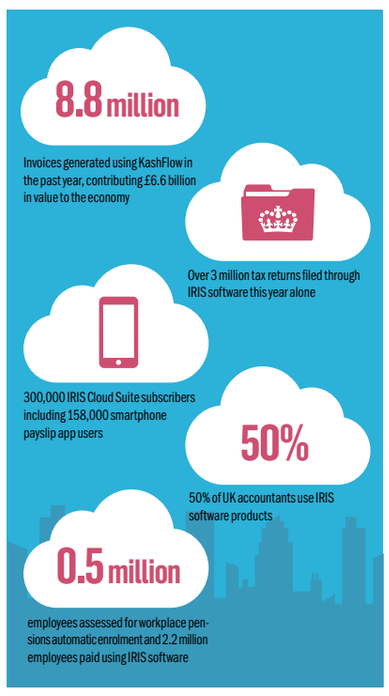
The problem, at least historically, has been a lack of resources, meaning small businesses often let practical and important parts of their operation, such as maintaining healthy cash flow, slip. The result of a business running out of cash is all too clear, but it's surprisingly easy to do.

> **KashFlow takes care of the tricky financial stuff so business owners can focus on the things they really care about, such as creating great products and making customers happy**

Every year thousands of viable businesses go to the wall despite having good products and happy customers. It happens because they focus on creating a great offering, but forget about the admin.

At IRIS we believe there is a better way. As part of the IRIS cloud suite of products, we offer KashFlow, a sophisticated yet simple online accounting platform. It helps small businesses keep up to speed with their finances without robbing them of time better spent on business development and innovation.

KashFlow is easy to access from anywhere, with simple navigation and a fast, free help centre staffed by real people. Users love the intuitive design, the cloud-based "go anywhere" interface and the quick and easy set-up.



Creating invoices is a doddle, while the system even chases late payments automatically, meaning users get paid quicker. You can create quotes too and all of your financial comings and goings are easily logged, with charts and graphs clearly illustrating the health of your business.

For accountants, KashFlow means a healthier, happier relationship with clients. Accountancy firms that integrate with the KashFlow platform can receive all the data they need online, without even having to meet a client face to face.

Happily, it also puts to an end accountants' perennial bugbear of receiving bags full of receipts to process just before a filing deadline with HM Revenue & Customs. Clients can upload receipt data by snapping a picture on their smartphones – simple.

KashFlow integrates easily with other systems and swapping from other accountancy software, or even an Excel spreadsheet, is a quick and stress-free job. You'll no longer have that sinking feeling around VAT deadlines or in the run-up to year end. The system deals with company payroll and pensions automatic enrolment too.

Because it's cloud based, KashFlow updates for all users on an account in real time. A business owner can input data, notify their accountant and have it filed with a few quick clicks of a mouse button. Why would you deal with paper ever again?

KashFlow takes care of the tricky financial stuff so business owners and entrepreneurs can focus on the things they really care about, such as creating great products and making customers happy.

Accountants can get accurate data in a timely fashion and can use the service as a sales tool to bring in new clients. KashFlow lists its accountants in a directory which comes top of search engines for relevant searches, meaning they can attract new clients as well as organise existing ones.

By moving to the cloud, the future can be brighter for small businesses and accountants. With KashFlow, both sides of the equation can focus on what they get paid to do, while dodging the annoying bits that get in the way.

www.kashflow.com

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◆ **HYBRID CLOUD**

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Hybrid cloud formation is mixing public and private

An integrated cloud computing environment, which mixes public and secure private services, is the business solution for an increasing number of organisations

Clouds appear in the sky, continually changing form – seemingly creating whatever our imagination desires. And now the same is true of that other type of cloud – used for computing – with customers desiring greater flexibility and choice.

Hence the era of the hybrid cloud is upon us, one that combines the cost advantages of the public cloud with the private-cloud security benefits of ring-fencing your own servers. The blended model is finding favour with more companies needing to ramp up their cloud capacity without paying through the nose to do so.

That perhaps reflects the wider trend in technology markets where consumers will not hang around waiting for goods and services. One click too many and the customer may never return. This has had a knock-on effect for IT companies that need to stay fleet of foot and innovative without letting their guard drop.

George O'Connor, an analyst with stockbroker Panmure Gordon, says hybrid cloud is becoming a middle road for many businesses. "Hybrid cloud is neither one thing nor the other, but is somewhere in between," he says. "However, hybrid cloud tries to marry the best of both worlds, the scale and cost benefits of cloud with the security and data curation of on-premise software.

"In these uncertain times, both these have become more important for corporate IT buyers and hence the recent resurgence of interest in hybrid cloud. The solution appeals to users who want to be trendy and also conservative," he says.

> **The mixed model allows companies to segregate their service between critical and non-critical functions**

The mixed model allows companies to segregate their service between critical and non-critical functions. An e-commerce website, for example, could be hosted in a private cloud to ensure customer details, such as transaction history and bank accounts, could be stored securely. However, the brochure site, where customers can scour for products or deals, could be moved to a lower-cost public cloud environment.

Cloud services specialists Interoute notes that an infrastructure-as-service provider could exploit the model to store sensitive client data in the private cloud, while allowing project planning and collaboration among multiple users on the public cloud. The trend provides a huge opportunity for companies ranging from HP to smaller data-centre companies such as iomart and even network players including Interoute.

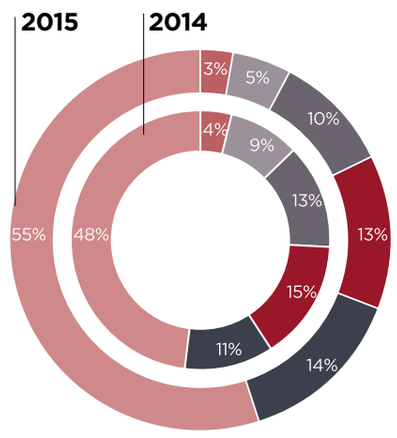
Simon Michie, chief technical officer at Redcentric, points out the benefits of hybrid cloud model for innovative companies. "The art of innovation in a hybrid-cloud world is to nurture the requisite imagination and creativity within your business deliberately, be prepared to invest speculatively, and successfully orchestrate the available range of on-demand, enabling technologies to deliver solutions that align with your goals," he says. "The game-changer with hybrid cloud is the relative affordability, accessibility and deployment speed."

The hybrid cloud has effectively democratised the IT process for many companies, according to Mr Michie. "Cloud has taken down barriers to entry and its 'out-of-the-box' nature allows the innovator to focus on ends, not means," he says. "Through the use of cloud, an entrepreneur can immediately gain access to the same technologies as their more established competitor. They can challenge and create new business models, and they can rapidly scale."

That is not to say hybrid cloud will be a phenomenon only among small and mid-sized companies. "A larger organisation can now afford to run a portfolio of innovation projects where previously they could only run one at a time. The mantra is to learn fast and succeed or fail fast. With cloud, the innovator can realise their vision with a rapidity and assurance never available before," says Mr Michie.

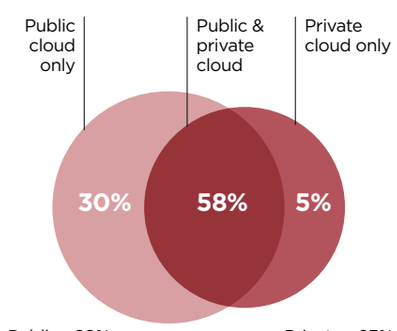
That is clear in one of the larger hybrid cloud deals to be signed. HP tempted the huge logistics company TNT to commit to a hybrid system this year. The six-year deal, estimated to be worth hundreds of millions of pounds, will result in the number of TNT data centres being reduced from eleven to two.

ENTERPRISE MULTICLOUD STRATEGY, 2014 COMPARED WITH 2015



Source: *State of the Cloud*, RightScale 2015

PUBLIC AND PRIVATE CLOUD USAGE



Source: *State of the Cloud*, RightScale 2015

Getty Images

As well as building TNT's defined data-centre networks, based on HP servers, storage and networking, and delivering HP-managed security services, HP will move the company towards an infrastructure-as-a-service model that will deliver savings and innovation. "This open standards-based common architecture cloud platform enables new capabilities, such as 'bursting' workloads, which will allow TNT to consume and pay for capacity only when needed," says HP.

The ability to support and deliver the "parallel universes" of the cloud is increasingly essential for companies such as HP and IBM to respond to customers' needs.

But the path to a hybrid cloud paradigm won't necessarily be swift. Kate Hanaghan, research director at TechMarketView, says: "The migration of large swathes of corporate IT into the cloud will happen over a period of many years. However, for organisations that rapidly need to adjust the cost and their use of large data-centre estates, cloud is playing an important role in the more immediate term. More specifically, it is typically the perceived 'safety' of private cloud that has been the preferred first step for large enterprise buyers looking to make significant, strategic investments.

"The medium-to-long-term aspiration for most organisations will be a hybrid-computing environment that uses a blend of cloud – public and private – and on-premise technologies. Suppliers, therefore, must be able to provide cloud services alongside managing existing legacy systems. Indeed, we believe the ability of suppliers simultaneously to support and deliver these 'parallel universes' of legacy and 'new world' technologies will become absolutely essential."

As in nature, cloud computing is continually changing and increasingly comes in a variety of forms.

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COMMERCIAL FEATURE

DON'T CLOUD THE ISSUE OF DATA STORAGE: THE TIME TO INNOVATE IS NOW

***Martin Warren**, cloud solutions manager at **NetApp**, tells why enterprises are adopting hybrid cloud*

Martin Warren
Cloud solutions marketing manager

Data is the underlying asset of any organisation, be that proprietary or customer data. In the past decade, the rise of data in enterprises has been meteoric, leaving companies looking for ways to store and manage it effectively. One such solution is cloud storage. Regulatory roadblocks can prevent migrations to the public cloud, while investment in a private cloud can be costly, leading organisations to the hybrid cloud.

For larger enterprises, it can make business sense to host a data centre, allowing sensitive data to stay secure in one easily accessible location. Data centres are costly and only something to consider if the quantity of data warrants this.

With a private data centre, enterprises pay for a set capacity at all times, regardless of whether or not it is being fully utilised. In addition, costs are incurred at every level from the initial server infrastructure, to ongoing costs of server space, electricity and cooling, as well as employing a full-time data centre manager and security staff to ensure data remains safe day and night.

Opting for a private cloud solution, whether hosted in a data centre or on-premise, is not entirely straightforward. While it is reliable in terms of security, it does have some of the same limitations associated with on-premise data centres. Procurement and build times can be lengthy, and there are often high capital expenditure charges, as well as ongoing operating charges.

Whereas with a hybrid solution, enterprises can retain business-critical data securely in an on-premise data centre, while storing broader company data in the public cloud. Through a hybrid cloud solution, enterprises can truly innovate, using data to react in new ways.

The hybrid cloud is also cost effective and flexible, with a "pay as you go" model. It's akin to flicking a switch on and off in accordance with data requirements. Furthermore, the level of access provided by cloud platforms makes it an ideal solution for collaboration, sharing and other operational processes.

It's possible to ensure that data is managed across the hybrid-cloud environment through the use of a data management platform. This enables the easy transportation of data, maximising operational efficiency and business agility, as well as reducing costs, ultimately improving business output.

> **Through a hybrid cloud solution, enterprises can truly innovate, using data to react in new ways**

For example, by adopting an inter-connected data fabric approach, supported by companies such as NetApp, organisations can easily switch between data stored on-premise, with a service provider or through a hyperscaler, such as AWS or Microsoft Azure, meaning their storage management and data protection strategy can be fine-tuned as their business evolves. Furthermore, the ability to move data between hypervisors ensures customers are not locked in by one cloud provider.

The data requirements of enterprises are continually increasing, meaning the issue of data storage and management cannot be ignored. Businesses must invest in ways to use data to their advantage. It should be a tool that streamlines the business and informs decision-making, rather than a drain on IT infrastructure. Hybrid cloud solutions are cost effective, flexible and meet the necessary security measures to comply with regulation.

For more information, visit www.netapp.com/uk/

Cloud integrated storage: the best of both worlds...

Why organisations change their back-up solution and how cloud integrated storage can help

Agents, jobs, and training stay in place

Local cloud integrated storage means fast back-ups and agile restores

Remote storage means data survivability and long-term retention

40% **Volume of data**
Cloud integrated storage appliances can reduce data sets by up to 30 times - combined with cloud economics; this means you can store large volumes of data at a low cost

39% **Cost/software licensing model**
Cloud storage is paid on a per-use basis, meaning you only pay for what you use

31% **Poor performance**
Cloud integrated storage appliances keep a local cached copy of recent back-ups for rapid restores

30% **Solution not scaling with use**
Cloud storage can scale to virtually any size

28% **Tape replacement**
Using the cloud means you can send data off-site immediately, without dealing with physical shipping and handling

Assurance and trust in the cloud

Although the popularity of cloud computing is increasing rapidly, potential customers may perceive security barriers that are inhibiting wider adoption of services

OPINION COLUMN

While businesses still have concerns about security, privacy and data management in the cloud, these can be attributed to lack of trust in cloud computing services. Cloud can't be viewed as more or less secure without understanding its level of security.

It can be said that the main barriers to adoption of cloud computing come from lack of trust, which is generated by the perceived lack of clarity in service level agreements (SLAs) and security or privacy policies, standard terms and conditions, and sometimes in the immaturity of cloud services. Transparency of cloud service providers in their approach to information security is the key to building trust in their services.

As security and privacy certifications and attestations have been identified as among the most effective and efficient means to increase the level of trust in cloud services, stimulating their adoption, cloud customers are recommended to adopt a cloud selection process that favours certifications or attestations that clearly support transparency.

In order to support cloud customers in this decision-making process, in April 2013 the European Commission (EC) launched the Cloud Select Industry Group (C-SIG) on certification with the aim of supporting the identification of certification schemes appropriate for the European Economic Area market.

Furthermore, in 2014, the European Network and Information Security Agency launched the Cloud Certification Schemes Metaframework (CCSM) initiative to map detailed security requirements used in the public sector to describe security objectives in existing cloud certification schemes. The goal of CCSM is to provide more transparency and help customers in the public sector with their procurement of cloud computing services.

DANIELE CATTEDDU
Cloud Security Alliance
Managing director
Europe, Middle East and Africa

Global organisations have also developed cloud security-specific certification schemes. For example, the Cloud Security Alliance (CSA) Open Certification Framework was created as an industry initiative to allow global, accredited, trusted certification of cloud providers. This integrates with popular third-party assessment (ISO 27001) and attestation statements (SOC2) developed within the public accounting community to avoid duplication of effort and cost.

> **Transparency of cloud service providers in their approach to information security is the key to building trust in their services**

Besides standards and certifications, clearly SLAs can provide visibility into security and privacy capabilities, and increase the level of trust in cloud computing services. Specification of security parameters in cloud service level agreements (secSLAs) has been recognised as a mechanism to bring more transparency and trust for cloud customers and service providers.

Unfortunately, the conspicuous lack of relevant cloud security SLA standards is a barrier for their adoption. The benefits related to the specification of standardised security elements in cloud SLA are clear as the usage of secSLA seems to be the missing piece on the cloud customer's security assurance and transparency puzzle.

For these reasons, standardised cloud secSLAs should become part of the more general SLAs or master service agreements signed between the cloud service provider and its customers. Current efforts from CSA and ISO/IEC (International Organization for Standardization/International Electrotechnical Commission) in this field are expected to bring some initial results by 2016.

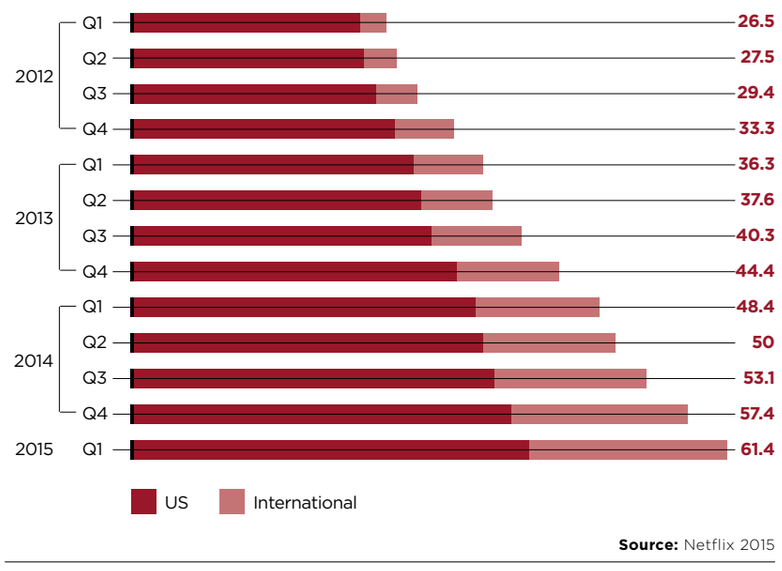
Cloud SLA-specific standards will appear in the short term, mostly lead by organisations like ISO/IEC which are working on the definition of common vocabularies, metrics and requirements. However, it should be noted that while the concept of secSLA is simple, the application, enforcement and monitoring are not.

Despite the existence of certification, SLAs and standards, the lack of security awareness sometimes affects potential customers in their decision to adopt cloud computing. In many cases, prospective cloud customers are unwilling or unable to make the organisational changes necessary for the effective use of cloud services. This needs to change in order to promote the secure uptake of cloud computing.

Entertainment coming on stream

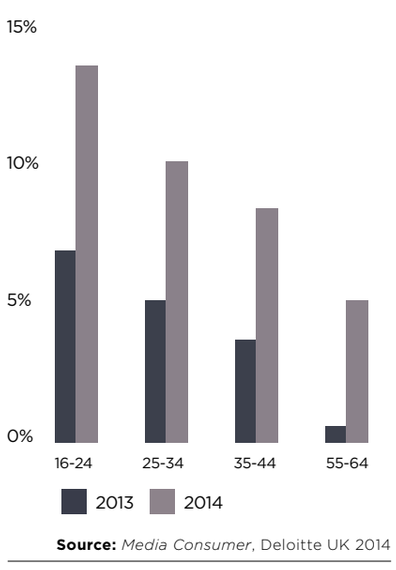
It is easier than ever to deliver digital content via the cloud, livening up how we get music, movies and theatre

NUMBER OF NETFLIX STREAMING SUBSCRIBERS (m)



Source: Netflix 2015

PROPORTION WHO SUBSCRIBE TO STREAMING SERVICES BY AGE GROUP



Source: *Media Consumer*, Deloitte UK 2014

◆ ENTERTAINMENT

● JON COLLINS

At the time of the Royal Shakespeare Company's first streamed theatre production, *Richard II*, in November 2013, there was little to indicate whether demand would actually exist. The plan was ambitions – not only was the play being transmitted to 100 cinemas in the UK and abroad, but also to schools around the country.

"We're relishing the chance to bring Shakespeare to thousands of UK schoolchildren in a new and engaging way," the RSC said at the time.

As things turned out, nobody needed to worry. More than 100,000 people turned out to see the broadcast in cinemas as well as 31,000 students from 400 schools, making it the largest audience for a single performance of a Shakespeare play.

With National Theatre Live, the Royal Opera House and others also becoming purveyors of the finest quality digital content to our silver screens, the model is quickly being accepted as the norm, rather than the exception. Some two thirds of UK cinemas now participate in NT Live, for example.

But organisations such as theatres and production companies could not become digital broadcasters without the abundance of massively scalable, globally accessible server, storage and networking resources – also known as cloud computing.

Live-streamed theatre is just one in a series of examples of how the cloud is transforming the ways in which we create and consume entertainment. In a transformation that has taken less than a decade, Netflix and Amazon, YouTube, Spotify and Pandora have trumped media companies, distributors and retailers, leaving corporate carnage in their wake for retailers such as Woolworths, Blockbuster and HMV, as well as driving an increasingly consolidated pool of music and entertainment industry players.

How quickly we forget. While trips to Blockbuster used to be a staple part of the Saturday evening routine, they are now as distant as the dot in the middle of the TV screen. The final nail in the coffin of physical media, beyond vinyl-loving aficionados, that is, has been the gradual arrival of fibre broadband in the UK, aided and abetted by the current roll-out of 4G mobile.

Put together, such developments mean the barrier to entry for cloud-based digital media delivery is as low as it has ever been.

The lowering hurdle means a burgeoning number of wannabe big-shot service providers, such as Ustream or Limelight in live media streaming, Beats or Tidal for music streaming and Twitch for streaming computer games. Such services are already, perhaps inevitably, being integrated into the portfolios of larger providers. Twitch was bought by Amazon last year, and both YouTube and Microsoft Azure have announced the launch of media-streaming capabilities.

> **Live-streamed theatre is just one in a series of examples of how the cloud is transforming the ways in which we create and consume entertainment**

With the inevitable conclusion that streaming is a feature, not a product, what's next in store? Live streaming of music has still to make a major impression, unsurprising given the complexities of broadcasting a live show, relative to the paltry amount of time a musical artist has to set up and take down a gig. These issues currently knock on to equally prohibitive costs, but as venues gain in-house capabilities, this will change.

And meanwhile the reach and accessibility of media will continue to grow. Delivery platforms are extending into our cars through initiatives such as GENIVI, for example. By the same token, an artist should be able to set up a performance from the pub, the park or indeed the kitchen. And, perhaps, even make money out of it.

Ah, money. That horrible word "monetisation" remains a challenge for many artists, exacerbated by the sometimes draconian terms being asserted over their current and past material as the new media kids, such as Spotify and Google, play fast and loose with what should be their most important asset. For art's sake, we can hope these issues are temporary symptoms of a changing market.

14.8m

music tracks streamed in the UK last year, nearly double the 7.5m in 2013

12.6%

of overall UK music consumption was streamed in 2014

Source: BPI 2015

There is plenty the wider industry can take from what is happening in the world of entertainment, not least, of course, that it is easier than ever to deliver digital content to customers, suppliers and other stakeholders. Organisations such as BrightTALK offer the corporate equivalent of Ustream, meaning any organisation can deliver live webinars, and nothing is stopping businesses creating a YouTube channel or iTunes podcast feed.

Indeed, as such capabilities embed themselves into mainstream culture, organisations without them become the exception rather than the rule. A common mantra is how business models are moving from products to services, requiring closer engagement with end-customers. Cloud-based media platforms may not deliver a one-to-one direct experience by themselves, but they certainly make such interactions easier to scale.

At the same time as recognising how the cloud is lowering barriers and creating new opportunities for delivery of digital content, it's important to note that it can only achieve these goals by being highly resilient and well architected. Contrary to common belief, the cloud is not infinitely scalable, but relies on smart use of appropriate processing and storage resources.

As early masters of content-delivery networks, Akamai have long known that part of the trick is moving digital content to as close as possible to where it is needed, avoiding bottlenecks. Meanwhile Netflix is renowned for its army of so-called chaos monkeys or autonomous software modules which deliberately attempt to sabotage the service, in doing so testing (and proving) its resilience. Corporate adopters take note.

The bottom line is that while it has never been easier for both artists and corporations to build and engage with audiences, given such a resource-sapping plethora of options, it is vital to start with a plan. Whether you see digital media delivery as an end in itself or as a catalyst for the core business, do it right and the rewards could be great.

Love or hate the changes that are happening to media delivery by all means, but ignore them at your peril.

COMMERCIAL FEATURE

POWER OF NOW IN THE ENTERPRISE

Industries are being shaped by the dramatic shift in customer expectations. Companies such as Uber, Square and Amazon have created and disrupted markets by understanding the power of simple, personalised, quick transactions done anytime anywhere.

Russell Acton
Vice president and general manager

capriza™

Even fast-food companies such as McDonald's and Taco Bell are reinventing "fast" by investing significantly in mobile order-ahead and delivery services.

Ultimately, these consumer expectations and the power of quick, personalised, contextual transactions will also shape how businesses run. If it takes a minute to get a cab, book a room or make a purchase, it should be just as quick for employees to complete an essential task at work.

It's critical to understand that what powers customer experience is the speed and effectiveness your employees can deliver it. Companies that can harness the power of the new consumer experience for business tasks will realise huge workforce productivity gains, accelerate processes, and ultimately deliver superior goods and services to their customers – and compete in the market.

Delivering a consumer-like experience for the workforce, however, is far easier for new companies than for large, established enterprises. While enterprises have market traction and an established customer base, the average enterprise has more than 700 business applications, making it very challenging to deliver a productive, personalised way to work for each employee.

The very systems, processes and workforce that give these companies might and scale make it difficult for them to be nimble and adapt to change. In contrast, newer companies, unburdened by existing processes, legacy systems and a large workforce, can deliver employee-centric solutions quickly and keep pace with consumers' changing needs.

This isn't stopping some market leaders from transforming how they deliver products and services to their customers. Disney, the "mother of experience", is betting $1 billion on mobile and wearable technology that will enable park employees, restaurant hosts, greeters and kitchen staff to power a high-touch personalised experience, and make it easy to buy throughout the Magic Kingdom. Among other things, restaurant visitors will be able to be greeted by name, order food at their seats and have the food magically arrive at their table.

Facing competition from the likes of Amazon and Google Express, Home Depot plans on spending at least $300 million on supply chain, technology and online improvements, including building new fulfilment centres and overhauling its warehouse technology systems to enable its employees to operate at the speed of mobile. The initiative is aimed at boosting online and mobile revenues by offering same-day delivery for customers and contractors, who might be in the midst of a home improvement project and need dry-wall, tiles or nails in a matter of hours.

When DirecTV needed to enhance first-time customer experience, they focused on minimising the time their 7,000 field technicians spend in customers' homes during activations. Rather than have technicians dial into a call centre to activate the set-top box, DirecTV enabled the technician to manage the entire activation process on their mobile device using an app by Capriza. This not only eliminated 20 minutes from the activation experience, but also dramatically lowered their call centre costs.

Networking hardware manufacturer Brocade faced a different supply chain challenge: the company's $500-million annual procurement budget was negatively impacted by lengthy purchase approval cycles. Equipping managers with a Capriza app that enabled them to approve purchase requests from Oracle EBS immediately from their smartphones, Brocade saw a 90 per cent improvement to cycle times.

The challenge facing companies such as DirectTV and Brocade is their large workforce relies on existing processes that leverage legacy systems, making it difficult to deliver on the new expectations of the modern customer. Because these business applications are complex, customised and interconnected, they are almost impossible to personalise and simplify, let alone mobilise, without a considerable amount of retooling.

> **Companies that can harness the power of the new consumer experience for business tasks will realise huge workforce productivity gains, accelerate processes, and ultimately deliver superior goods and services to their customers**

At Capriza we have helped numerous companies modernise by simplifying and mobilising their business applications (SAP, Oracle, PeopleSoft, Salesforce, custom-built and so on) without any business disruption. All this involves no upgrades, no hiring, no changes to existing infrastructure or security. The Capriza solution helps deliver these easily, in just days and without the usual cost and complexity we have come to expect. The result is intuitive, contextual experiences that deliver a productive, personalised way to work for each employee. If you can deliver on that simple contextual experience for your employees, they will be able to deliver on that experience for your customers.

www.capriza.com

Consumers' expectations are changing

Meeting these expectations gives businesses a competitive advantage

Businesses are being challenged delivering on consumers' new expectations

Winning the mobile moment means changing how you organise, operate, and deliver products and services; your company and its processes and information systems were never designed with mobile moments in mind: Forrester

Creating a unique and differentiating experience for your consumer requires a fundamental change in terms of the organisation and the process and governance between the showroom floor, corporate office, and supply chain and logistics: PwC

The role of cloud in tech trends

Since 2007 researchers at Gartner have been predicting strategic technology trends for the coming year. But what is the role of cloud computing in delivering the top trends identified for 2015?

10 TECHNOLOGY TRENDS

GREGOR PETRI

1 SMART MACHINES

By combining historical data, real-time measurements and advanced analytics, smart machines perform tasks humans could not do alone. The machines are typically not self-contained – their "memory" and "brain" live in the cloud where they can be rapidly scaled to meet requirements.

2 WEB-SCALE IT

This describes the trend of moving beyond typically inflexible corporate IT systems towards adopting the agile development methods and flexible, scalable deployment pioneered by major cloud-based organisations, such as Facebook, Google and Amazon Web Services.

3 3D PRINTING

The closest most of us will get to a "Beam me up, Scotty" experience in our lifetime is likely to be through cloud-based hubs for 3D printing, where design and rendering software is loaded and blueprints for all kinds of things can be exchanged. Fast advances in medical bio printing, however, mean we may soon say, "Beam me a new liver, Scotty."

4 SOFTWARE-DEFINED ARCHITECTURES

This trend makes the cloud more versatile. Traditionally, data centres were filled with specialised hardware (firewalls, routers, servers, storage) dedicated to one task. A data centre configured for a bank could not double at night as a data centre for streaming movies. Software-defined architectures remove this constraint by creating a web-scale "mesh" of versatile hardware – its function defined by software – that can switch between different capabilities in minutes, not days or months.

5 INTERNET OF THINGS (IoT)

The IoT connects physical objects to each other and to the people and machines that want to interact with them. Although these "things" can now communicate, often via an IP address, individually they remain rather simple. It is the cloud that makes them into a meaningful ecosystem that can, with analytics and smart machines, help humans turn all this information into better decisions concerning, for example, routing traffic, saving energy and so on.

6 CLOUD/CLIENT COMPUTING

In client/server computing the application was stored on our PC and the data was stored on the server. Now, the various servers of the cloud run the application and often hold much of the data, and the client (our PC, mobile, tablet, wearable) simply processes and displays the information from the cloud.

7 RISK-BASED SECURITY AND SELF-PROTECTION

IT in the past has always tried to eliminate risk. In the cloud that's not possible and trying to be risk-free is simply a roadblock to progress. The cloud is too big and open to fully protect, but anything and anyone connecting to it should, within reason, be able to protect itself or themselves. That may sound scary at first, but it's how we live our lives when we go out into the world. Though we are protected from the worst threats by the police, we don't assume there are no risks. It's similar for our applications and devices; they must learn to weigh up risks and threats for themselves, instead of working under the assumption that they operate in a completely safe environment.

8 ADVANCED, PERVASIVE AND INVISIBLE ANALYTICS

Most of us experience this through our smartphones already, when Google Now, Cortana or Siri informs us, without being asked, of a traffic jam or broken train on our commute home and offers a faster route. It appears a simple thing, but the vast volume of data required and smart analytics to process this data into useful information instead of annoying spam wouldn't be possible without the cloud.

9 COMPUTING EVERYWHERE

Soon everything will be computerised, from toothbrushes to thermostats to cars. Connecting them all together, storing and making sense of all the data they create, and providing relevant services via our devices, will be the cloud. Businesses must understand how the cloud fundamentally changes their business models, because it dramatically alters the relationship between consumers and the product or service they use.

10 CONTEXT-RICH SYSTEMS

This applies to a great many of the trends cited here. How will risk-based security work? How does a smart machine make decisions? How do things such as Google Now, Siri or Cortana give us timely, useful information? The answers are by using contextual information – our location, the time, temperature or traffic conditions. What stores and makes sense of all this contextual information and makes it easy for us and our devices to access? The cloud. We're already used to content being one search away, but even that will seem old fashioned when the cloud already knows what we are looking for.

GARTNER'S TOP 10 STRATEGIC TECHNOLOGY TRENDS 2012-15

2012	2013	2014	2015
Strategic big data	Strategic big data	Smart machines	Smart machines
Extreme low-energy servers	Integrated ecosystems	Web-scale IT	Web-scale IT
Next-generation analytics	Actionable analytics	3D printing	3D printing
App stores and marketplaces	Enterprise app stores	Software-defined anything	Software-defined applications
Internet of things	Internet of things	Internet of things	Internet of things
In-memory computing	In-memory computing	Cloud/client architecture	Cloud/client computing
Mobile-centric interfaces	Mobile applications/HTML 5	Mobile apps and applications	Risk-based security/self-protection
Cloud computing	Hybrid IT	Hybrid cloud and IT as a service	Advanced pervasive/invisable analytics
Media tablets and beyond	Mobile device battles	Mobile device diversity/management	Computing everywhere
Contextual/social user experience	Personal cloud	Era of personal cloud	Content-rich systems

Source: Gartner/TechRepublic

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Build any planning model
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Accelerate with pre-built modeling apps

Act with flexibility

ACCURATE

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Collaborate in real time
Ripple changes through connected plans

Act with precision

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