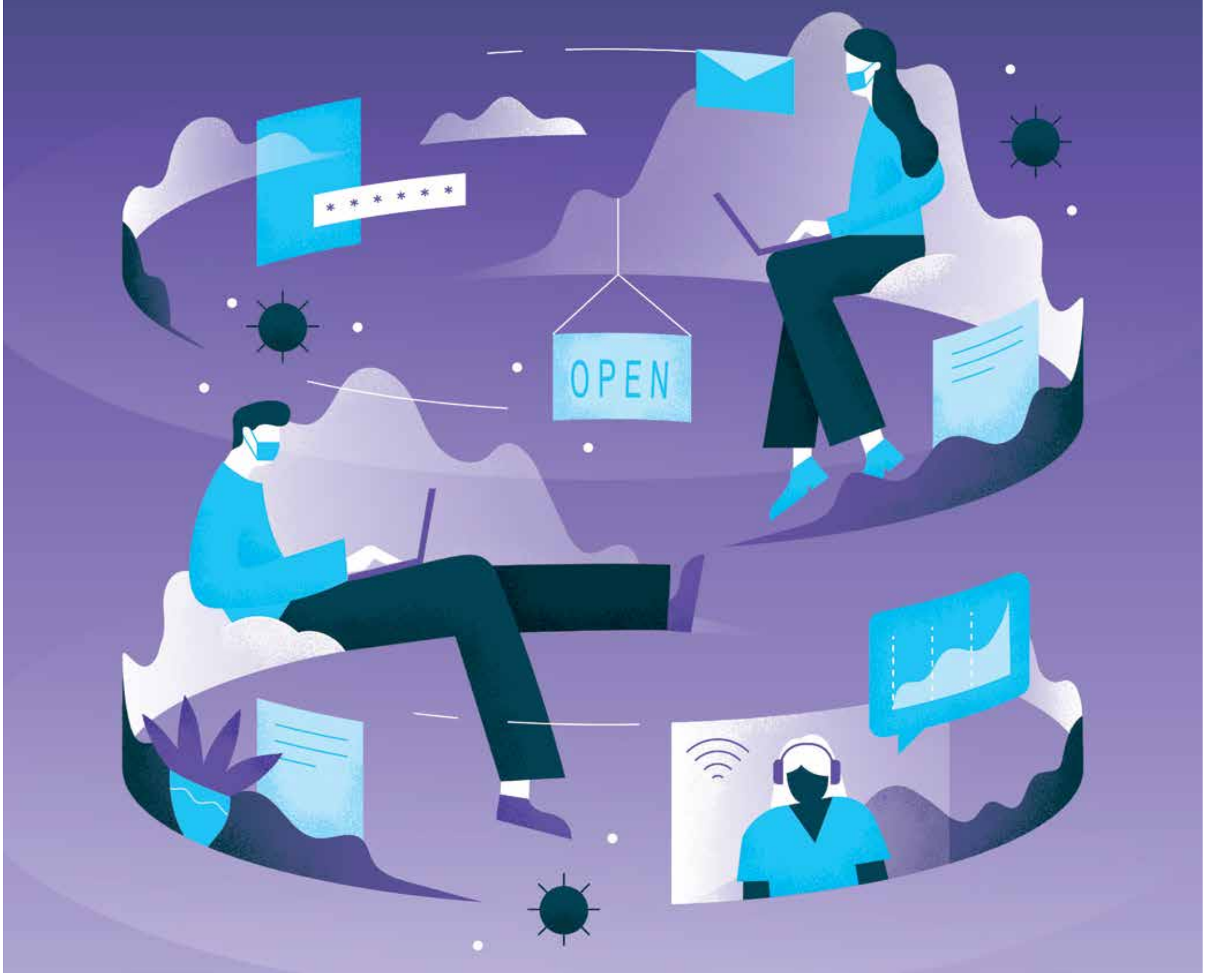
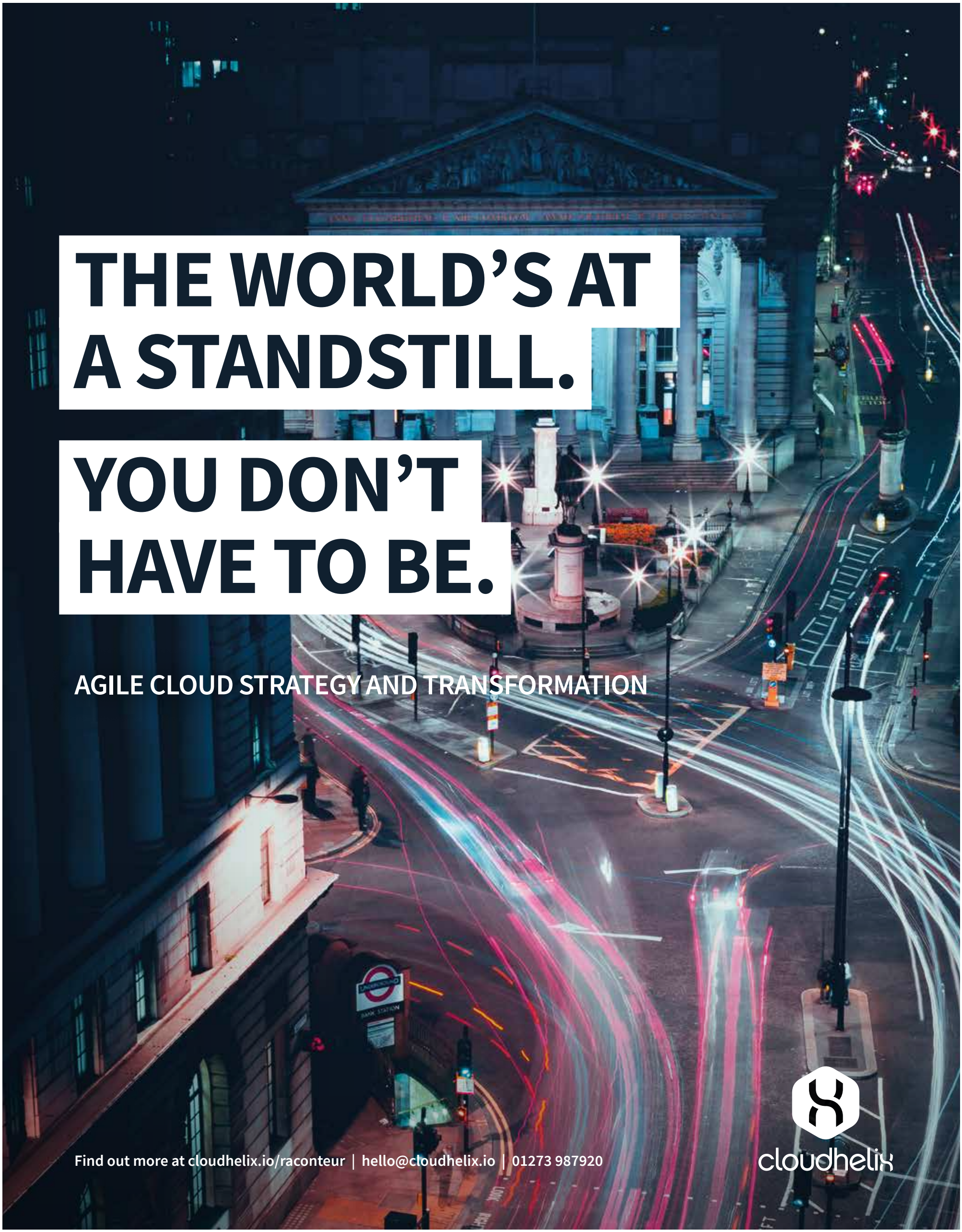
CLOUD FOR BUSINESS

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CLOUD FOR BUSINESS

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THE TIMES

CORONAVIRUS

Why cloud is more vital than ever

Cloud computing has enabled companies to continue operating seamlessly throughout an unprecedented crisis that could have easily brought business processes and productivity to a halt

Sooraj Shah

It would be easy to generalise that technology has helped businesses to carry on working during the coronavirus outbreak. But delving deeper into what exactly has been the key to enabling people to work from home and keep business-critical services going, there is one constant: cloud computing.

While the likes of Zoom and Microsoft Teams are gaining traction with consumers and businesses alike, the reason millions of people can use this tech simultaneously is because they are powered by cloud computing.

Benefits are well documented: cloud infrastructure enables companies to scale up and down with flexibility so they can cope with volatile conditions like those currently being experienced, while software-as-a-service, or SaaS, apps mean companies do not have to worry about scaling up their hardware and bandwidth to cope with huge demands.

Depending on the type of business, these benefits may vary. For instance, for many organisations it will simply be the case of facilitating home working.

"The cloud has been absolutely essential and I really don't know how we'd have coped without it. If we were still reliant on physical datacentres, we wouldn't have been able to expand so quickly," says Patrick Babic, service owner for the end-user computing team at energy giant Centrica.

"With staff forced to work from home, Citrix Cloud has enabled them to securely connect to the network through their home broadband and with their own device. This simply wouldn't have been the case without the cloud."

The company had Citrix Cloud in place prior to the pandemic, but had to expand the capacity of users and servers in the cloud because of so many employees working from home. This was the key benefit of cloud computing for Centrica from the outset, the ability to easily flex up and down when required in a short space of time.

The scaling-up aspect of cloud is particularly important with ecommerce. Adam Taylor, co-founder and chief executive of PetShop.co.uk, says that as the company had shifted to a cloud strategy before COVID-19, with NetSuite's cloud enterprise resource planning product, it had been able to cope with unprecedented demand.


Leo Patrizi/Getty Images

"We've been told by manufacturers, such as Mars and Nestlé, that we've been able to scale up more swiftly than most of our competitors and this has been because of cloud infrastructure," says Taylor.

"We've gone from packing and shipping 1,000 orders a day to 4,000 orders a day. We were able to scale up to meet this demand within the space of two days."

According to Taylor, cloud enabled the company to be able to order the stock in quickly, pack it and dispatch it more swiftly, and log all this in accounts. In addition, while other competitors' websites had to be shut down because of the sheer volume of customers accessing online shopping during the COVID-19 lockdown, PetShop.co.uk's website managed to stay robust.

Customer services departments have been vital throughout this period, as customers do not have the option of any face-to-face contact. As a result of social distancing measures, contact centres have had to switch to remote working, while also dealing with an increase in calls, and cloud computing has been at the heart of enabling these organisations to manage demand.

Northern Ireland Water has installed the Cirrus Cloud Contact Centre to enable agents to work from home, provide a webchat portal and ensure payment card industry-compliant payments can still be made.

Meanwhile, in early-April, the London Borough of Waltham Forest deployed Amazon Connect, a cloud-based call centre, so it could handle calls from more than 3,000 residents and customers each day, which was 30 per cent more than before to the pandemic.

The product has also helped the borough to increase the service to be available seven days a week and ensure staff could work remotely, which was not possible with the previous technology it had in place.

Architectural practice Maber had been trialling NBS Chorus, a cloud service it uses to specify building products and which allows multiple users to work on the same specification. As a result of the pandemic, the company had to roll out the project to the whole company so people working from home can have access to the system to write specifications.

"It's absolutely business critical; the drawings and modelling we do for the buildings are supported by the specifications, which tell the contractor exactly what they should be using to build the buildings. This would have held up our work if it wasn't in the cloud," says Nick Greenwood, architectural designer with Maber.

Employees at Maber had to use a VPN connection to get access to the company's five servers, but many struggled to connect to the physical hardware. As a result, the company has moved all these local files over to the cloud-based platform Google Drive, resulting in greater efficiency. The company also uses a cloud-based business information modelling tool by Graphisoft.

According to Greenwood, the company would have struggled to keep working during the pandemic without cloud computing. "What it has done is prove the business can operate at a high level of efficiency, even remotely. So we don't need to be sitting in offices next to one another; we can be spread all across the country and provide clients with the service they expect," he says.

The reality is the pandemic has highlighted the importance of cloud computing and, if business leaders had not been convinced of its benefits before, they are likely to be now. ●

64% estimated year-on-year increase in group quarterly revenues at Zoom for the three months ended April 30

775% increase in monthly users of Microsoft Teams in a one-month period in Italy

25x increase in daily usage of Google Meet in March compared with January

Company statements

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CYBERSECURITY

Refocused attitudes to data management

Companies must reassess their approach to data management in the coronavirus era, as shifts in working practices and business processes transform how they protect key information

Davey Winder


Markus Spiske/Unsplash

We are living in truly unprecedented times, of this there is no doubt. With governments around the world enforcing lockdowns and social distancing, the change to our work patterns is as obvious as it is disruptive. Businesses continue to investigate how best they can extract the most value from existing resources as possible; to do otherwise is economic suicide.

With arguably the most valuable resource for the vast majority of 21st-century businesses being data, utilising its potential has become more critical than ever. But has the COVID-19 pandemic fundamentally changed how organisations are approaching data management?

First consider the orthodox ways in which data management varies, not only between market sectors but also within organisations.

"Vertical markets such as retail, media and finance, have been using data intensively for many years and as a result benefit from a more data-driven approach to decision-making than organisations such as local government," says Craig Lodzinski, chief technologist for data and emerging technologies at IT infrastructure and services provider Softcat.

Although there's no doubting there has been something of a seismic shift towards understanding the value of data, Lodzinski says: "The world's most popular data science tools remain Microsoft Excel plus pen and paper." He's even seen these orthodox methods used in businesses with otherwise very mature data science capabilities.

But the pandemic has certainly highlighted the shortcomings of these approaches, chiefly in the clarity of information. "As the conventional work environment is turned on its head," says Lodzinski, "so the ability to ensure data is correct and can be understood in the same way by all stakeholders is of critical importance."

However, it should be borne in mind that pandemic behaviours are not necessarily great indicators of long-term data management trends.

"Whether it is the human or machine or a process in general, they are all operating under external influences and situational demands," says Frank Casey, group vice president, datacentre and hybrid-cloud global traffic management, at technology services provider NTT.

By way of example, COVID-19 has turned the traditional notion of a customer relying on data captured from multiple sources on its head. They now buy what is available rather than what is wanted; essentials over desirables. Which means, with traditional physical channels no longer in use, many organisations are reporting "massively reduced and skewed daily data volumes, and no longer have access to rich and deep interaction and transactional data that they relied on for decision-making", says Casey.

Indeed, even the cognitive models developed leveraging interactions through physical facilities are no longer relevant in these times, he says.

What this means is new techniques are emerging to predict client behaviours, techniques that nimble businesses can exploit by "going beyond organisational boundaries, leveraging digital channels and mining social data", says Casey.

There is much to be said for the argument that every organisation is a data business in 2020. The problem, according to Danny Reeves, chief executive at data discovery software firm Exonar, is "the trading environment has within a few weeks been completely transformed by COVID-19 and along with it the data that was previously valuable may now be useless".

Equally, previously overlooked data stored within an organisation may now be the source of "substantial benefit in the new normal", he says.

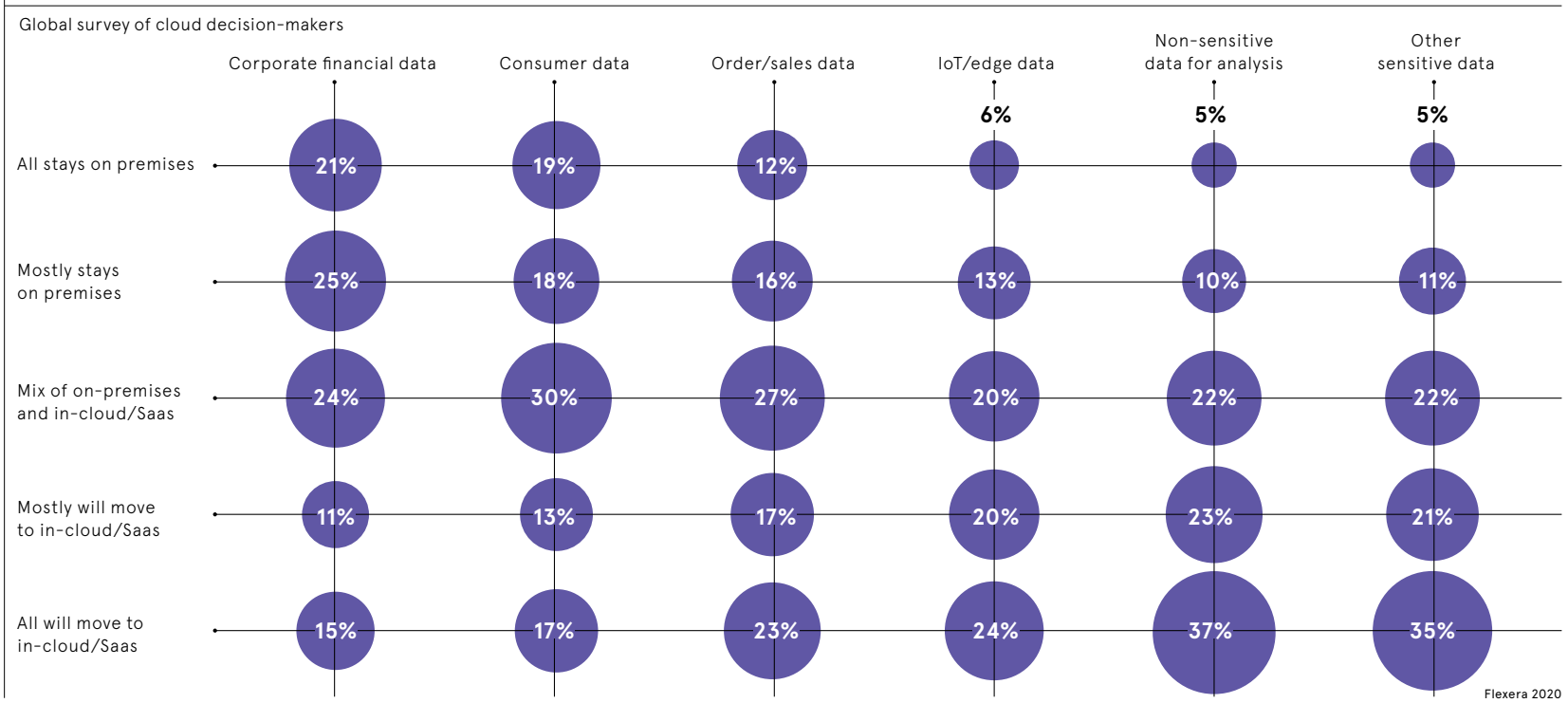
There can be no doubt business as usual within a remote landscape peppered with virtual collaborations heightens exposure to cyberthreats and regulatory compliance scrutiny.

"Now, more than ever, data governance is a high-tension stress point for corporates," says Greg Mason, co-founder and chief technology officer of the Forensic Risk Alliance. "Yet they are compelled to keep operating at the same level as if they were under normal circumstances."

The new normal that working from home brings has certainly meant connectivity and security are playing into the legitimacy of data-management strategy more than ever.

"With so many employees suddenly thrust in what may turn out to be permanent work-at-home scenarios, many companies are discovering they are ill-prepared to secure and control so many possible attack vectors," says Bradley Shimmin,

TYPES OF DATA THAT WILL MOVE TO PUBLIC CLOUDS



> **Trading has been transformed by COVID-19 and along with it the data that was previously valuable may now be useless**

distinguished analyst at technology consultancy Omdia.

A mitigating factor is most organisations already have the tools and technologies that are capable of securing data access, even those historically wed to a centralised workforce, says Shimmin.

"Collaborative platforms like Google G Suite and Microsoft Office already support a concept called zero-trust access, where users gain access through multi-factor authentication via device-specific security checks," he points out. And most corporate apps, even those not running on public-cloud platforms, such as Amazon Web Services or Microsoft Azure, make use of similar zero-trust capabilities.

"Below those, down at the data level, databases and data-driven apps have long used strong encryption at rest and in motion to ensure data remains protected as it moves across corporate boundries for consumption by users and applications alike," says Shimmin.

As Philip Miller, co-founder and director of data visualisation specialists Solidatus, reminds us, security departments need to accept that people will demand more unconventional access to their data now. "Things that might have only been available under certain access conditions now need to be used from home. It is critical to make sure the right people have the right access to data," he says.

Without the luxury of conversations with decision-makers by the office coffee machine, data management needs to step up to prevent a slowing down of processes.

"Automation and shift left [DevOps] style approaches are more vital than ever, with data lineage and mapping procedures paramount," says Miller.

The sheer volume of data has changed almost every enterprise landscape and operating practices that put privacy at the heart of data management strategy can no longer be optional.

Francois Rodriguez, chief growth officer at encrypted collaborative solutions company Adeya, concludes: "While the COVID-19 pandemic is upending business as usual, enabling the secure collaboration and communication for employees has never been a more business-critical issue."

How Avado coped with going virtual

On March 23, as the UK entered a COVID-19 lockdown, professional learning academy Avado went virtual. While the organisation had already put in place a remote infrastructure and approximately a third of the company already worked remotely, adapting quickly to a new way of working for all 360 employees required some agile thinking.

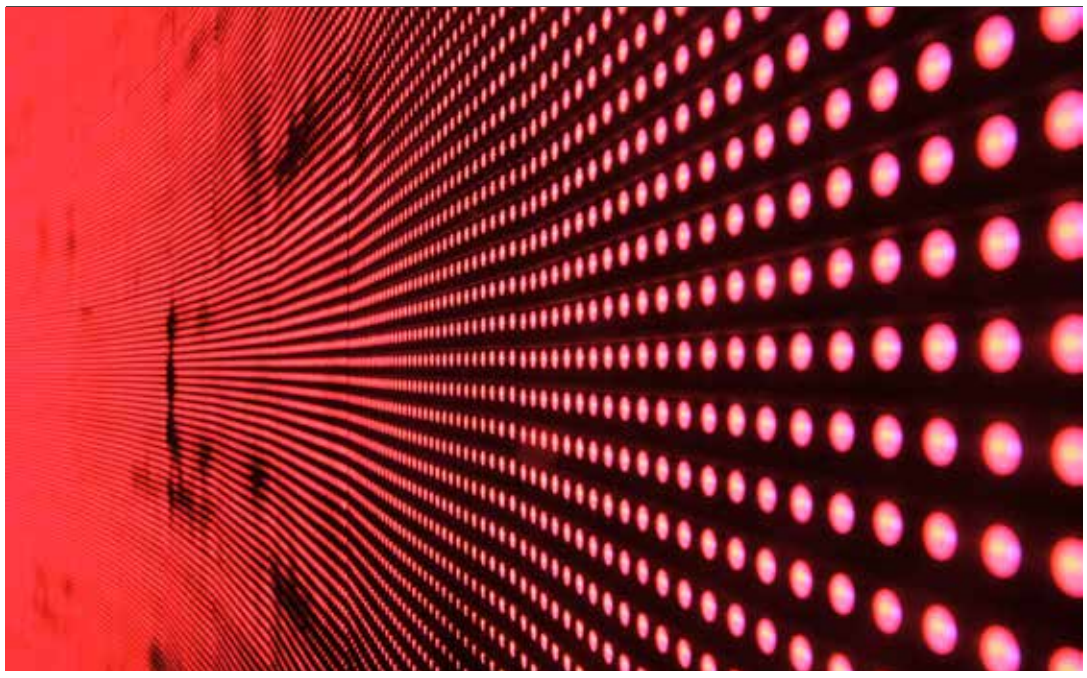
Fortunately, one of the company's most recent priorities had been an update to its data management strategy. Mike Fenna, Avado's chief technology officer, had established several principles for data working and had implemented them across the company.

The fundamentals were access to data, trust in people to access it and confidence to use the data in decision-making. This demanded greater accountability from everyone to care for company data and adopt behaviours that facilitated an agile approach to incorporating data more fundamentally into the business.

Avado rolled out Tableau, a data visualisation and analytics platform, across the company to ensure a single point of access to comprehensive data insight.

"Tableau gives a clear view of one truth, so everyone can make decisions quickly and at speed," says Mark Creighton, chief executive at Avado. "In a climate where decisions need to be made within moments and at high volume, data clarity could mean the difference between survival and extinction."

Commercial feature



Flexible development

Over the past few months, banks, social media sites, ecommerce stores and even gaming platforms have seen dramatically increased demand for their services

As data volumes have exploded, many enterprises have relied on cloud service providers to expand their capacity rapidly, a scenario that highlights the cloud's force-multiplier benefits. These include providing businesses with "enormous flexibility with very little anticipation required", says Alvin Richards, chief product officer at Redis Labs.

Redis Labs is the home of Redis, an open-source, in-memory database platform capable of delivering sub-millisecond response times. It's also the commercial provider of Redis Enterprise, which enhances the power of Redis to help companies to bring high-performing and reliable applications rapidly to market. It can be deployed on any cloud platform, on-premises, or in multi-cloud or hybrid environments.

By eliminating the need for a round trip to disk for each operation, Redis can support millions of requests per second, making it ideal for real-time internet-scale apps in financial services, healthcare, internet of things, adtech and other sectors.

More than 7,400 enterprise organisations, including Dell, Microsoft and Mastercard, currently rely on Redis for caching, leaderboards, real-time analytics, geospatial data, streaming and other services. And many of them are rapidly developing new applications to tackle complications that have arisen from the coronavirus outbreak.

To build these applications quickly, developers need to have all the tools in the toolbox available instantly, says Richards. The fact that cloud tools, including Redis low-latency caching capabilities, enable this instant availability makes the cloud a force multiplier not just for businesses that are seeing increased demand for their services, "but also for application development teams to accelerate or reduce the time to value for the business, because they're not having to find all these tools and draw them together".

Redis is a NoSQL database platform, which means it offers versatile data structures, ranging from strings and lists to hashes and streams, that are optimised for specific application scenarios and functionalities. Redis Enterprise can also be expanded with Redis modules that address a wide range of data-processing scenarios across almost every industry.

"Essentially, what these modules do is allow you to model your data in a way that makes the most sense to you as a developer and without any mismatch between your structures in the code and how those structures are stored in the database," says Richards.

Redis's sub-millisecond response times enable businesses to deliver personalised results to users in an instant. Gap, for example, uses Redis to provide its customers with real-time stock information tailored to their location. "That's a really simple way to understand the immediacy of large amounts of personalised data, because in that particular use-case the customer gets a personalised result, which leads them to that buying decision," says Richards.

> **You should be able to consume the services you want, the way you want, where you want**

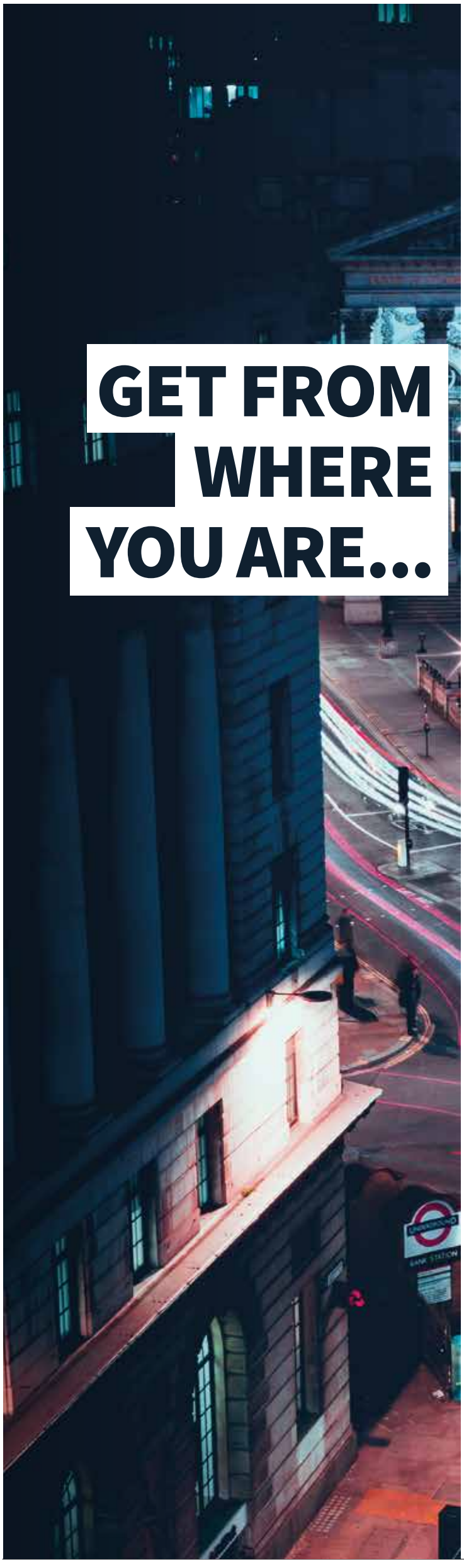
In addition to being fully in-memory, Redis Enterprise enables data persistence and high availability through replication and back-ups. Redis on Flash, meanwhile, extends Redis to a combination of both RAM, persistent memory and flash memory (SSD) through an intelligent approach to tiering, which means "you can actually store a much bigger dataset, again with those low latencies", he says.

Redis Enterprise's active-active architecture for globally distributed databases, meanwhile, is based on CRDTs, or conflict-free replicated data types. This easily resolves conflicts between pieces of data during simultaneous updates, making it simpler for developers to create responsive distributed applications. Finally, the recently released Redis Enterprise 6.0 also delivers all the core security functionality needed for large application environments.

Redis Enterprise is compatible with all the major cloud services, from Amazon Web Services to Microsoft Azure and Google Cloud, so users can unlock greater flexibility through multi-cloud deployments too. "You should be able to consume the services you want, the way you want, where you want," says Richards. "It shouldn't be a one-size-fits-all scenario." And as many businesses are finding, that kind of flexibility can make all the difference during difficult times.

For more information please visit www.redislabs.com/try-free

redislabs
HOME OF REDIS



CLOUD STRATEGY

Coronavirus accelerates shift in cloud deployment

There are convincing business cases for using public, private or hybrid cloud models under normal trading conditions. But now, in the midst of the COVID-19 crisis, your choice might impact your company's long-term sustainability

Dave Howell

With the COVID-19 crisis unfolding, enterprises are asking whether they have adopted the right cloud computing models for their business's processes and whether these will have to change rapidly in a post-pandemic environment.

Legacy workloads, ongoing security concerns, shifting patterns of network access and cloud sprawl, where multiple cloud deployments, often from different vendors, are in use, all impact decisions when choosing cloud services to deploy after COVID-19.

Businesses are now at the stage where their choice of cloud computing models is vital to their long-term sustainability and profitability. What the pandemic has bought into sharp relief is how a flexible cloud deployment is critical to enable enterprises to be agile and adaptable with their workloads, processes and the support they can give to remote workforces.

The cloud service models on offer are also expanding to meet increasingly focused and bespoke business models.

Chief executives are tasking their technology and information leaders to advance their cloud deployments away from one size fits all, to specialist service providers focused on their business niche.

Large-scale cloud infrastructure service providers, such as Amazon Web Services, Microsoft Azure and Google Cloud, are the workhorses for general workloads and application deployments. However, businesses are also looking past these infrastructure-as-a-service providers towards more personalised virtual machine services better suited to their needs as they assess what business means for them after COVID-19.

Sunil Prashara, president and chief executive of Project Management Institute, says: "Leaders always need to think customer first, especially as virtual work is now the new norm, and must reimagine their businesses. They need to be virtually agile and able to adapt to how business and work gets done from this point forward."

The near future will require a more subtle and personalised approach to cloud computing models. As businesses look past the pandemic, their choice of public, private or hybrid cloud will be driven by the new commercial environments they find themselves trading in.

Taking a holistic approach to their entire business need will result in the right decisions being made when choosing and deploying cloud services. Enterprise may have to reimagine existing service models, but also embrace new forms of cloud computing.

Insights from 451 Research indicate more than a third (38 per cent) of businesses are shifting their focus to hybrid cloud structures as a core component of their formal cloud strategy.

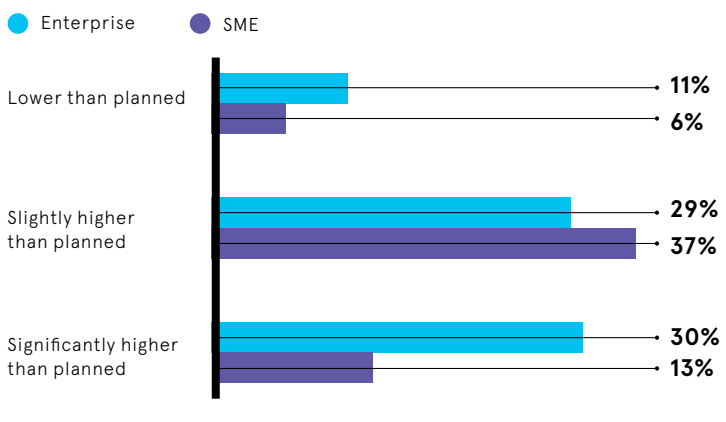
For many enterprises, particularly outside highly regulated industries where private clouds are often a prerequisite of trading, cloud services will need to be rationalised. In the rush to adopt cloud computing, the focus on the customer has often been lost with the cloud computing models chosen not delivering their expected benefits.

Paul Tacey-Green, cloud director at Amito, explains: "Scalability will figure higher up in decision-making. COVID-19 has shown how important flexibility is, together with ease of scaling. So public cloud will be more attractive and having that option to upgrade is essential for compliance and the cost-benefit.

"The crisis has been a lesson in staying ahead of the curve when it comes to cloud deployment. Having the option to ramp up capacity has been the difference in being able to run your business or not."

CHANGE IN PLANNED CLOUD USAGE DUE TO COVID-19

Global survey of cloud decision-makers



Flexera 2020


Stanislaw Pytel/Getty Images

So have businesses that have invested in private cloud made a fundamental mistake? Conversely, will those enterprises that embraced the hybrid cloud approach become leaders in their market sectors? The answer is more complicated than a simple yes or no. The question facing every company using or planning to use cloud services is which cloud platform they should deploy to gain maximum advantage and future-proof their enterprise's cloud services.

Indeed, Dave Bartoletti, vice president and principal analyst at Forrester, points out we need to be careful when defining hybrid cloud. "Hybrid cloud is not a third type of cloud," he says. "It's the situation companies are in when they use a combination of both public and private cloud resources. There are many different ways to deploy hybrid.

"In general, we expect companies to expand their use of public cloud, contract their spending on building private clouds and shift their hybrid balance to be greater on the public cloud side. This shift was already underway; the pandemic will accelerate it."

> **The extreme strain on IT during COVID-19 has exposed every IT organisation's unique breaking points**

Cloud vendors are also reacting to change. The established large-scale suppliers are already responding to the impact the pandemic has had across their customers' businesses. Is a more boutique approach to cloud services a clear trend?

Gartner predicts that, by 2023, leading cloud service providers will offer a "distributed ATM-like presence to serve a subset of their services for low-latency application requirements".

Eran Brown, chief technology officer, Europe, Middle East and Africa, at INFINIDAT, comments: "I believe the extreme strain on IT during COVID-19 has exposed every IT organisation's unique breaking points, and all organisations will learn and adapt based on their own challenges. Since the customers already working in hybrid models suffered the least, they will come out with the upper hand and others will align with their model."

The so-called new normal businesses are facing will mean an evolution of their cloud computing models. The mix of public versus private cloud and hybrid cloud deployments will be influenced by business processes, customer-facing services, support for mass remote working and how enterprises see their path in a post-COVID-19 world.


Mint Images/Getty Images

Cloud spotting

Private cloud
A private cloud is part of a business's existing LAN (local area network) and resides behind a firewall isolating the servers from the internet. Private clouds often, but not always, involve physical servers on a business's premises. They are usually adopted by companies in highly regulated sectors, such as financial services, as private cloud offers higher levels of direct control and security. Enterprises that want to maintain a level of control over aspects of data storage and application control opt for private cloud deployments.

Public cloud
The public cloud is characterised by services on offer from the established hyperscalers, notably Amazon, Microsoft and Google. Public clouds are fully remote servers accessed via a standard connection to the internet. They offer massive scalability, making them ideal for many customer-facing applications such as ecommerce. Businesses shift the maintenance of cloud infrastructure to the service provider, thus reducing costs. The public cloud does, however, mean reduced security as it uses a shared infrastructure.

Hybrid cloud
Mixing public and private cloud deployments is referred to as the hybrid cloud. Offering high levels of flexibility, hybrid cloud services have become almost the default cloud computing model for most businesses. Hybrid maintains some degree of control on-premises for sensitive data and applications, yet also allows the massive scalability of the public cloud when this is needed. Many businesses have taken advantage of hybrid to scale their cloud deployments. Maintenance and complexity, in particular, need to be carefully considered to avoid security issues.

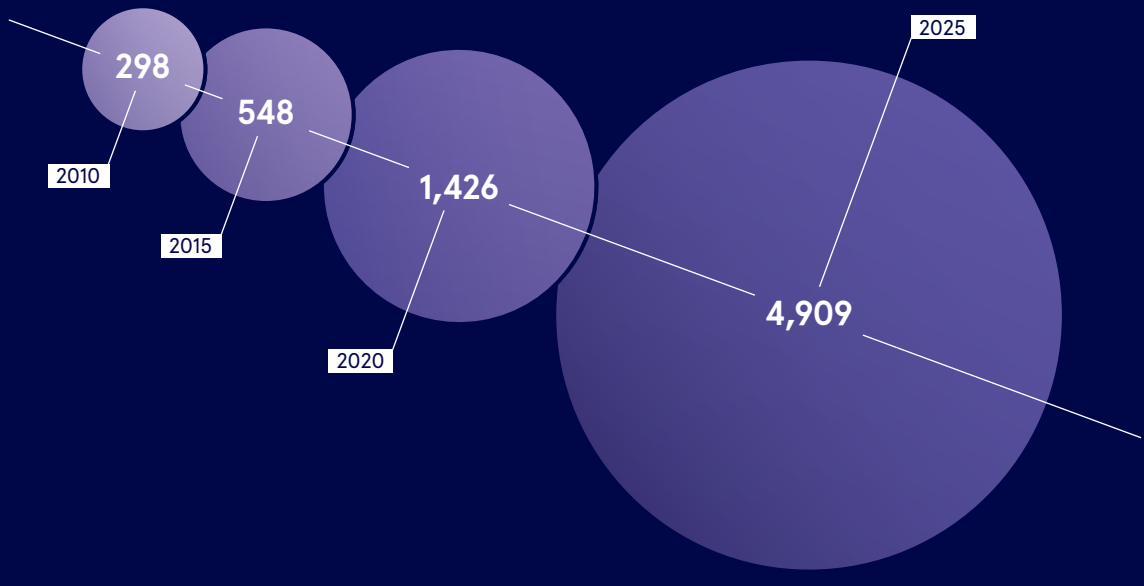
THE GROWING DATASPHERE

As the world becomes ever-more connected and our lives are transformed by smart devices and the ability to instantaneously access images, videos and information, the demand for cloud storage has soared. And, as evidenced by businesses' increased use of cloud computing over recent months to communicate and access work remotely, the reliance on public cloud datacentres will continue to grow

DAILY CONNECTED INTERACTIONS

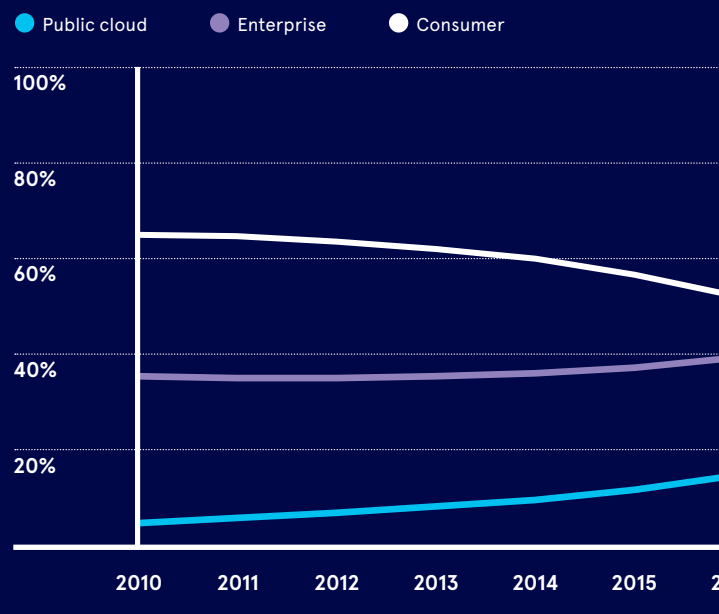
Average data interactions per connected person each day

IDC 2018



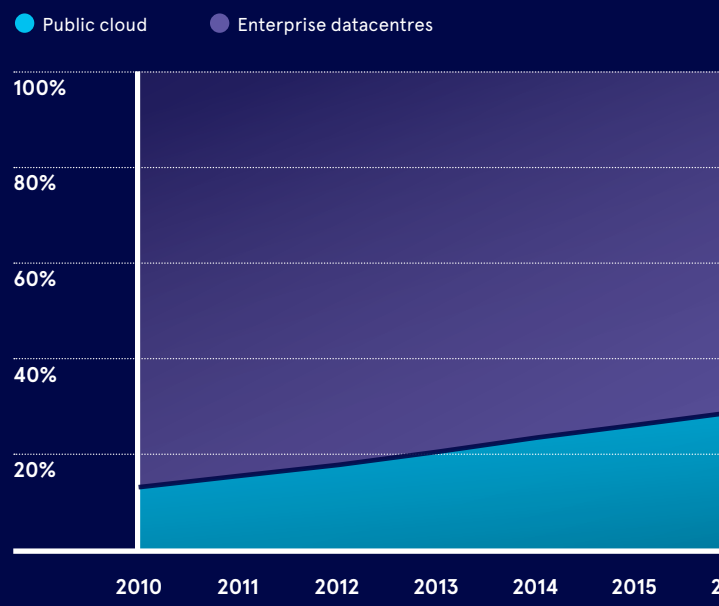
WHERE DATA IS STORED

Average data interactions per connected person each day



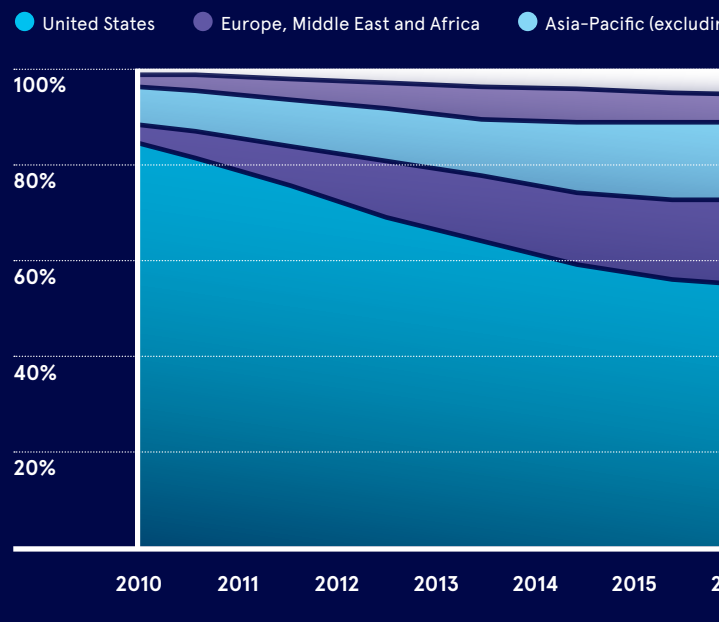
THE PRIVATE-TO-PUBLIC SHIFT

Estimated share of global data volumes stored in public clouds and traditi



WHO NEEDS THE CLOUD THE MOST?

Global share of cloud storage by region, and compound annual growth rat



5.3bn

estimated number of internet users worldwide by 2023, up from 4.2 billion in 2019

Cisco 2020

175ZB

estimated size of the global datasphere in 2025, up from 33 zettabytes in 2018

IDC 2018

49%

of the world's stored data will reside in public cloud environments by 2025

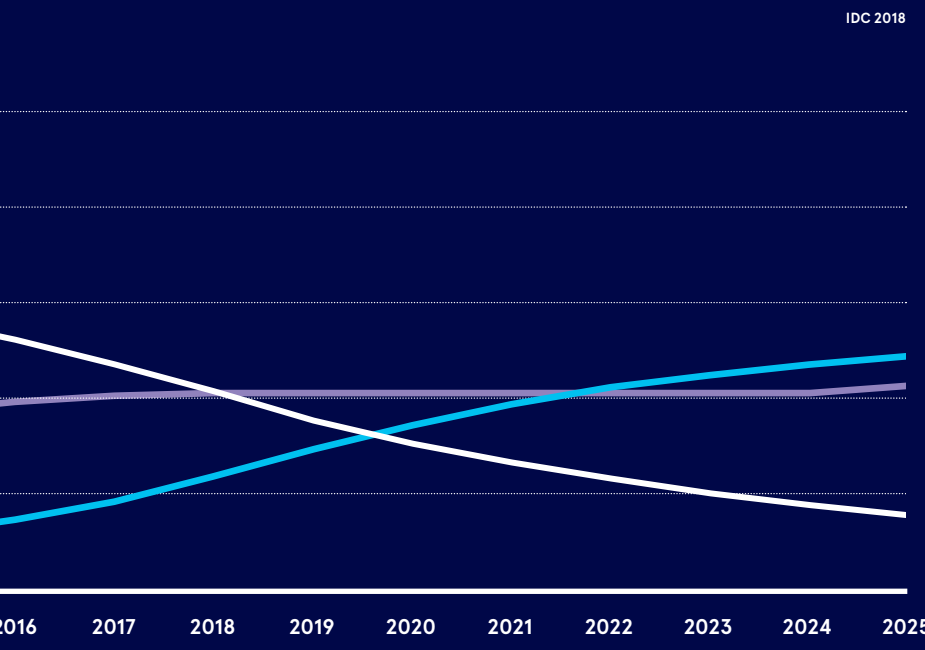
IDC 2018

47%

expected increase in public cloud spend by organisations in 2020

Flexera 2020

IDC 2018



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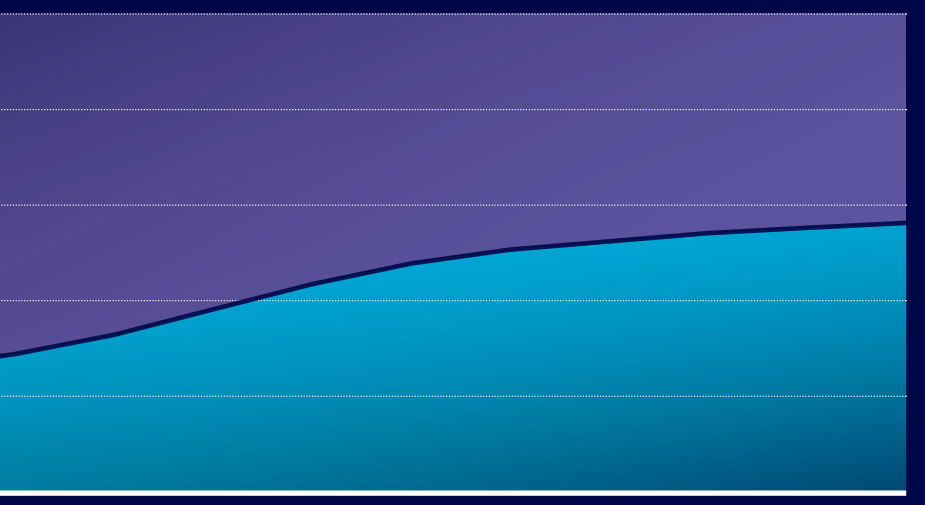

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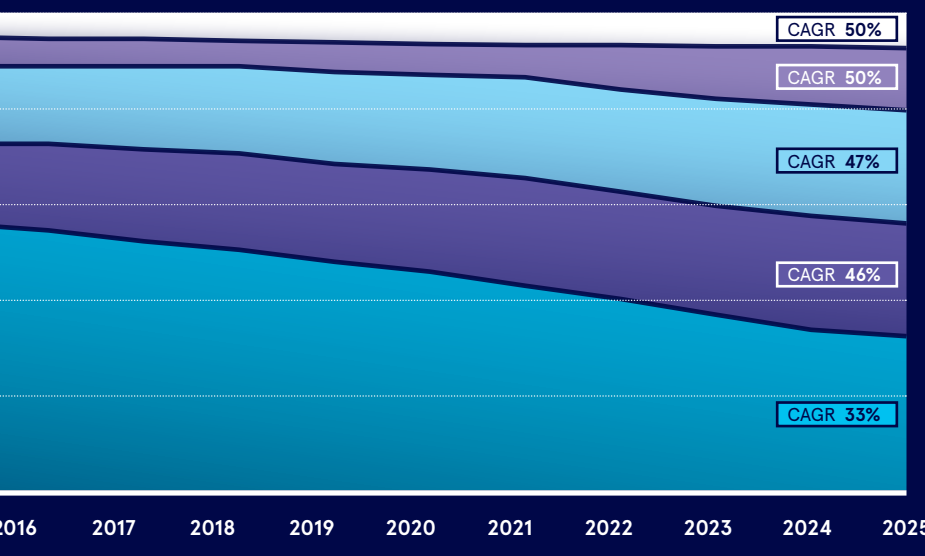
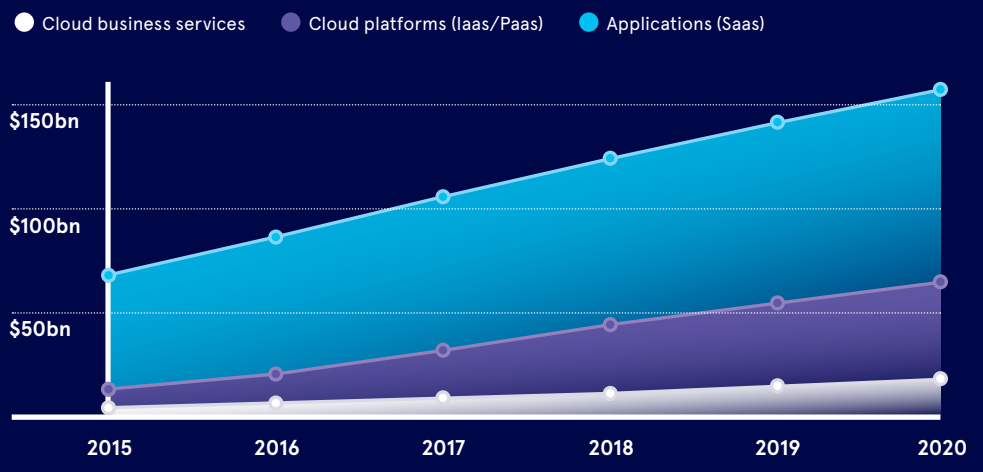


WHERE PUBLIC CLOUD BUDGETS GO

Global public cloud services revenue ($bn)

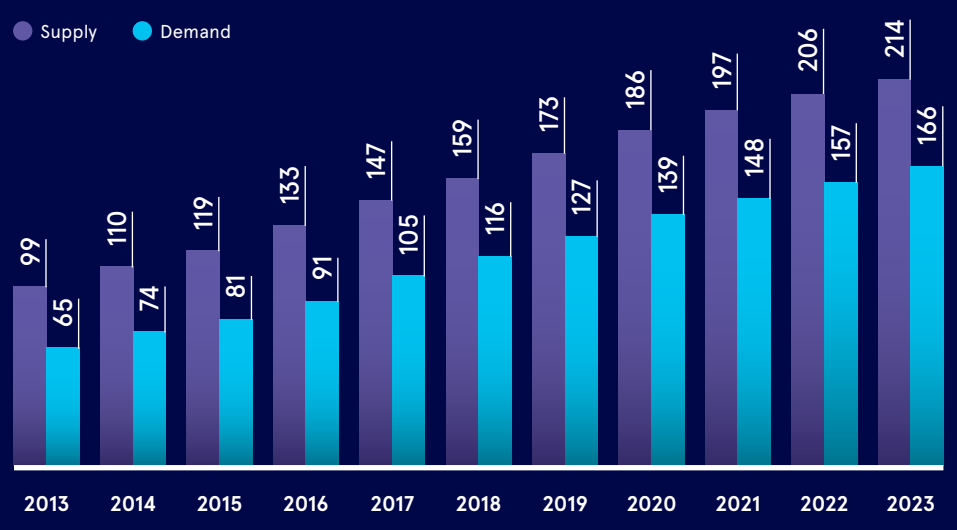
Forrester 2019



SUPPLY AND DEMAND FOR DATACENTRES

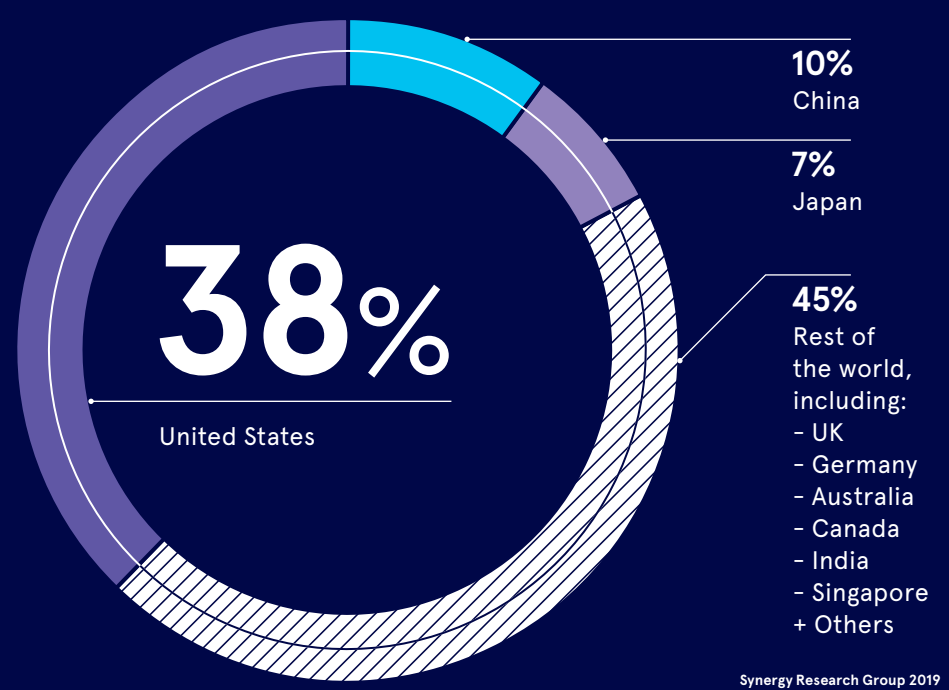
Global footprint of multi-tenant datacentres (million square footage)

Forrester 2019



WHERE THE HYPERSCALE DATACENTRES ARE LOCATE

Hyperscale plants are large-scale datacentres owned and operated by a mega cloud provider, such as Amazon or Microsoft; these figures were based on an analysis of the datacentre footprint of 20 of the world's major cloud and internet service firms in the third quarter of 2019



Synergy Research Group 2019

WASTE

Why firms are wasting their cloud spending

Enterprises big and small are investing in cloud services that aren't utilised, resulting in millions wasted each year, and the numbers are only likely to rise

Jon Axworthy

Waste not, want not. In challenging and uncertain times this reassuring refrain is one that we often return to as it reminds us to make the most of our resources. It's a phrase that's particularly relevant these days to enterprises investing heavily in the cloud as a critical part of their coronavirus response. But they are failing to identify that cloud waste could eventually become a limiting factor to success beyond the pandemic.

Forward-thinking businesses have, quite rightly, identified that cloud services are essential to a successful digital transformation, the importance of which has only been highlighted by the impact of COVID-19, which has forced them to become more agile. However, in the race to modernise their infrastructure rapidly, many are potentially overextending themselves in the cloud.

The 2019 European *Insight Intelligent Technology Index* (IITI) revealed organisations were allocating more than £29 million every year for cloud spending, but that 30 per cent of this money was bankrolling services laying dormant, resulting in £8.8 million wasted cloud expenditure annually. Further predictions from Gartner, released at the end of 2019, forecast cloud waste would exceed an eye-watering £14.2 billion in 2020.

Of course, since these figures were released there has been a global scramble by businesses to increase cloud capacity to deal with the extra demands brought about by their organisational response to the virus. The almost overnight shift to remote working has only added to the rapid adoption of cloud services as enterprises seek to relocate infrastructure to minimise disruption.

This suggests the numbers may have to be revised upwards by the time 2020 finally draws to a close. But why are so many digital transformation business models out of sync with their cloud services?

Ozioma Uzoegwu, lead cloud architect at systems integration company Insight, believes idle cloud estates are born out of ineffective planning.

"Organisations need to know exactly how they want the cloud to transform their business and help meet its goals before they move," he says. "They need to determine exactly what services they need to do this and exactly how they can obtain those services."

> **"Most resources are only used during the week and don't need to be running 24/7, which means they sit idle, but are still paid for**

The IITI highlights the importance of the planning stage when 39 per cent of respondents revealed that a proportion of their cloud waste could be traced directly back to planning issues, while 44 per cent identified trying to determine whether public, private or hybrid cloud was the best fit for what they were trying to achieve.

Successful digital transformation requires a clear understanding of what a business wants to achieve from the technology it's embracing, for example is it trying to increase agility or cut costs?

"Think about non-production resources," says Jay Chapel co-founder and chief executive of ParkMyCloud. "Most of these are only used during the working week and don't need to be running 24/7, which means for almost three quarters of the week they sit idle, but are still paid for."

Overprovisioned resources are also a problem that occurs during planning, according to Chapel, and in many instances a business will have been paying for virtual machines that are larger than needed for their workloads.

"Employees also need to understand exactly how the cloud differs from legacy environments," explains Uzoegwu, "so they won't make costly assumptions in procurement.

"Even if it plans perfectly, the enterprise still needs to have full visibility and control over its cloud environments. It needs to ensure it has the right tools for the job, not only to manage dynamic cloud environments, but the new approaches and technologies the cloud allows, such as microservices, containers, serverless computing and DevOps."

According to the IITI, 36 per cent of enterprises cited a lack of visibility as a reason for cloud waste, but this can be minimised with the adoption of artificial intelligence (AI) tools, says Michael Allen, vice president, Europe, Middle East and Africa, of software intelligence company Dynatrace.

"Organisations need the assistance of AI to understand what's going on in their cloud," says Allen. "They can then use that intelligence to automatically scale their cloud services up and down in line with their needs at any particular point in time. That way they can ensure they are only paying for the cloud services they need."

This is particularly relevant during the current global health crisis as its ripple effects prompt companies to purchase software in the cloud to help them maintain business continuity, making previously purchased software obsolete.

"When it's so easy to spin up, spin down or move applications and infrastructure, it can be tempting for individual business units to simply purchase what they need, when they need it," says Uzoegwu. "This can lead to a cloud sprawl with potentially duplicate services or services that are still being paid for long after they have stopped being of any use.

"Ultimately, for organisations to truly drive enterprise-wide agility, innovate faster and modernise the way they work, they need to rethink their approach to cloud and treat it like any other IT project."

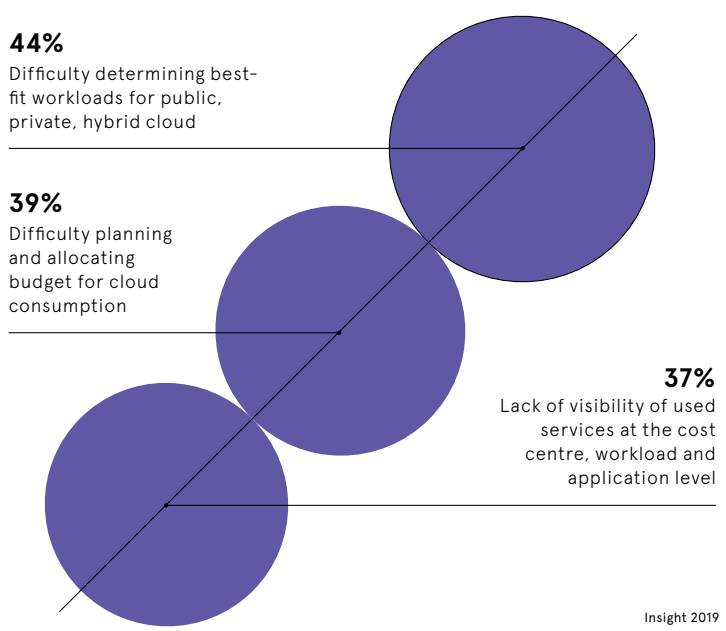
After all, moving to the cloud shouldn't be a leap of faith. It needs to be a well-disciplined and well-provisioned move, so a business can minimise cloud waste and ensure valuable resources, which should be working towards company growth, aren't evaporating into thin air.

30%

of the £29 million organisations spend on average each year on the cloud is not utilised

Insight 2019

TOP CHALLENGES FOR MANAGING CLOUD BUDGETS



Insight 2019

Coca-Cola European Partners build a single digital workforce

Flexibility is the key to adapting in a disruptive business environment and CCEP, the largest independent Coca-Cola bottler, is leading the way with a digital, mobile workforce

The coronavirus pandemic has caused seismic disruption to businesses. The sudden need to enable vast remote working has caught many off guard, particularly those with legacy IT.

Coca-Cola European Partners (CCEP) is one enterprise that could have easily found itself among those organisations in reactive mode, were it not for its proactive approach to building a truly mobile workforce. Formed through the merger of three separate Coca-Cola bottling firms, the combined organisation has made it a priority to deliver a single unified digital workplace for its 23,300 employees across Europe.

Given the wide-scale incompatibility of CCEP's legacy systems and the vast geographic disparity between the original company platforms, including around nine email systems and twelve collaboration platforms, the challenge was achieving this vision quickly and cost efficiently. Trying to bring everything together involves a huge amount of duplication and complexity, so CCEP had to decide how to simplify this and best connect its users.

"Our original thought was to go greenfield, build new and move everybody to it," says Neil Charlton, director of technology solution delivery at CCEP. A common approach among big organisations, this typically involves engaging a large consultancy firm that steers towards the adoption of standard operating models. It didn't take long, however, for Charlton and his team to realise this wasn't the right journey for CCEP.

"The big providers in the industry are moving to commodity solutions, which works well if you're willing to build a new solution and move everybody," Charlton adds. "But if, like us, you want a hybrid model that gives you stability as you integrate legacy with your new environment and enables users to transition through that smoothly, then boutique consultancies are a better option. They have the experience to do the integration, deal with the complexity and work through all the challenges."

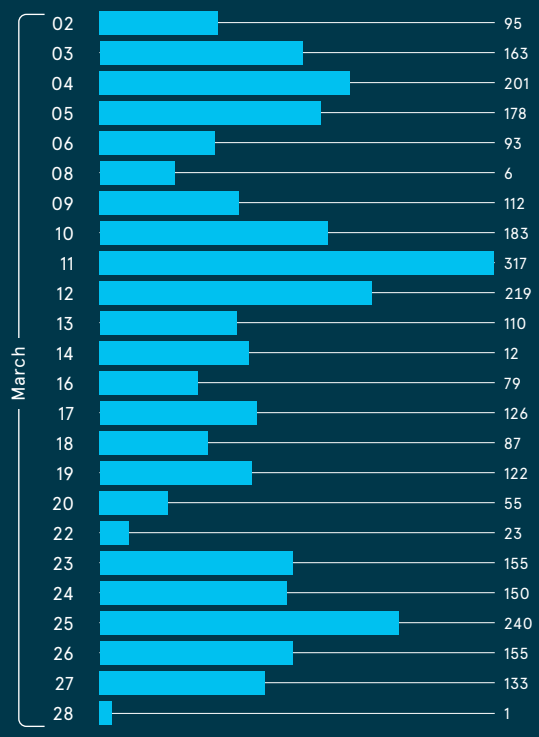
COCA COLA PROJECT

10,000

workstation and mobile migrations to digital workplace in less than

4 months

COUNT OF COMPLETED MIGRATIONS BY DAY



Gartner reference cost of digital workplace transformation = up to

$2,000

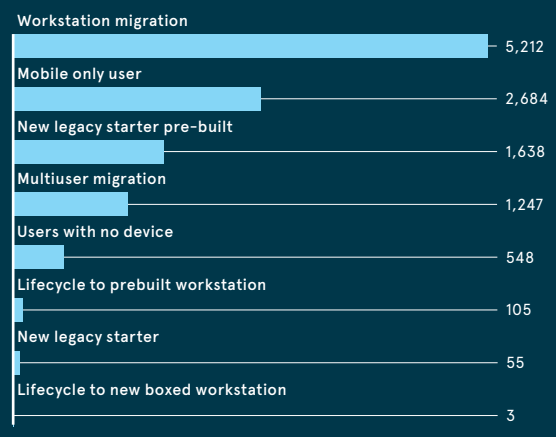
per desktop

Speed + reliability = smaller team needed = costs can now be below

$300

per desktop

COMPLETED MIGRATIONS BY SCENARIO



Dashboard AI

"Nobody knows what the new normal is going to be as we emerge from this pandemic, so businesses need to make sure they're geared up to be flexible and agile," says Simon Reid, director at OKTiK Technology.

"The ability to be able to change at pace will be vital. Many organisations don't know if their workforces are going to be mobile, home based or in the office. How do you cope with that uncertainty? You build a system that's agile, flexible and allows you to adapt quickly to whatever the model becomes."

Doing this while reducing costs is equally important. "Having absolute clarity and visibility of project costs and momentum is critical, and that's what our dashboard-driven artificial intelligence (AI) capabilities enable," adds OKTiK director Graham Brant.

"In real time, you can access a concise view of project progress, transition activities and where any issues exist. The dashboard can be tailored to the audience, from management to technical, enabling an accurate way for the project to collaborate and report efficiently."

This realisation saw CCEP collaborate with boutique consultancy OKTiK Technology to design a digital workplace programme with automation at the heart. OKTiK created solutions that connected systems within CCEP, which many people thought couldn't be connected, and the speed and predictability provided by the OneTiK Automation Platform negated the need for CCEP to bring in large teams of IT people to migrate users.

This created a foundation that then allowed CCEP to integrate and establish a transition path to its new environment, built around Office 365 and Windows 10.

OKTiK's tailored approach to meeting CCEP's objectives, as opposed to just advocating standard operating models, is best represented through the unified project management dashboard it built. Powered by the enormous amount of data and intelligence being automatically collected and managed from the end-to-end automation process, the dashboard provides a real-time view of what is happening. This enables CCEP stakeholders to streamline the project, predict issues and resolve challenges promptly.

> **To deliver complex change, you need to work effectively with third parties; OKTik truly integrate with us, creating a one-team spirit focused on solutions**

The programme has been the single biggest enabler of remote working for CCEP. Hitting the velocity of migrations at the start of January meant that by the time a global pandemic was declared in March, momentum was already strong enough to enable a seamless mobile workforce. Migrations grew from zero to 700 users in two weeks and this is now approaching 400 a day, which would be impossible to do manually. Meanwhile, Office 365 has enabled its staff to share and secure data more effectively.

"With over 23,000 people to migrate, and all the back-end complexity, we needed real-time reporting to prove it's working and automated," says Carlton. "The dashboards allow us to report to the chief information officer or chief executive on the status of migration in every geography at any time and fix any problems as they occur.

"They are used every day and through the COVID-19 crisis have actually helped to create real energy as everyone can see the counter ticking up in real time. To deliver complex change, you need to work effectively with third parties; OKTik truly integrate with us, creating a one-team spirit focused on solutions."

While every large company's IT environment is different, OKTiK has developed a construct whereby it can go into any organisation with a proof of concept and within four weeks enable them to see what they can deliver with the full automation platform. The construct is flexible enough to adapt to unique environment challenges and, through an evolving partner ecosystem, its capabilities are extending rapidly.

For more information please visit www.oktik.net

OKTiK

Coca-Cola EUROPEAN PARTNERS

COMMUNICATIONS

Keeping isolated workers together

How cloud-based communications have given five different companies a lifeline during lockdown

Sally Whittle

HotPod Yoga, which has pivoted to virtual classes amid lockdown, raised just under £100,000 in fundraising for the NHS with 14,000 people attending one class mid-April

1 Hotpod Yoga: reaching out with cloud classes

Every Thursday, 20 or so people gathered inside a Hackney yoga studio. It's a balmy 37 degrees, the walls pulse with light and a soothing soundscape can be heard.

It is a formula that has made Hotpod Yoga one of the UK's most successful yoga companies with more than 80 franchises. But how do you deliver that when a lockdown closes all your studios? The answer lies in the rapid deployment of cloud services, says Max Henderson, the company's chief executive.

When the government lockdown was announced, Hotpod Yoga staff all started working from home. Within 48 hours, the company had rolled out a Zoom video conference yoga schedule. "Obviously we can't replicate the full experience online, but we can offer customers a high-quality class with a teacher they know and trust," says Henderson.

More than 800 customers signed up for the first Zoom classes, suggesting Hotpod Yoga made the right choice. Meanwhile, employees are using a combination of cloud communications services to continue to manage operations. "We are using Slack and Zoom to communicate with franchisees, along with Xero to help collaborate with financial staff who are working from home," says Henderson.

Staff uptake has been enthusiastic, but he is aware that it may tail off over time. "I think in the early weeks there's an adrenaline rush, almost like people are in shock and will pull together to achieve tremendous things," says Henderson. "But we're starting to now settle into a new normal and those cloud communications are just becoming embedded."

The company has even used its virtual yoga classes to raise just under £100,000 in fundraising for the NHS with 14,000 people attending one class remotely mid-April.

2 Portview: cloud comms are a perfect fit

When interior fit-out specialist Portview closed all its sites on March 24, managing director Simon Campbell knew business as usual wasn't an option.

The company works across the world designing and fitting interiors for stadiums, retail spaces and hotels. Overnight, the company furloughed 40 per cent of its employees and moved the remainder to home working. All employees have access to cloud-based video calls with the company's occupational nurse, in case they are in need of support.

While most clients have paused projects, the company is focusing on future potential projects and employee development. To achieve this, Portview is using Microsoft Teams for collaborative working and meetings, alongside a cloud-based project management tool that enables complex computer-aided design documents to be shared across teams, while computer-generated "walk throughs" can still be shown to clients.

Meanwhile, employees can also access a cloud-based social intranet that offers a platform for informal communication and virtual coffee breaks. The hub has quizzes and games, with a host of cloud resources, including guitar lessons and worksheets for children who are currently learning at home.

The hub helps employees feel they're not just "punching the clock", says Campbell. It helps staff feel supported and part of a team. "Even if people are furloughed, they've having the same problems as the rest of us and we want to make sure they're OK," he says. "Good communication is vital in helping to reduce that anxiety."

> **"Even if people are furloughed... we want to make sure they're OK. Good communication is vital in helping to reduce that anxiety**

3 MNDA: relying on unified comms for support

The COVID-19 outbreak arrived as the Motor Neurone Disease Association (MNDA) had completed a project to adopt more agile working practices. It meant the small charity was ready to support its 190 employees working from home, thanks to a cloud-based telephony system from NFON and Microsoft Teams.

The cloud communications platform, which was completed in January 2020, reduces the cost of home working and improves


Clive Mason/Getty Images

flexibility. "Workers can have calls and messages diverted to any device, and the integration between Teams and NFON means there's just one interface for all call management and messaging," says Simon Cooper, head of ICT at MNDA.

Calls to the charity's helpline have rocketed in recent weeks, with people concerned about how to get support for themselves or family members who are quarantined and living with MND. Using cloud telephony means the helpline has remained open, with staff taking calls from home.

Volunteers are using the platform proactively to contact 1,500 people the charity has helped in the past, ensuring they have the support they need. "The fundraising team are trying to keep supporters engaged on Zoom and we've had some success with virtual quizzes," says Cooper. "It's also about encouraging people to have a virtual coffee break and a bit of banter with colleagues. The platform is critical in making people feel connected."

4 Promo Veritas: cooking up culture

Stuck at home, the team at Promo Veritas tried baking tartlets as part of a companywide Zoom cooking competition. It's probably not what you'd expect from a consulting firm that helps brands to run promotions, but in lockdown being creative can help build team spirit.

"My wife is a chef so she'll be doing a demonstration, then people will submit photos of their tartlets and we'll pick a winner," says Jeremy Stern, the company's chief executive.

The weekly Friday Fun challenge is just one way Promo Veritas is using cloud services to keep its employees engaged and productive during the lockdown. The company is also using cloud communications to support more typical business communication. Around 150 employees are currently working from home, using a VPN to access cloud-based email, along with Microsoft Teams and Dropbox.

With cloud-based email, people can drop messages relating to a specific brand into a shared Dropbox folder that all team members can see. This means someone starting work can easily catch up with anything they might have missed, says Stern. This is vital because some of the team are working reduced hours, so not everyone is working on the same days.

Each week there is a staff talk on Microsoft Teams. Everyone is expected to attend and invited to share their good news, current projects and other updates. Stern likes that issues tend to be quickly "done and dusted" on Teams, rather than sitting in emails being bounced from person to person.

5 Moleskine: efficiency, productivity and creativity

Moleskine has been hit harder and longer than many companies by the arrival of COVID-19. With products sourced from China, manufacturing in Northern Italy and a corporate office in America, it has managed to be at the heart of three pandemic epicentres so far. As a result, some employees have already been working from home since February.

Cloud communications are critical to the company's ability to continue doing business, says Peter Jensen, senior vice president, and chief brand and innovation officer, at the stationery company. "It has been hard, but we have been using Slack, Dropbox and Zoom for some time, simply because of the highly distributed nature of our company," he says.

Slack is used almost exclusively in place of email, because it tends to encourage faster, briefer messaging. Workers can post shared files on Slack and have visibility of whether the recipient is online and has seen the document. Dropbox is used to share important documents and agendas ahead of meetings. This is important in reducing the risk of "Zoom scope", when meetings go on too long, says Jensen.

He thinks the pandemic has changed how Moleskine will approach remote working and business continuity in future. "The business case used to be very much around efficiency and productivity, but it's now also about giving people time to think and space to be creative," says Jensen. "I think we will also be focusing on mindfulness and having a more balanced culture."

COVID-19 chases cloud into its latest model of adoption

A third era of cloud adoption is being accelerated by the coronavirus pandemic

Following early IT-led adoption programmes and discreet business experimentation with the cloud, we are now entering a third era of cloud adoption.

This era reflects a more connected and comprehensive approach to cloud migration that includes an enterprise-wide modernisation of culture that truly capitalises on what cloud can bring. It reflects a complete exploitation of cloud native capabilities.

Significantly, it's also a phase that's being accelerated by the impacts of COVID-19, as organisations seek to ensure a more adaptable service proposition and full continuity of their services during the crisis.

Cloudreach has been guiding clients of all sizes towards this "new norm", regardless of crises, for more than a decade, its deep heritage in cloud helping customers of all sizes and sectors to bring adaptable technology and culture to their operations.

"Cloud can be disruptive and we help to manage that disruption to drive maximum value," says the company's head of strategy and professional services Dave Chapman. "We have a deeply experienced advisory practice, seasoned in helping customers understand all aspects of their modernisation from technology, to financial frameworks, to cultural change.

"Our scaled migration factories help customers migrate to the cloud, at pace, at scale and with requisite security and control. Simultaneously, we help them design new cloud-native apps, data and analytics to drive innovation and revenue when in the cloud.

"This proposition suits the third era of cloud adoption we're seeing, which is now being accelerated by the impacts of COVID-19 on organisations, their services and continuity efforts."

> I expect that 'pandemic' will be number one on every business continuity scenario planning list for some time

Chapman has witnessed varied positive and negative impacts of the pandemic for different sectors, but notes many organisations are in the middle, simply trying to weather the storm.

He explains: "Numerous organisations have had to adapt to ultra-granular remote working for the first time. This has involved rushing investments into laptops and tablets, massive upgrades of virtual private networks, a rise in the use of collaboration tech, such as Zoom, and a rapid attempt to move critical applications out of their physical supply chains to the cloud."

Following this initial-shock phase of readjustment, Cloudreach has noticed the majority in this group are now entering a more thoughtful period, however, when the focus has shifted to a more strategic plotting of how to invest for the future. It is through this phase that the significance of scaled, accelerated continuity-led transformation is set to come to the fore.

"I strongly suspect that 'pandemic' will be at number-one of every business continuity scenario planning list for some time," says Chapman. "Previously, cloud transformation business cases were either cost driven or innovation/agility driven. We are already seeing a shift to a focus on resilience and continuity-led transformations, where organisations can adapt their environments to support workforces and markets in a way that can be dialled down to zero or up to infinity depending on the situation."

This model and clients' current feeling that time is of the essence fits into Cloudreach's scaled migration offering, which revolves around getting to the cloud as a matter of urgency and enjoying the wonders of it once there.

"Doing too much during the actual migration can end up in a slow and expensive process as you're incurring costs in two environments," says Chapman. "What we do is set up very competitively priced migrations to get the technology moving quickly, while ensuring each application is on the right path and given the right level of transformation during the migration.

"We also help with the wider impact of the change so organisations don't get hit by a shock of cultural upheaval."

Cloudreach believes that COVID-19 is simply accelerating the level of transformation that most enterprises should have been considering already.

"If it is the case this situation forces companies to change their culture to one that is more resilient, adaptable and agile," Chapman concludes, "then it will inevitably help them beyond this current troubling time as they accelerate to a new way of thinking in this third era of enterprise-wide modernisation."

For more information please visit www.cloudreach.com/en

Cloudreach™

Accelerating the journey to autonomous everything

The need to operate and support vast remote working in a pandemic environment is causing companies to ramp up their plans to embrace intelligent transformation

Businesses are operating in an unprecedented time of turbulence and disruption. Emergence of COVID-19, and subsequent lockdowns around the world, has brought industries like hospitality and tourism to their knees, though the power of technology has kept many others running.

The ubiquity of fast internet connectivity and cloud services has allowed most companies to continue operating with their workforce at home, which would not have been the case had the pandemic occurred twenty or even ten years ago, when major remote working would have been an almost impossible challenge.

That's not to say the transition to remote working has been easy. Far from it. Just one in twenty UK employees worked mainly from home in 2019 and more than 70 per cent didn't work from home at all, according to the Office for National Statistics. This means the majority of organisations were not set up with the appropriate technology systems, policies and security controls to enable home working on such a large scale.

The need for secure and immediate remote access to networks, applications and services, and infrastructure that can cope with the increased workload, has placed enormous strain on IT departments.

"Lockdown was totally sprung on businesses," says Scott Dodds, chief executive at Ultima, an automation and infrastructure service provider. "Most companies had a few days, if they were lucky a week or two, to make it work.

"Even a tech company like Ultima was somewhat in the dark about stress testing some of our systems because we've never put the whole organisation online for a week and tested it. I don't think anybody has. They've tested pockets, bits of applications and services as part of a business continuity plan, but the way it was all thrown at everybody within a few hours or days means it was something very few had planned for. Everybody's been learning as they go.

"Business continuity is instant. Either it works or it doesn't. If it hasn't been working, then how do you fix it in real time? There has not been this kind of plan to do it. It's just whatever it takes to get the services and capabilities of your employees up and running as soon as possible.

"Ultimately, intelligent platforms drive intelligent transformation. But who drives that transformation? The chief information officer? The chief financial officer? Right now, the answer is COVID-19, plain and simple.

"A lot of companies are waking up to the fact remote working can be very effective, but there is more they need to do to make it robust and secure. Cloud and automation hold the key to doing that with maximum flexibility and agility."

Cloud has transformed business operations in the last decade, enabling workforces to be more productive and agile. It also allows organisations to reduce their infrastructure costs, offering the ability to flex up and down according to current needs and detect idle services, though only if they have the right skills and know-how. The manual processes required to operate workloads in the cloud are often fraught with human errors leading to delays, spiralling costs and security vulnerabilities.

Seven in ten IT decision-makers quizzed by the London School of Economics said their company had lost money due to a lack of cloud expertise and American computer software company Flexera estimates wasted cloud spend stands at 35 per cent.

Automation is the crucial ingredient. By automating maintenance, security and support requirements, the benefits of the cloud can be delivered without the operational pain points.

To support companies in the current environment, Ultima has launched Autonomous Business Continuity (ABC). The solution allows organisations to inoculate their business-critical environments with automation services immediately, achieving low-cost, software-driven cloud disaster recovery in three hours, remote working in three days and a full autonomous cloud datacentre in three weeks.

Meanwhile, Autonomous Edge, Ultima's product for workforce automation, provides powerful capabilities for companies to manage devices and applications remotely.

The autonomous cloud datacentre is provided by Ultima's Autonomous Cloud platform, which improves business-as-usual activities rapidly by monitoring, managing and optimising cloud environments without the need for agents. Running infrastructure in the cloud is typically 50 per cent cheaper than on-premise infrastructure for small and medium-sized or mid-market companies, according to Ultima, and Autonomous Cloud is on average three times cheaper than having your own skilled-up cloud team in-house.

The platform takes the existing virtual environment and builds it in the cloud in minimal time, before managing the migration in days, supported by artificial intelligence techniques. Even a company with just several dozen virtual machines would ordinarily require more than six weeks of professional services to migrate manually.

Once it's up and running, the autonomous cloud service provides all the management, patching, monitoring, dashboarding and reporting within the software. It also enhances security, utilising machine-learning to analyse trends and create alerts, with automatic patching.

"The companies that don't have this kind of autonomous cloud environment, set up for remote working and flexibility, will almost certainly be left behind in the new normal that emerges post-COVID," says Dodds. "It's not just about enabling remote working, but allowing you to manage your business in a more flexible and agile way, and to be more innovative.

"Clearly, businesses that were already set up in this way, and we work with hundreds of them, have experienced much fewer issues and less friction during the pandemic. That has meant they can focus on creating serious competitive advantage.

"Our ABC offering takes away the requirements for all those people and skills you'd normally need to provide IT. It releases the time for what your technical people should be doing, which is managing your app layers and business innovation and projects that will really give you that crucial competitive advantage.

"Managing core infrastructure is just not something you should be spending a lot of money on. It's expensive enough as it is just to have infrastructure there ready for you to use, but to then add layers of management or monitoring and other elements on top that are not software delivered is a heavy expense. We release some of that time and money so your IT department can focus on the things they should be doing, which is driving innovation in the business."

Through Autonomous Cloud, Ultima is helping mid-sized organisations to transition effectively to the cloud, enabling them to reduce costs while optimising business performance

For more information please visit https://info.ultima.com/raconteur

ultima

AUTONOMOUS CLOUD

Autonomous Cloud is Ultima's solution to provide cloud customers with a platform for monitoring, managing and optimising their cloud environments.

40%

more efficient to use Autonomous Cloud in detecting potential issues compared with a traditional management or monitoring tool

Ultima/Explore WW 2020

AUTONOMOUS MIGRATE

Autonomous Migrate is our solution to enable simplified and automated migration of some or all on-premises workloads into the cloud, where an enterprise-grade, best practice-built Azure environment with migration capabilities is included.

50%

cheaper on average to run your infrastructure in the cloud compared with running on-premises for a small-to-medium or mid-market sized customer over a six-year period

Ultima 2020

AUTONOMOUS EXTEND

Autonomous Extend provides customers with an enterprise-grade, best practice-built Azure environment through automation. Everything is ready to go out of the box, from firewalling, networking all the way to backups.

10 days

Traditional build and documentation time for Azure setup

<3 hrs

Autonomous Extend

Ultima 2020

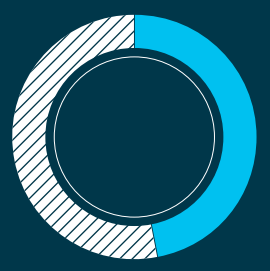
AUTONOMOUS DR

Autonomous DR is made for customers who are currently concerned about their disaster recovery or business continuity capability around critical services on-premises

1 in 4

IT professionals have never tested their DR strategy for critical resources

Spiceworks 2018



47%

of companies have concerns about using the cloud due to lack of skills

Barracuda 2019

53%

say they cannot test their DR strategy due to inadequate resources

Spiceworks 2018

Wu Dongjun/Visual China Group via Getty Images

SUSTAINABILITY

Water-saving solutions needed as storage heats up

Large-scale data facilities use billions of gallons of water to cool systems, so will this environmental problem only worsen as the world becomes increasingly reliant on the cloud?

Sanjana Varghese

Datacentres are a crucial part of modern infrastructure, particularly as the global population moves their lives online, from work to play. But the environmental impact threatens to degrade and devastate datacentre locations.

According to the latest US research, datacentres could produce up to 14 per cent of the world's carbon emissions by 2040. But simply operating a datacentre also requires an enormous amount of water which, when depleting local supplies, can become a difficult issue for surrounding regions.

In August 2019, Google announced proposals to build facilities in the desert region of Arizona and inked plans with the local water supplier to guarantee it one million gallons of water a day to cool the facility. At peak times this could rise to four million gallons daily. To put these figures into perspective, the typical household in Arizona uses up to 15,000 gallons in a whole month, according to the Arizona Municipal Water Users' Association.

In April, a legal filing in Red Hill, Texas showed Google wanted as much as 1.46 billion gallons of water a year for a new datacentre by 2021. This, according to the Texas Water Development Board, would represent a significant increase in the surrounding region's overall annual supply.

But why do datacentres require so much water? The basic premise is that using cloud storage leads to activity in the servers, which generates physical heat as a result of the amount of energy used. As the temperature increases, servers may slow down or malfunction, which is where cooling towers use the process of adiabatic cooling – evaporating water to remove heat –to keep processes running smoothly.

"A datacentre's job is to provide raw material: convert information into useful data and the by-product is heat," explains Tate Cantrell, chief technology officer at Verne Global, a datacentre company based in Iceland. "What we want to do is get rid of the heat, so the server can cool and last for a long time."

As demand for these services increases, whether that's more people using Instagram every day or attending virtual meetings on Zoom, more central processing units and cores are also packed into datacentres, which leads to server densities and increased demand for the water necessary to cool these systems.

"It's very clear that from the standpoint of society and technology, we need real action," says Cantrell.

But efforts to reduce water usage are underway at many companies. Facebook's environmental report in 2018 detailed its method of using air from outside a datacentre in its cooling towers. The air, at the right conditions, enters the datacentre, warms up as a result of the heat generated and then is recirculated or exhausted outside. The method enabled the social media giant to cut its datacentre water usage in half.

Aerial view of the construction site of Tencent's biggest data centre in Anshun, Guizhou Province of China

Microsoft is trying the radical approach of building a datacentre underwater off the coast of the Orkney Islands, taking advantage of the cooler sea temperatures to cool its servers. While the plan, dubbed Project Natick, is still in phase two of a feasibility study, the data storage facility has been up and running since mid-2018 and is being used by 18 different departments at Microsoft.

In Atlanta, Google is using waste water, unfit for consumption by humans or animals, to minimise the effect on local drinking water supplies. Meanwhile, loop systems, where the same water is evaporated, condensed and then reused, have been incorporated into many datacentres worldwide.

> **It's very clear that from the standpoint of society and technology, we need real action**

38%

of the world's large-scale datacentres are located in the United States

Synergy Research Group 2019

CyrusOne, a real estate investment company, in March announced that its Arizona datacentre was "net water positive" through an air-cooled chilling system. It also partnered with a local organisation that worked on issues around water supply to restore water flows in excess of the amount the datacentre used in 2019.

Other companies have made unorthodox choices when it comes to location. Nautilus Data Technologies built a datacentre on a yacht, which floats off the coast of California and uses ocean water to coo its servers, while Facebook owns a 27,000-square-metre facility in northern Sweden, close to the Arctic Circle.

Verne Global set up shop in the Icelandic town of Keflavik because of its existing industrial infrastructure. Iceland's electricity and heat supply is 100 per cent renewable and the year-round monthly average temperature ranges between -1C and 10C.

"We started Verne Global because we wanted to be an example of how a datacentre could promote proper climate action," says Cantrell. "We were able to take advantage of being positioned in Iceland in the datacentre design."

Building datacentres in places with lower temperatures can be effective in mitigating their environmental impact, though location can only go so far in reducing energy consumption. To maintain an expected service level and cope with demand, datacentres can't always be in remote locations.

But even datacentres located near cities can reduce their water usage. Equinix, a global data platform company, has a Toronto-based facility which draws cold water from Lake Ontario, a local water source that isn't used for drinking water.

David Watkins, solutions director at VIRTUS, a datacentre operator with four sites in and around London, points out that all datacentres often operate 24 hours a day. "The UK has a temperate climate, especially overnight, and we're not taking water from the main supply," he says. "We can use ambient conditions, without mechanical cooling, to chill the air, and we use what heat we can, before it cools down, for example heating parts of the datacentre where people work."

As pressure grows on the world's datacentres, the industry is facing a high stakes stress test, but solutions to mitigate datacentres' environmental impact are becoming more widespread. With the right information and sufficient impetus within companies, datacentres could yet demonstrate that an interconnected world doesn't have to come at the expense of the environment.

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