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EVERYTHING  
XaaS  
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# 'Covid-safe' solutions help return to work effort



**Enterprises across the UK can now implement social distancing, contact tracing and sanitation procedures to enable a safe return to work, thanks to new solutions from O2 Business and a next-generation technology firm.**

As lockdown eases across the nation, businesses are re-evaluating the set-up they had in place before the coronavirus pandemic spread to these shores. While some enterprises have the luxury of migrating toward more home-working, others need to find a way to welcome back staff without putting lives at risk.

O2 Business announced a new suite of digital solutions to help get people and businesses back to work safely, building customer confidence. Virtual queuing, staff scheduling and appointment booking technologies have proved successful in allowing O2 to reopen its retail stores, so these solutions are being offered to a range of O2 customers including retailers, supermarkets, stadia and healthcare businesses. The technology is provided by Rotageek.

"Digital has been disrupting business models for decades, but Covid-19 has turbocharged the changes we are dealing with," said Jo Bertram, managing director at O2 Business.

"We believe that innovative technologies like virtual queuing and staff scheduling can help businesses reopen in a safe, socially distant way that builds customer confidence. Combined with connectivity, the latest devices and data insights, these solutions can help Rebuild Britain."

Smartway2 is a next-generation technology company specialising in workplace scheduling solutions and it said its Covid-Safe Workplace functionality protects people in the workplace by automating social distancing, contact tracing and sanitation checks.

When an employee books a desk in Smartway2, all surrounding desks within a specified radius are automatically taken out of service. When the desk is vacated, a countdown timer in the system will prevent anyone else booking it until it has been sanitised, to prevent touch contamination and sign-off and release procedures for desks and rooms are fully automated.

The digital desk displays also indicate whether the workstation is available, awaiting cleaning or out of service, in order to prevent people sitting in a desk that is not safe. In the event that someone falls ill, Smartway2 can produce contact tracing reports that identify at-risk col-

leagues, categorising their risk level depending on their likely proximity to that person.

John T. Anderson, CEO, Smartway2 told *Networking+* that as the UK workforce prepares to go back to buildings and offices across the country, the first priority must be to ensure their safety.

"Smartway2's Covid-Safe Workplace capabilities make it far easier for employers and employees to execute best practice in the workplace in the post-pandemic world," he said. "Despite its rich functionality, Smartway2 has been designed to be easy to deploy and easy to maintain, so IT managers can concentrate on delivering against important strategic activities, like their organisation's digital transformation plans." He added that organisations today are already seeing a spike in the voice and data traffic that flows across their network and that Smartway2 has been engineered so that its footprint and maintenance is minimal. "For example, boasting a zero footprint Outlook integration that updates over the air - therefore making the return to work not just safe for staff, but hassle-free for network managers too," Anderson said.

*continued on page 2*

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## 'Covid-safe' solutions help UK back to work effort

*Continued from page 1*

"As staff can book office space and resources from the comfort of their own home, or via their mobile while traveling, they can be assured that with Smartway2, their safety is top priority the moment they return to work."

The service has already proved popular with enterprises that recently signed up to it. "It's so flexible and customisable that we can make it do whatever we want it to do," said Smartway2 customer Joel Olson, programmer and analyst at Amarillo ISD. "With other tools on the market, there's no way to achieve that. Smartway2 won't just serve our current needs – it's flexible enough to adjust to whatever we decide we need in future. It's built in such a way that we can innovate."

Anderson added that one of the key design principles the company "obsessed over" when coding the product was flexibility. "We wanted to be the first – and for some time to come, perhaps – the only solution that can easily be configured to cope with an immense variety of scenarios," he said. "As a result, we built a flexible rules engine. At the time we had no idea that it would be so well suited to helping organisations safely return to work amidst a global pandemic. That is a scenario I fully admit we did not plan for, but we are grateful for the opportunity to make a difference during these challenging times." ■

## Kent-based fire and security firm takes on new cloud tech

A Kent-based fire and security firm has recently implemented high tech mobile workforce management technology provided by tech firm BigChange.

Folkstone-based Metroline Fire & Security, which installs and maintains fire alarms, intruder alarms, access control and CCTV systems for commercial and residential clients, has signed up to the latter's cloud-based system that combines back office software with a mobile app.

It has replaced a number of different systems with a real-time management and operational system to deliver services during the coronavirus crisis.

"BigChange has enabled us to undertake a complete digital transformation of our business, replacing a series of separate systems giving us a single view and total visibility of the business" said Paul Roberts, director Metroline Fire & Security.

Running a fleet of 25 vehicles – tracked as part of the BigChange system – the company's engineers use JobWatch, a five in one mobile phone app that synchronises in real time with the central office CRM and scheduling system.

"BigChange has already provided Metroline with significant improvements in productivity and customer service and during the coronavirus crisis it has allowed us to continue to operate seamlessly with no impact of our ability to deliver our services," Roberts added. "On lockdown, everyone could work from home we were able to shut



**Running a fleet of 25 vehicles – tracked as part of the BigChange system – the company's engineers use JobWatch, a five in one mobile phone app that synchronises in real time with the central office CRM and scheduling system**

down the office and be up and running at home within one hour. With BigChange also we can change the way we operate we are looking at ways to stock up vehicles to use the stock facility on JobWatch."

Metroline installation and maintenance engineers receive jobs on their mobiles with the JobWatch app replacing all paperwork with electronic data entry for everything from job sheets, to vehicle checks and risk assessments. Linked to

job sheets are photographs captured on site showing completed installations and repairs with control panels to provide evidence of 'all working in order'.

Metroline said it has seen some immediate benefits in efficiency through improved scheduling and tracking allowing the optimisation of resources through pinpointing the nearest available engineer and improved route planning to reduce unnecessary mileage. ■

## Emtelle secures two-year contract extension with Gigaclear

Rural fibre optic broadband ISP Gigaclear has inked a two-year extension contract with Emtelle, which will enable the former to keep fuelling deployments of fibre-to-the-premises (FTTP) technology with equipment from the fibre manufacturer.

The supply agreement – said to be worth £10m over the period – covers microduct and various other fibre cable solutions. Emtelle's fibre and duct solutions have been used by Gigaclear since 2017 for providing spine, distribution and drop connections to residential and commercial premises, mainly in rural districts.

"It's a pleasure to have extended this supply contract to Emtelle until the end of 2022," said Gareth Williams, CEO at Gigaclear, said. "Having worked with Emtelle for many years now, we have witnessed its unrivalled service in terms of support and communication. For

us, working with a supplier which is responsive, easy to deal with, and has the ability to adapt to change helps us focus our efforts on our end goal – bridging the digital divide by bringing outstanding broadband to rural communities. Emtelle has enabled Gigaclear to do just this, and this contract extension will ultimately enable us to continue ramping up our network deployments across the UK and connecting more customers with ultrafast broadband."

Tony Rodgers, CEO at Emtelle added: "Emtelle is delighted with the outcome of the recent contract extension negotiations with Gigaclear, and it's great to know that our solutions and support are highly acknowledged and appreciated by such customers. We look forward to providing uninterrupted supply and support to Gigaclear as part of this extended contract in the following two years." ■



**Emtelle's fibre and duct solutions have been used by Gigaclear since 2017 for providing spine, distribution and drop connections to residential and commercial premises, mainly in rural districts**

## TeleData announces expansion

Manchester cloud-hosting and data centre operator, TeleData, has begun a 7,000 square feet data centre expansion project at its Delta House facility in Wythenshawe as capacity nears a critical point.

The project, into which the business will be investing up to £2m, will bring online up to 200 server racks for customers, in a range of configurations, within highly resilient Tier 3 space.

This expansion will make use of the most advanced technologies available to ensure maximum efficiencies, and the entire facility will benefit from a number of non-disruptive changes to power and cooling systems to improve resilience even further. The business is also implementing advanced monitoring systems and intelligent Building Management Systems (BMS) which will make TeleData one of the most intelligent facilities in the UK, bringing together monitoring and alerting processes that are enhanced by machine learning.

"TeleData is expanding at a time when available data centre capacity is nearing a critical point, particularly in Manchester, with a serious lack of new investment into high quality supply coming from other providers in the region," said Matt Edgley, commercial director at TeleData. "As the world emerges from the current pandemic situation, data centres form an increasingly important part of the national

fabric, enabling remote and flexible working with high capacity networking and compute solutions to ensure peace of mind."

Edgley added that "customers who are serious about their technology, the environment and effective continuity of key services" should be considering TeleData as a provider. "Our new data centres will be able to accommodate anything from quarter racks and half racks to dedicated suites or rooms, and phase one of the expansion will be complete in Q4 of 2020," he said.

The announcement comes after TeleData made a six figure investment into its cloud platform in 2019, as well as a £1.2m investment into energy efficiencies.

TeleData recently became the first UK colocation facility to join the smart grid with battery storage, as part of a project to improve environmental efficiencies with low loss transformer and voltage optimisation, boosting the resilience of the facility by improving the shelf life of equipment, while reducing unnecessary energy waste and optimising the incoming power supply.

It also recently announced the release of private cloud and private cloud desktop products to expand its portfolio even further and provide key solutions that are designed to help businesses accelerate their digital transformation. ■

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# New framework to protect NHS and public sector

The NHS in England and other public sector bodies can now access free cybersecurity services, ranging from risk management to incident response.

Rolled out by NHS Shared Business Services (NHS SBS), the Cyber Security Services Framework is a service that will provide access to cybersecurity experts, offering a range of services such as consultancy, incident response and recovery, risk management and staffing.

NHS SBS said the framework addresses the Department of Health and Social Care's cyber security agenda and will work alongside services already available from NHS Digital's Data Security Centre.

It was developed in partnership with NHS Digital and the National Cyber Security Centre (NCSC) and has an estimated value of £250m. It is set to run until May 2022 with an option to extend for two years up to 2024.

"The launch of this new framework is particularly timely as the COVID-19 pandemic has prompted a new wave of cyber-attacks and scams," said Director of Procurement at NHS SBS, Phil Davies. "We welcomed

the opportunity to partner with NHS Digital and look forward to continuing our collaborative relationship to ensure the agreement meets national cyber needs. Technology plays a huge part in the way the NHS delivers patient care, so it is vital that healthcare providers keep data secure, whilst being prepared for and resilient against attacks."

Davies added that the NHS and public sector have been proactive in harnessing improvements in cybersecurity since the WannaCry attacks in 2017, "but there is still more work to be done". ■

**The new framework offers a range of services such as consultancy, incident response and recovery, risk management and staffing**

## Report finds two-thirds of malware is encrypted

WatchGuard Technologies' Internet Security Report for Q1 2020 found that 67% of malware detected in the first three months of the year was hidden in HTTPS encrypted tunnels, in a bid to navigate traditional AV.

During the period they blocked over 32 million malware variants and nearly 1.7 million network attacks.

Elsewhere, some 67% of that malware was delivered via HTTPS connections and 72% of these encrypted attacks apparently featured zero-day malware which would have been missed by legacy signature-based AV.

It is understood the growing popularity of HTTPS is down in part to initiatives like Let's Encrypt, backed by the non-profit Internet Security Research Group (ISRG). Nevertheless, while it has improved website security and user privacy, it also offers cyber-criminals a free and easy way to disguise their activity.

"Some organisations are reluctant to set up HTTPS inspection due to the extra work involved, but our threat data clearly shows that a majority of malware is delivered through encrypted connections and that letting traffic go un-inspected is simply no longer an option," said Corey Nachreiner, chief technology officer at WatchGuard. "As malware continues to become more advanced and evasive, the only reliable approach to defence is implementing a set of layered security services, including advanced threat detection methods and HTTPS inspection."

Meanwhile, the vendor claimed that it detected 6.9% less malware and 11.6% fewer network attacks than in the previous quarter despite the apparent uptick in Covid-themed threats.

It suggested that this could be because fewer users were operating within the traditional corporate network perimeter during Q1 thanks to work-from-home mandates.

The firm's latest Internet Security Report for Q1 2020 is distilled from analytics provided by its 44,000 global appliances. ■



**The new framework offers a range of services such as consultancy, incident response and recovery, risk management and staffing**



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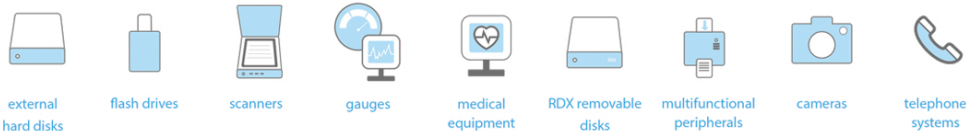
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## Critical Power Supplies is still working during COVID-19 to help you

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## 'Enterprises will lose customers' - survey

A survey found that a significant proportion of consumers will take their custom elsewhere if their personal data is compromised by a business due to poor security practices amid the current pandemic. The research, commissioned by PCI Pal, the global provider of secure payment solutions, found that 33% of UK consumers will avoid a business

'for up to several years' if personal data has been compromised due to a business' poor data security practices during Covid-19. A further 30% said they 'would never return', representing a significant potential risk to organisations that have had to adapt working practices. Only one in 10 said 'it wouldn't impact' their loyalty to a business.

## Anti-scam service sees a million reports

The National Cyber Security Centre (NCSC) has thanked the public as it revealed that thousands of scam websites have been taken down after being flagged to its Suspicious Email Reporting Service. Launched in April, the NCSC said the service has already surpassed one million reports from users. The scheme involves an email address – [report@phishing.gov.uk](mailto:report@phishing.gov.uk) – to which members of the public can quickly forward any emails they feel are potentially scams for analysis by security experts. NCSC chief executive Ciaran Martin said: "Reaching the milestone of one million suspicious emails reported is a fantastic achievement and testament to the vigilance of the British public."

## Colt offers multi-cloud access to firms

Colt Technology Services has launched multi-cloud access on its SD WAN platform. The multi-cloud offering enables enterprises to benefit from a single connection to multiple cloud service providers (CSPs), including cloud-to-cloud connections, over SD WAN. This ensures enhanced security, agility and latency compared with connecting via the public internet. This SD WAN proposition provides intelligence through application recognition and traffic steering features to increase the availability and access to multi-cloud services. This new offering is underpinned by the Colt IQ Network, comprised of 29,000 on net buildings and over 900 data centres, serving more than 25,000 customers globally.

## AI waiter getting bars and restaurants back in business

AI-powered digital waiter and menu service, w8r.ai, has launched to help restaurants, cafés and bars to safely reopen their doors as lockdown restrictions begin to be lifted. The service removes the need for physical menus and lets customers order food and drink directly to their table from their own phone, increasing staff and customer safety. Customers simply use their phone camera to scan a QR code on their table, which launches a digital menu from which they can browse and tap to order."



## University secures funding to address stress in security

A team at the University of Wolverhampton is creating innovative new technology to help cyber security professionals reduce stress and improve performance. The team went through a rigorous selection process and has been selected for the Cyber Security Academic Start-ups Accelerator Programme aimed at supporting the commercialisation of cyber security research.

The programme is funded by the Department for Digital, Culture, Media and Sport (DCMS) and delivered in partnership with Innovate UK and Knowledge Transfer Network. Led by visiting scholar Ellen Kay and Professor Prashant Pillai of Wolverhampton Cyber Research Institute, the team has been handed £31,000 to develop a market proposition and carry out market

validation of their technology. The team also consists of Prof Maria Uther, Professor of Psychology and Head of Centre for Psychological Research and Dr Sadiq Ali, Lecturer at the School of Mathematics and Computer Science and Member for WCRI. Professor Pillai said: "This is an excellent source of funding and it will help us bring our innovative idea to reality."

## Calligo makes second Irish acquisition in six months with Itoic Voice & Data

Calligo, the end-to-end managed data services provider, has acquired Itoic Voice & Data a Cork- and Dublin-based IT managed services provider, specialising in delivering IT solutions and maintenance. The purchase is Calligo's seventh acquisition in three years and follows January 2020's acquisition of Dublin-based DC Networks. These two acquisitions combine to make Calligo one of the largest IT managed service providers in Ireland. "With the addition of Itoic Voice & Data, we are now one of the largest IT service providers in Ireland, with sizeable presence in both Cork and Dublin – Ireland's two largest economic regions – and the capability to serve businesses throughout the country," said Julian Box, founder and CEO



of Calligo. "We focused our current expansion strategy on Ireland because of its growing number of innovative businesses developing new data-reliant tools and services. We believe Irish businesses stand to gain enormously from our services and expertise, particularly in international data privacy." The value of the deal has not been disclosed.

## Parallels and Google partner up

Parallels and Google have partnered to bring enterprises and cloud workers full-featured Windows applications to Chrome Enterprise this autumn. Remote work is a new reality, making efficiency, connectivity, speed, reliability, security and uninterrupted access essential elements of a successful organisation. At this key moment, the two organizations have formed a landmark partnership to equip enterprises with solutions that optimise their businesses and teams to meet the evolving challenges of modern work environments. Parallels brings more than a decade of cross-platform solutions experience, seamlessly integrating operating systems and features, to its partnership with Google.

## LMS365 deploys new UK data centres

Microsoft 365 and Teams learning platform LMS365 is deploying new data centres in the UK to support new data governance requirements. It will leverage the new data centres, running Microsoft Azure, to provide a learning platform that supports the data and compliance requirements within these local regions. The company said that businesses in the UK are using cloud technologies as part of their shift to remote work environments. At the same time, they are dealing with a changing regulatory framework that includes GDPR and in-country data residency standards.

## Word on the web...

**Rachel McElroy, from Solutionize Global on when soft – or key – skills are more vital than technical attributes...**

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# How Toshiba HDDs have helped CERN keep track of their generated data

How three generations of Toshiba Hard Disk Drives have helped the world's largest physics lab keep track of the hundreds of terabytes of data that are generated by the LHC experiments every second

CERN's Large Hadron Collider (LHC) is at the forefront of physics research. The data output from its "Run 1" and "Run 2" phases have already been used to demonstrate the existence of a previously undetected subatomic particle and extend our understanding of the universe and how it formed. Notably in 2012 it confirmed the existence of the Higgs boson.

The scale of CERN is astounding. From the size of the large hadron collider – a circular particle accelerator with a radius of 4.3 km – to the rate of particle collisions – up to 1 billion particle collisions can take place every second inside the LHC experiment's detectors.

But it is the data that is most impressive, with the collisions generating 1 petabyte (PB) of data per second. Even after filtering only the interesting events, the facility requires approximately 10PB of new data to be stored for analysis each month.

This data is stored in the CERN Data Centre and is shared with a network of about 170 data centres for analysis, thanks to the Worldwide LHC Computing Grid (WLCG). The current storage setup at CERN consists of HDD buffers with 3,200 JBODs carrying 100,000 hard disk drives (HDDs) providing a total of 350PB.

LHC Runs are set to continue, and with each new "Run", data storage increases significantly. Following upgrades, CERN's Run 3 is scheduled for 2021.

Toshiba Electronics Europe GmbH's hard disk drives are used by CERN to manage huge volumes of data since 2014, with three generations of Toshiba hard drive technology giving it the capacity increases it requires. But, can this continue when, as CERN's Manager of the Facility Planning and Procurement Section at the IT Department, Eric Bonfillou, puts it: "The planned upgrades of the LHC machine will require scaling of compute and storage resources beyond what today's technology can offer."

## 2014 – CERN purchases Toshiba hard drives

Since 2014, CERN uses Toshiba's hard drives. At the heart of CERN's needs are server-grade HDDs with high performance, high reliability and optimised for highest capacities. During 2013-14, CERN held a scheduled shutdown phase to prepare for Run 2. During this period, it upgraded its storage systems, adding arrays of 24-bay 4U JBODs populated with Toshiba's MG03SCA400 hard drives.

With 4TB of capacity per HDD, each spinning at 7200rpm and receiving data via a 6 GB/s Interface, CERN gained 96TB per JBOD expansion unit. The HDD's mean

time to failure (MTTF) was 1.2 Mio hours, which translates to a predicted annualised failure rate (AFR) of 0.72%.

## 2015/2016 – CERN begins Run 2: Data storage needs to be increased significantly

With the start of the "Run 2" in 2015, the need for data storage increased immensely.

CERN adds new storage capacity using Toshiba's new 6TB SATA model, the MG04ACA600E. Again, installed in a 24 Bay 4U Front loader JBOD, the total raw capacity was increased to 144TB per unit.

The MTTF for this model improved to 1.4 Mio hours, giving a predicted AFR of 0.62%.

## 2018 – Toshiba launches MG07 helium-filled model to extend capacity to 14TB per HDD

After 2016, Toshiba accelerated the development and introduction of new high capacity enterprise HDD models to serve the world's need for cloud data storage – launching two new generations – the MG05 and MG06. The MG06 series became available with capacities up to 10TB per drive. And although the construction was still air-filled, Toshiba was able to increase the MTTF to 2.5 Mio hours, which translates into an AFR of 0.35%, the lowest currently on the market for air-filled HDDs.

For Conventional Magnetic Recording (CMR) technology in a 3.5" form-factor, air-filled HDD technology reaches a limit at 7 platters (and therefore 10TB) of capacity.

And while it is theoretically possible to increase this using thinner platters the air would be too heavy a gas, resulting in severe flatterring. Alternatively, Shingled Magnetic Recording (SMR) technology can be used, but this requires special handling

to avoid serious performance issues, and is limited by the need for special file systems tailored to the technology's intricacies.

CERN's 2018 storage upgrade coincided with the launch of Toshiba's MG07 range, the world's first server HDDs with up to 14TB. With the purchase of the 12TB variant, CERN doubled its capacity per JBOD – to 288TB.

The MG07 increases the capacity without changing the form factor by using helium rather than air. This allows the use of thinner platters without the associated flatterring, with up to nine per drive.

By using CMR, the MG07 is suited to any workload without the loss of performance associated with SMR. Additionally, helium creates less friction than air, significantly reducing the energy required to rotate the platter stack. With precise optimization of the spindle motor, the operating power has reduced by a third (from c.11W to <7W) for the helium-based model of the MG07 series.

The MG07's MTTF significantly extended to 2.5 Mio hours.

## The increased data capacity demands from Run 3

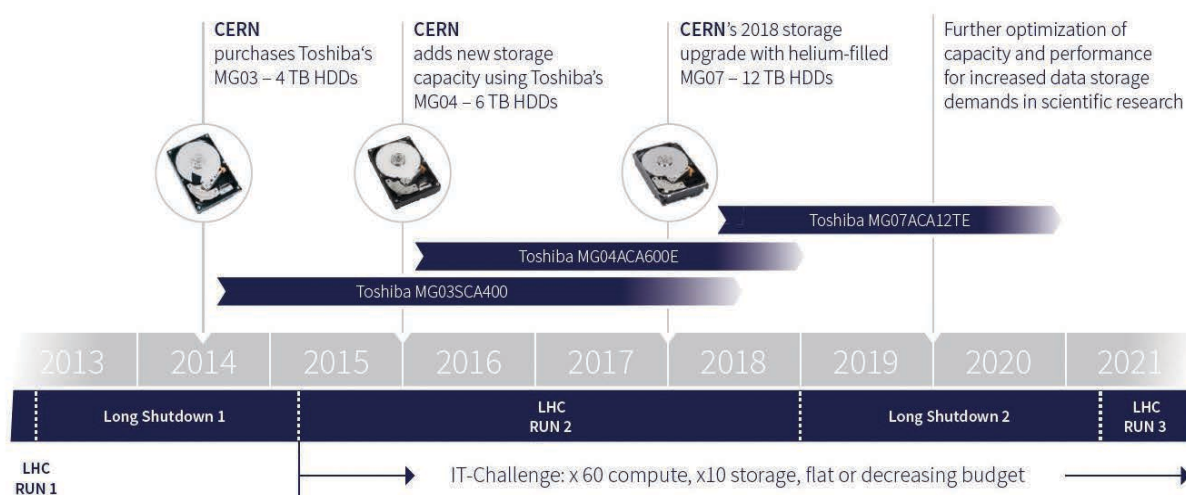
In 2019, the LHC machine shut down again to install further upgrades before restarting for Run 3 in 2021. A significant increase in storage demands is expected, with the acceleration in data generated.

As Eric Bonfillou, states: "Toshiba's products and support have met CERN's stringent requirements. Our IT infrastructure, in terms of computing power and storage capacity, has scaled well with the scientific computing needs, making maximum use of Toshiba's high capacity and reliable hard disk drives."

## A timeline of how CERN has scaled its storage with Toshiba

"So far our IT infrastructure, in terms of computing power and storage capacity, has scaled well with the scientific needs, making maximum use of Toshiba's high capacity and reliable hard disk drives." (Eric Bonfillou, CERN)

### CERN Project Timeline



Toshiba's planned launches for CMR (conventional magnetic recording) and SMR (shingled magnetic recording) based drives that use the same 3.5" form factor will give CERN access to 16TB and 18TB drives adding 432 TB of new capacity per JBOD.

"Toshiba Products are well suited for large scale datacenter storage and the successful deployment and operation of three generations of Toshiba Enterprise HDDs in CERN's challenging IT environment is a perfect reference case" says Larry Martinez-Palomo, General Manager of the HDD Business Unit at Toshiba Electronics Europe.

As for longer term R&D activity, Toshiba is developing a next-generation magnetic recording technology that will further extend capacities to exceed 20TB per HDD, while still maintaining the 3.5" form factor.

Martinez-Palomo adding: "We are confident that our HDD next generation technologies will contribute to solve CERN's future scaling challenges in terms of storage capacity, investment budget, power consumption and reliability."



Click here to watch the full video

**TOSHIBA**



# A brief history of data encryption

Nigel Thorpe from SecureAge explores its evolution and asks if today's PKI encryption techniques have cracked it

**D**ata encryption goes back to ancient civilisations that used forms of message concealments, in peace as well as wars. The Egyptians used Disordered Hieroglyphics, the Greeks Steganography, the Spartans Scytale and the Romans, the Caesar Shift Cypher.

While these basic methods laid the foundations for modern cryptography, what has evolved are two fundamental approaches based on complex mathematics: 'symmetric' and 'asymmetric' cryptography.

## Simple symmetrics

The Caesar Cipher is an example of symmetric cryptography, designed to ensure that plain text is replaced by ciphertext, appearing to be gibberish. The message sender uses an algorithm and 'key' to encrypt it and the recipient reverses the processes, using the same algorithm and key.

A simple algorithm could be shifting the alphabet by a specific number of places: a key of 3 means letter A would be replaced with D, and so on. All modern forms of symmetric cryptography are based on this principle. However, there are security problems because the person encrypting the message must be able to deliver the key to the recipient safely. If anyone else acquires it and knows the algorithm, they can decrypt the message along with anyone else who has that information.

## Public vs private

To overcome this, researchers came up with asymmetric, or 'public key' cryptography, using complicated mathematics to create two tightly connected keys per person. One is public and the other is private. If Bob encrypts a message using Alice's public key, she can decrypt it using her private key, hence the asymmetry. Alice can give everyone her public key, because only she can decrypt messages for herself because she keeps her private key secret.

To encrypt data so that only the intended person can read it, we need a reliable and secure way of finding their public key. If a malicious individual, Villanelle, manages to send her public key to Bob while pretending it's Alice's public key, then Villanelle can decrypt Bob's message to Alice. Villanelle can also re-encrypt the message using Alice's real public key and send it on so nobody notices the interception. Public key cryptography is also significantly slower than symmetric.

This is where PKI - Public Key Infrastructure - comes in, which addresses both the

problems of identity and of performance. Identity is at the core of PKI - and being able to identify an individual is all about trust. PKI uses the same principle as

having a passport but instead employs digital certificates, 'signed' by a Certificate Authority (CA). Everyone needing to share or exchange encrypted data needs to trust the CA.

So, Alice, Bob and Villanelle all have certificates containing their public keys signed by their common CA. The signature uses the encryption process above, but in reverse. The CA has its own public and private keys and uses its private key to encrypt (or sign) everyone else's public keys. The resulting signatures are contained in digital certificates. Bob can retrieve Alice's public key by obtaining her digital certificate from a certified directory, secure in the knowledge that this is Alice's true identity.

To resolve the speed issue, there is a combined approach. Firstly, each file is encrypted using a very large symmetric key. The process is fast, employing hardware instructions that are incorporated into modern CPUs.

If Alice wants to encrypt a file called CustomerDetails.xls, for example, so both she and Bob can decrypt and work on it, she generates a random symmetric key and the Customer Details file is encrypted using it. Alice retrieves her and Bob's certificates and through them, both their public keys. She encrypts the symmetric key using her and Bob's public keys.

Alice now has a file that is useless for anyone other than herself and Bob. They use their private keys to decrypt the symmetric key and then use the symmetric key to decrypt the Customer Details file.

## Carry on encrypting

You could believe with evolution and plethora of encryption products available, we have it cracked. But it's not as simple as that.

For comprehensive data protection, we must recognise the most innocuous-looking information could help 'bad guys' build personal profiles for fraud. All information must be encrypted all the time, in all locations: at rest, in motion and in use.

The exponential growth in remote working enforced by COVID-19 means we must be particularly sure that information is useless if in the wrong hands, whether by accident, insider theft or malware attack.

Ubiquitous encryption needs to be fast and invisible to the user, removing the human element entirely. The only way to do this is through transparent, authenticated encryption operating at file system level. There is no disruption to the way people and applications work. If you want to edit a spreadsheet, it's opened normally. Finding keys, decrypting and encrypting happens behind the scenes, removing user decisions and ensuring that data is always strongly protected.

Ancient history showed us the way and had we thought more about protecting data and less about preventing access to it with firewalls, user controls and other 'castle and moat' techniques, modern information security may have been very different. We now have the knowledge, technology and processing power to deliver encryption to protect all the data all of the time.



Nigel Thorpe, technical director, SecureAge

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# Sustaining the benefit of digital transformation

Darren Anstee, CTO, NETSCOUT

**W**e have all seen, and in many cases experienced, the positive impact that digital transformation projects can have within organisations. The lifecycle of a successful digital transformation project should start with a well-defined business goal and should end with the sustained delivery against that goal. Herein lies one of the challenges facing CIOs – sustaining the business benefit – the support of these new, evolved often much more complex and distributed service infrastructures.

The use of multiple public, private or hybrid cloud environments, combined with virtualised/containerised multi-tier application implementations, orchestrated by systems that automate care-and-feeding has led to a huge increase in the complexity of monitoring and troubleshooting what is actually going on. Of course, we have SaaS thrown into the mix as well. How do we know that everything is working properly? Where do we look when something goes wrong? What was the root cause of a fault or performance degradation? These are just some of the questions that, have become a lot harder for IT organisations to answer, and answering these questions is more important now than ever before.

Businesses have embraced new technologies for their business benefits. The costs have been high in many cases, and good returns on investment are expected. So, how should we ensure that our IT operations teams can help our businesses to sustain the benefit promised by new technologies?

The users of our business networks and services, whether external or internal, expect a consistently good level of performance and availability. As we migrate workloads to multi-cloud and/or hybrid environments we must ensure that we can obtain consistent visibility across technology boundaries. This is essential if our operations teams are to have the information they need to monitor, understand, report-on and trouble-shoot what is going across the melange of technologies we now utilise.

Consistent visibility across multiple platforms is key and must be built-in from the ground-up as new projects are implemented. Relying on disparate data-sets and attempting to massage data from different sources, at different granularities into an holistic picture of activity doesn't work well – we can end up with gaps and inconsistencies that lead to incorrect assumptions, inaccurate reporting and higher Mean Time to Resolution (MTTR) when things go wrong.

If we want to assure the performance and availability of the services our users' access, then we need to understand the different technology domains that are in play and the boundaries between them. It isn't enough to collect information from a SaaS application about its response time to an action; a user's perception of that response time is based on everything that occurred end-2-end across multiple application and network domains. We need to be able to tie together user activity across these domains to understand their experience.

This means understanding where our users are coming from to reach the services they need, the paths they may take and the dependencies within our service infrastructure. This is especially true right now, where we have a lot of users working remotely from environments without any specific instrumentation. When they report a fault, where do we look?

To get the visibility we need, we must combine both passive and synthetic monitoring

techniques. We need consistent visibility of activity across each 'edge' so that we can understand 'where' things go wrong (if they do), and we need synthetic transactions to monitor the 'real' end-2-end experience a user would get of a service, across different access pathways. This dual level view is essential as we optimise and trouble-shoot the performance of our overall service delivery platform.

Beyond having good visibility into what is going on within our environments, our IT teams also need to understand not just how it all works, but how to work with the ven-

dors of different aspects of their infrastructure and services to get the best response if there is an issue. IT teams have seen huge change in their day-2-day activities and in the systems they interact with.

Continuously upgrading the knowledge of the IT team with training on the technology being used, and coming down the line, is essential. As is holding regular reviews with each of the cloud, SaaS vendors etc., to build knowledge of each-other's systems and people. Here, an evidence-based approach, leveraging the visibility and

reporting mentioned above, can yield a huge advantage in quickly clarifying 'where' a problem occurs and 'why' it is happening, skipping over the finger-pointing that can otherwise occur, leading to lower MTTR.

Fundamentally, managing the complexity of our new environments is the challenge that faces all IT teams and CIOs. As Albert Einstein once said, 'Out of Complexity, find simplicity'; consistent, complete visibility across the disparate technologies we use can truly enable us to reap all the benefits of complex digital transformation projects.

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# Anything and everything

**The three traditional pillars of cloud computing - SaaS, PaaS and IaaS - now support such a range of services that IT and business are entering the 'anything as a service' or XaaS era. Robert Shepherd speaks to those who know everything**

**W**hen I started looking for industry luminaries to enlighten me about XaaS, the refrain from many public relations and marketing officials was almost identical, as if they weren't quite ready for the call. My questions were answered with questions, usually in the form of "can you give me a bit more information"? In other words, XaaS means different things to different people, even though it isn't new to the party. The 'X' can mean either anything or everything can be purchased on an "as needed" basis and the main pillars are...well, it depends on what you want.

Renat Zubairov, CEO and co-founder, elastic.io, says that despite the fact the everything/anything-as-a-Service (XaaS) has been around for a number of years now, 2019 was the year when, according to

Gartner, everything-as-a-Service (XaaS) went mainstream and got everyone talking.

"With a growing commitment towards digital transformation, the XaaS revolution is more than just a new channel trend," he says. "It came as a fundamental response to the increasingly complex demands of the integrated enterprise. It is reinventing the IT infrastructure, turning it into an environment where computing, software, networks, servers and more are bought, rather than built, into the computing infrastructure."

When it comes to the main pillars, Zubairov says the general definition encompasses SaaS, PaaS and IaaS – but it can also be much broader than that. "Ultimately, it all boils down to the self-service aspect," he continues. "Companies increasingly realise that they cannot – or in fact, don't want to – bear the full responsibility of a product. There are simply

not enough resources for that. What matters is the product experience, which include service, and the outcome. Both companies and XaaS providers need, therefore, pay a special attention to whether the customers' ultimate needs are well understood and reflected in SLA, whether customer support delivers a superb performance, and regularly review whether the product still delivers the value promised."

Chris Conry, CIO at Fuze, a cloud communications and collaboration software platform designed for the enterprise, says XaaS offers businesses the opportunity to save money, boost productivity and provide flexibility. "The main pillars when businesses decide to consider, for example, unified communications as a service (UCaaS) include costs, flexibility, simplicity and mobility," he says.

For many, the main driving force behind the growth of infrastructure as a service

is the trend away from a more traditional CAPEX model, typically with hardware and software on premise, to an OPEX model which can bring massive cost savings and is a much more flexible and dynamic method of consuming products.

Alex Grant, director of Pod, a unified communications platform developed by 24 Seven Cloud says he subscribes to that theory.

"When considering deploying a XaaS platform vs traditional on-prem equipment and services, it is worth considering how well the platform can scale in terms of features and size," he adds. "For example, can it support a growing business and is the upgrade path easy and trouble free?"

One thing we can all agree on then is XaaS is a general, collective term that refers to the delivery of anything as a service. It takes the pressure off businesses doing everything in-house.

Now that we have a better idea as to



what XaaS is, why do enterprises need it? It's the old do-it-yourself v bring in a professional argument.

Prima facie, only a handful of the biggest players across every industry can afford to do everything in-house. However, for the rest it's about reducing cost, risk and complexity. With that in mind, the "pay as you go" model also provides the flexibility to pivot and react to emerging market demands.

"The XaaS model provides access to an almost unlimited bank of resource when it is needed – New Year, Black Friday sales, university holidays or other seasonal peaks – without it standing idle at other times," adds Zubairov. "Its flexibility is equally well recognised for addressing expectations of more and faster services."

Dominik Birgelen, CEO and co-Founder of Oneclick AG is of the opinion that the flexibility of XaaS, along with its simple deployment and ability to increase workforce efficiency, means that it could be an extremely important asset for a business. "Everything-as-a-Service helps companies innovate faster, transform digitally, gain access to cutting-edge technologies and succeed in global competition," he says. "According to Deloitte, companies that use three-quarters of corporate IT as a service save an average of 67% of their operating costs. What's more, efficiency is increased by making systems and applications available faster."

Conry argues that when a business uses several different applications for communication and collaboration, they need to consider both initial expenses and maintenance costs. "The more moving pieces (i.e. solutions and providers) a business has in its technology stack, the more cost that is incurred," he adds. "Each piece has its own licensing terms and non-bundled pricing, demands unique on-going IT support, integration and care, requires end user training and adoption, and carries a heightened back office overhead burden from legal, security and finance."

It has also been said that UCaaS will help reduce those expenses as cloud-based solutions don't require on-premises equipment. This translates into a reduced IT data centre footprint and elimination of maintenance concerns associated with the communications gear and dependent systems, according to Conry.

"Cloud-based unified communications is built upon a service provider's global infrastructure of data centres connected to the internet," he says. "For the CIO, that means no upfront capital investments and economies of scale that can reduce unit carrier costs (e.g. per phone). The provider's multiple data-centres can provide on-demand scalability and built-in



**In our current or what will soon be our "new normal", all organisations will need to consider their current telecoms operations and IT infrastructure to increase productivity, reduce superfluous costs and safeguard for the future**

redundancy to ensure business continuity. Services can be fast (low latency), reliable, and in many cases more secure than those patchwork systems they are replacing."

What's more, by choosing to go with a UCaaS vendor, Conry says updates and platform revisions will be managed and driven by that provider, freeing up the IT team's time to focus on other strategic initiatives in support of broader business goals. IT can align faster and better with line of businesses and play a bigger role in the digital transformation of their organisation.

It also makes some sense dealing with one vendor as the CIO signs up to a simple billing process, consolidated across geographies and different services. One provider – a global carrier – for all communications: voice, text, video, etc.

"On-premises UC might not provide the flexibility that businesses require," adds Conry. "With UCaaS, businesses can be more selective about the features and functions they choose to deploy and pay for, creating a customised platform that only has the tools they need. If a business isn't going to leverage collaboration functions, as an example, they don't have to pay for it. Now more than ever, workers require the flexibility to work from anywhere. Because there is no hardware, UCaaS gives workers the mobility they want. Software can be installed on any device, from smartphones to computers, and the cloud lets employees access files from anywhere."

In our current or what will soon be our "new normal", all organisations will need to consider their current telecoms operations and IT infrastructure to increase productivity, reduce superfluous costs and safeguard for the future. "The current climate has forced millions of businesses across the world to adapt to a new way of working. For many, this has meant abandoning offices and working remotely leaving existing telecoms services and hardware redundant and costly," says Grant.

XaaS is clearly a big world and so enterprises, IT managers and their teams need to be ready for the challenges that await them. Zubairov says in the digitally-

transformed enterprise, the biggest challenge for IT managers lies in is the complexity of integrating a growing number of SaaS subscriptions into the IT infrastructure.

"Preventing data silos from emerging in each operational business unit and achieving an integrated and interoperable IT infrastructure becomes exponentially challenging with the addition of each individual software application as it requires not just one but a series of bespoke API connections and the number of connections grows more than proportionally with multiple systems," he continues. "This means that maintenance of the infrastructure becomes an enormous challenge, without even considering growth and upgrade."

Zubairov also has some tips when it comes to choosing a supplier. He says research shows that companies are increasingly selecting technologies for their integration capability as much as their breadth of functionality. "It is clear that the solution should be able to address most, if not all, business requirements, but how well does it integrate with the existing IT infrastructure?" he adds. "Choosing a solution that offers built-in integration capabilities will not only save the company the integration headache, time, and resources but also power up key business processes like marketing, sales, customer service, to name a few."

Birgelen says enterprises should look for a provider that offers complete end-to-end support and management of the solution. "IT managers have a busy job and their time is best spent using their expertise to further develop the organisation's own IT strategy, rather than on the implementation and maintenance of resources," he adds.

As far as Grant is concerned, the key is to choose a vendor with a suite of products which are designed from the ground up to work together. "All too often service providers pick and choose components from different suppliers with varying success," he says. "This sometimes results in a disjointed end user experience, with wildly different user interfaces to learn and support."

It can be difficult for business leaders to identify the ideal service. While price may stand out as a differentiator, it is not the only one factor that IT leaders should consider, adds Conry. He says it is important for businesses to look for XaaS vendors that can and will modify

their offerings to meet individual client requirements. "This flexibility should account for specific features, integration with existing IT infrastructure and more," Conry adds. "Alternatives should be fully vetted from a security perspective. Security and data privacy requirements are extremely important when it comes to any cloud service. Unauthorised access or mishandling of information could have a significant negative impact on an organisation. Providers should be evaluated on their compliance with security best practices, industry standards, and regulatory requirements. The speed and degree to which vendors are able to answer these questions and provide independent attestation of their compliance is a good indicator of their overall operational effectiveness, and ultimately provide a measure of trust."

What's more, Conry says reputation around service delivery is also very important. "After all, a XaaS solution is only valuable if it lives up to its promise, and the best way to guarantee that this will be the case is by partnering with a vendor that has a reputation for meeting expectations and delivering high-quality service and support," he adds. "In addition to looking at reviews and other widely available feedback regarding a XaaS vendor's performance, business leaders should also ask potential service providers to offer references that can provide insight into their own experiences of implementing and leveraging these solutions."

He says, "one final, critical factor to take into account" is the cloud system's analytics capabilities. High-end analytics are essential for determining how the technology is actually being used by employees throughout the company. "A XaaS system that lacks analytics will likely lead to inefficiencies and missed opportunities, which undermines the value of the company's investment," he adds.

Luckily, any sector can benefit from the XaaS revolution whether the business is in the retail, manufacturing, telecommunications, technology, or any other industry. "The great power of XaaS is that it is industry and sector agnostic," Zubairov adds. "The XaaS offer has been continuously growing and addressing a wide range of business needs and any company can use it to harness the full potential of digital transformation strategy."

Of course, when it comes to the hiring of anything, it comes with a recurring fee.



**"Ultimately, it all boils down to the self-service aspect."**

Renat Zubairov,  
CEO and co-founder,  
elastic.io



Zubairov says as the term XaaS covers a broad range of various products and services, the criteria on which recurring fees are based varies greatly. “What is common to recurring fees of, safe to say, the absolute majority of XaaS is the inclusion of future updates and upgrades. Other common ‘items’ include – but are not limited to – maintenance and support, hosting, analytics, content updates, to name but a few,” he says.

Nevertheless, James Maynard, solutions director at UKCloud, says that historically, the private sector has pioneered XaaS, as businesses have had more budget and freedom to trial it within their organisations – “and all industries benefit” from the remote collaboration that XaaS enables. “However, public sector bodies benefit hugely from XaaS, given the nature of their work and time-poor employees,” he adds. “Public sector organisations have grown organically meaning they typically have very broad estates with dispersed tooling and complexities, the value of managed services mean those IT hygiene factors can be outsourced from patching through to network monitoring enabling those organisations to improve their time to value in the digital space. Take the NHS: health tech has been largely driven by cloud technology in the past few years, such as remote GP consultations. Reducing some of the pressure of navigating the software or infrastructure itself is such an important part of managed services.”

As far as Conry is concerned, for any application as a service, the buyer will not be expected to pay for storage, systems equipment, network infrastructure, redundancy and disaster recovery measures, or the administrative burden required to patch and update the solution. “The subscription cost of XaaS will include all of these responsibilities that traditionally fall on enterprise IT for on-premises technology,” he continues. “Buyers of XaaS generally need only worry about subscription cost, any implementation services associated with the initial solution deployment and any desired integration with the existing technology stack, and training for end users and administrators.”

Arguing against XaaS would be like explaining to a millennial why you still use DVDs or pay for a landline. You won’t win the argument, regardless of how cogent an argument you possess.

For one, XaaS provides consistent pricing models which make it easier to plan ahead. The “pay as you go” model also provides the flexibility to pivot and follow emerging market demands on a whim.

Still, trusting in a third party to take responsibility to effectively “run” your business is huge leap of faith. Yet steps of this magnitude are needed to accelerate the digital transformation of most organisations.

As we (hopefully) enter a post Covid world, things are going to look very different to how they were at the start of 2020. Will it change the enterprise approach to XaaS?

“Absolutely because we are facing three simultaneous types of uncertainty,” says Eran Brown CTO EMEA & APJ, Infinidat. “Public health uncertainty, which impacts the demand curves in unpredictable ways (though none of them is positive), financial uncertainty as more and more companies are cutting staff, using furloughs to keep cash available to stay afloat and operational uncertainty - the combination of supply shocks, demand shocks and credit shocks all make planning anything far from easy. This is right from manufacturing and stock planning through to sales and revenue predictions.” Brown says the result is that organisations will need to keep their cash reserves for as long as possible; avoid

making long term commitments and be able to change plans quickly.

“Companies that build their IT using more flexible consumption models will be able to do this on-premises and will avoid paying the XaaS ‘tax’, making them leaner and more likely to weather the storm,” he adds. “Companies that rely on the public cloud to achieve this, will increase their cloud spending and will see their IT budgets and cash reserves drain faster.”

Birgelen says the adoption rate for XaaS will actually gain momentum and significantly shift forward. “After the crisis, it’s likely that many companies will tackle IT modernisation projects with a focus on finding solutions that help reduce costs, and this will lead to a huge digitalisation boom,” he adds. “CIOs will soon look to implement strategies that ensure business continuity while improving

**“Companies that rely on the public cloud to achieve this, will increase their cloud spending and will see their IT budgets and cash reserves drain faster.”**

*Eran Brown,  
CTO EMEA & APJ,  
Infinidat*

efficiency. They will use new technologies and solutions to automate processes while supporting IAM, security controls and a variety of devices including PCs, tablets and smartphones.” The choice is yours. ■



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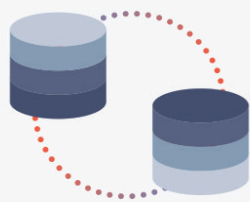
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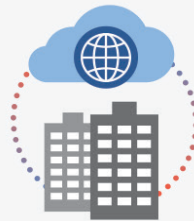
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# Manufacturing for modern times

## Three manufacturers secure new tools to build for the future



### Protecting property, protecting people

Hesco manufactures, designs and deploys defence barriers in several countries around the world. It is renowned for its rapidly deployable Concertainer system that is used for both flood control and military fortification worldwide. Camp Bastion, the former British Army headquarters in Afghanistan, was named after the company and its iconic barrier system.

Operating from both the UK and US, and with around 300 staff, the company has customers in various parts of the world, including Europe, Asia, America and the Middle East.

Keeping in contact with customers, and making sure staff can contact each other, is vital to the company's operations around the world. Having a communications solution that supports this is crucial.

The challenge was as follows: improve communications and customer service across the company, increase ability to send and receive documents and resources across a reliable network, ensure staff are safe when on location through better communications and find a data package that allows travel and communications usage without the shock of unknown costs.

Mobility is key to Hesco's operations. Its technical support teams are always on the move, meeting customers around the globe.

This could mean they're inspecting a barrier in Algeria one day, then repairing a flood defence system in Thailand the next.

"We work on a very responsive basis. If our customers need something urgently, we need to be able to respond to them quickly. The signal we were using wasn't giving us the reliability to do this," says Adam Robinson, Supply Chain Manager at Hesco.

A lack of reliability meant the company's staff couldn't respond to customers in the way they wanted, so the company needed a reliable communications solution, to provide a seamless service whether staff were based in the US offices or on location.

"It didn't feel professional hanging up on customers, clients and suppliers because a signal wasn't working. When you're constantly late for meetings or need to leave part-way through because a web conference isn't working, the frustration builds," adds Adam.

The company was also lacking a data package with the ability to accurately predict the cost of usage when abroad.

"Travelling to different countries that have different network providers was tough, and we needed to buy data bundles in every location," says Ben Jenkins, Technical Support Manager at Hesco.

"The cost builds up, and it was frustrating not to have a consolidated solution."

Hesco's support teams train and educate people, repair barriers and maintain defence systems in all parts of

the world, so giving them the assurance they can contact base means they're able to feel secure, wherever they're located.

"When our teams are on the front-line, speed and efficiency is needed. A lot of territories they work in are hostile, so to be able to have regular and clear contact with our teams, and knowing they're safe, is very important," says Supply Chain Manager, Adam.

"So from an operations side of things, we needed a solution that would give us that."

Hesco looked to Vodafone to provide a continuous and reliable service, and one that gave them the flexibility and adaptability they needed. Roaming worry-free with Vodafone was chosen to meet their needs across the board.

"The move to Vodafone was seamless. Our costs are now predictable and thanks to roaming worry-free with Vodafone, we know what the cost will be, based on where our teams are in the world," says Adam Robinson, Supply Chain Manager at Hesco.

"We can take our standard package abroad and use our minutes and data for a small daily fee," adds Adam. "It allows our teams to travel without the worry and stress of a huge bill when they return."

Straight away, the business stopped worrying about roaming charges and unreliable signal strengths.

"We're no longer having to buy data every time we go somewhere, and we're not worrying about not getting a signal or service. Our costs are now predictable and we know what we're going to get charged at the end of each month," says Technical Support Manager, Ben.

Hesco's communications are now more flexible and adaptable to meet different needs.

The business has seen plenty of practical benefits too, involving the safety and security of its staff around the world.

"We have two people deployed in Eastern Africa and it's important that we know they're safe. By using mobile, whether it be a voice call or video call, we can know they're safe and well in these locations. Vodafone gives us a high level of confidence wherever we are," says Ben.

Another benefit of using roaming worry-free with Vodafone has been the increase in staff productivity.

"Staff can now connect their laptops to their phones and use their data packages to access emails and the internet," says Adam. "This means they're worry-free and they don't need to go into the office or a suitable location with Wi-Fi."

"Being able to access our website and download documents with more ease has led to a clearer operation of marketing."

"Our various teams want to take technology for granted and now we can do that," concludes Ross.



### Automotive manufacturer infrastructure upgrade

DACC Europe is a well-established structured cable and infrastructure provider established in 1996 in Docklands, London, enjoying year on year growth and being fully independent.

It has successfully managed projects from the relocation of an investment banks' office in Paris to the design and installation of a complex 30,000 port structured cabling system within a large data centre.

Expertise comes from an experienced team and fully qualified installation engineers with real delivery expertise and commercial acumen.

A global provider of cabling infrastructure and network technology, DACC Europe claims to be the preferred supplier to many blue chip organisations. Our solutions are innovative, transparent and underpinned by digital platforms across a multitude of sectors.

DACC Europe says it's committed to excellence business is based on providing the highest quality service and stress free solutions. "We have the experience, expertise and ability to meet the most challenging demands," it boasts on its website.

The client in question is a global automotive manufacturer and DACC Europe has delivered over 200 projects for this client across the UK. The remit for this project was to upgrade the existing structured cabling to a new Category 6a shielded solution through existing offices and manufacturing/plant areas whilst these areas were occupied.

In addition, the project included the survey/design and planning of each occupied area along with the upgrade of the client's wireless access points. All work was completed at night so not to disturb the occupants of the building.

DACC Europe provided a proactive approach whilst working on the project to overcome the challenges of working in a live environment and with no interruption to any users on the internal network. With the challenges associated with working in a live office/manufacturing environment, DACC Europe delivered the project on time and to the high standards our clients have come to expect. The project partners were CommScope and Corning.



### Stagecraft problems solved with SEH Technology USB over IP

Showman Fabricators designs and creates custom sets and environments, using all kinds of materials and shape-building techniques.

Hanging from the studio ceiling 25 feet up, the servo motors hoist these scenic elements — large "light rings" containing LEDs that shine in multiple colours — on command to specified positions above the studio's floor. These positions are pre-programmed into programmable logic controllers (PLCs), the brains behind many industrial automation systems. The commands are sent over ethernet, strung up into the ceiling, from the stagehand's touch-screen operator station at floor level to the motors above.

Using Clearpath's PC-based setup and configuration software, the servo motors need to be commissioned with such parameters as the weight of scenery element they lift. And that, in turn, requires a one-to-one USB connection — whose cable length limit is 16 feet, or five meters — between PC and servo motor. The Clearpath software is also needed for system monitoring and possible troubleshooting, to ensure the precision of those positions and movements.

Manually plugging each of 20 ceiling-mounted motors into a PC — presumably while standing on a scissor lift — was not going to work. The only practical way that Showman Fabricators could effectively tune servo motors that were mounted on the ceiling, was by simulating that direct USB connection over that same ethernet network.

"This was only the second project we'd used these particular servos for," says Ryan Poethke, automation and electrical designer at Showman Fabricators

That path led Poethke to a PLC programming discussion forum, where he picked the brains of fellow engineers. He asked forum members to recommend a solution with crash-resistant software (rebooting devices hanging from the ceiling to re-establish connectivity was also a non-starter); easily customized addressability, so that each of 20 devices would have logical names; DIN-rail mounting, and 24V power, requiring no separate power supply.

SEH Technology's INU-100 USB device server soon rose to the top of the list for several reasons. Importantly, notes Poethke, they were able to confirm lead time for a relatively large quantity — 20 — units. Equally important, test samples are a standard service at SEH, something other vendors were unwilling or unable to provide. Showman couldn't commit to purchasing 20 device servers with the chance there would be incompatibilities.

Poethke's automation and electrics department team built a Showman-Fabricators-branded control cabinet, for each of the 20 servo motors.



# The Internet of Things in nature and wildlife

## Adam Leach of Nominet explains how ZSL uses IoT in its bid to protect the animals and their surroundings

It's too easy to see nature and technology as contradictory elements of today's society; one represents a symbolic – or literal – escape from the other. However, in our innovative, digital world, technology can in fact provide a vital service to the natural one, supporting the important work of the many organisations tasked with keeping it safe for the generations to come.

The idea that nature and technology can work together became evident for me in 2016 when we, at Nominet, started to work with the Zoological Society of London (ZSL). This venerable organisation – founded in 1826 – has certainly changed with the times and has long been working to find ways to use the latest technology to support their conservation efforts across the world. Most recently, ZSL looked to the Internet of Things (IoT) to take a critical role in its work, an endeavour which Nominet was able to support it with. ZSL recognised the potential for this technology to help them more efficiently gather and analyse real world data, detecting poachers and monitoring changing habitats from a distance.

Specifically, Nominet's year working in this area enabled us to deliver a suite of IoT tools that are now forming a critical part of ZSL's Instant Detect, a wildlife, environment and threat monitoring system that can help preserve and protect species in some of the most demanding, wild and unconnected parts of the world. The system combines rugged cameras and sensors into a low-power radio network to monitor wildlife and detect human activity.

The captured data is transmitted using satellite connectivity to Nominet's IoT Tools platform in the cloud, which is accessible to conservationists no matter where they are in the world, helping them understand conditions on the ground, identify threats and develop methods to meet identified challenges. For example, the human detection sensors can serve as an early warning system of illegal activity, supporting the on-going efforts to tackle poaching. Such data capture could prove a vital link in the chain when racing to save species from extinction, especially in challenging terrains, and Nominet is proud to be able to bring our technical capabilities and knowl-

edge to support such admirable work.

This isn't the only example of IoT being used in environmental management situations. Nominet previously brought the connected network approach to the Oxford Flood Network, a project that helps to monitor local water levels and protect homes and habitats. In this instance, IoT helped to collect data 'in the wild' for analysis which could, as required, be used to alert the authorities of a flood risk and potentially save homes or farmland from damage. The need for networks such as this will only become more pressing as climate change impacts our weather and floods become more common, even in temperate climates like the UK. Using technology to help humanity meet the environmental challenges of our changing eco-system seems a necessary and important step – indeed it could be a crucial means of keeping our planet habitable.

Through this work with ZSL – and Nominet's other projects including the Oxford Flood Network – our expert team has developed skills and expertise with IoT and we believe this new platform could be valuable in a variety of settings and to various organisations. To that end, we have decided to now make the IoT data collection, analysis and insight platform that is used in Instant Detect, open source. Not only will this give the wider conservation community access to the platform to support their activities, it also allows the wider tech community to get their hands on it and – we hope – push the capabilities of the platform still further with their own expertise. We look forward to seeing where IoT Tools might go next – and who else it could help.

This work with IoT tools and ZSL has been intellectually stimulating and satisfying for the Nominet team, but it has also reminded us that technology can be a force for good in the modern world – it's been refreshing. Technology has real potential to help us tackle some of the world's biggest challenges, such as the extinction of species or climate change, but only if we work together with others in the space, share expertise and drive forwards towards positive outcomes that benefit all.



The system combines rugged cameras and sensors into a low-power radio network to monitor wildlife and detect human activity. The captured data is transmitted using satellite connectivity to Nominet's IoT Tools platform in the cloud, which is accessible to conservationists, helping them understand conditions on the ground, identify threats and develop methods to meet identified challenges

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## Multi-service ports: adaptable networking designed for digital journeys

*Prasanna Caliaperoumal, deputy director, product, Epsilon*

In a market where global yearly spending on digital transformation will reach \$2.3 trillion in 2023 (IDC), enterprises have to build adaptability and simplicity into their networking. Without successful networking, they will continue to face a never-ending set of challenges when connecting and delivering their applications and data globally. They need networking that can do more with less resource allocated to it and fewer vendors to manage.

The growing adoption of cloud has led to service providers offering new networking models such as multi-service ports. They are designed to show that connecting across the globe and to the cloud doesn't have to be complicated.

Ethernet multi-service ports reduce the need for multiple service provider relationships and offer a simpler model for networking. They make it easy for enterprises to access an array of network services and connect globally using a single port, helping to accelerate their digital journeys.

From a single port, a "virtual connect" – a private, dedicated point-to-point ethernet VLAN connection – is established between two endpoints. This should enable the organisation to rapidly consume connectivity services regardless of where applications and data are hosted.

Enterprises can use a multi-service port to connect to data centres, public clouds, internet exchanges (IXs) and other network resources, and to deploy software-defined wide area networking (SD-WAN) in branch locations.

Traditional networking models that simply connect A to B often come with challenges for enterprises in terms of flexibility and scalability. Multi-service ports can solve these challenges, allowing organisations to easily change and adapt their network services.

Users can consolidate service providers and connectivity services into a single easy-to-manage port. Organisations no longer have to manage multiple service provider relationships, track and compare pricing across services, or allocate resource to creating their own ecosystem of connectivity. They can plug into an existing ecosystem and access global connectivity with a simple and seamless model.

With a software-defined networking (SDN) management layer, organisations can automate networking provisioning and access a comprehensive range of services on-demand. They can take their approach to networking into the future and immediately benefit from removing manual processes and long lead times.

Organisations only pay for what they use which drives costs down. The days of over-provisioning for a single service are over. A multi-service port is a cost-efficient way to increase the flexibility of an organisation's operations while scaling to meet new demand.

From a single port, organisations can benefit from seamless connections to global networks with hundreds of data centres, cloud service providers (CSPs), IXs and more. A multi-service port removes barriers to serving demand in new markets and supports digital transformation across the globe.

Whether an organisation is "cloud-first", "cloud-only" or just starting its digital journey, a multi-service port gives it access to the services it needs today, as well as tomorrow. With a comprehensive range of services available from a single port, the organisation is ready to connect applications and data no matter where they are located.

If an organisation's objective is to complete its digital journey with simplicity, efficiency and flexibility, it will need to look at the models offered by different service providers.

Choosing the right networking model will offer long-term value as well as near-term cost reductions. The service provider should have proven network expertise and offer a complete end-to-end service that includes set-up and last mile connectivity. A track record of developing and managing network infrastructure to support applications and data is essential.

The service provider's ecosystem should

offer network reach that goes beyond developed markets and offers a depth of connectivity in emerging markets. It should be able to support the organisation no matter where it needs to be present and offer direct access to multiple clouds and IXs.

A provider should also offer flexibility in terms of allowing the movement of ports across different locations on the network, enabling organisations to benefit from moving their service wherever it's needed. It should also have an MEF-certified, carrier-grade network with scalable bandwidth to

ensure growing demand can be met.

Multi-service ports offer a simple yet powerful networking model that can move with the enterprise's changing demands while serving the entire IT value chain.

While an organisation cannot predict the future, it can build a networking foundation that is ready to change and adapt with new technologies and user behaviours. The organisations that take action now will be ready to adopt new solutions and create a competitive edge with flexible and adaptable networking.

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# Creating a robust disaster recovery strategy

Tim Mercer, CEO, Vapour

If Covid-19 has taught the global economy anything, it's the need for businesses to be able to adapt to the unexpected. So, what's the answer to creating a robust disaster recovery (DR) strategy?

Firstly, it may sound flippant but the clue's in the title. A strategy is very much that – strategic, planned. So, for a DR strategy to take shape, organisations need to look ahead and consider different scenarios. It's impossible to predict every eventuality but a sense of preparedness is key.

That strategy then needs to be rolled out and tested. Otherwise there's no way of knowing its likely effectiveness and what needs to be tweaked to better protect the business should disaster really strike. Some organisations – pre-lockdown – had already prepared, but the devil is in the detail.

Recent tech headlines revealed how difficult it became for many firms – even resellers – to obtain kit when lockdown was

announced. A number of businesses didn't have a complete DR strategy in place for a pandemic, which generated unprecedented demand levels in little time.

Whether preparing for a virus outbreak to a cyber-attack or workplace fire, a tech inventory would ideally be drawn up way in advance, listing everything needed to remain productive and maintain 'business as usual'. This includes IT and voice equipment – and perhaps even video collaboration technology. 'Bring your own device' (BYOD) protocol is also advised.

In addition, secure network connectivity is even more crucial than physical hardware, and this may be where specialist input is required.

For example, organisations need to think about their server location and bandwidth to enable easy data access. If servers are physically based at a company's HQ rather than in the cloud, there's a risk that the internet pipe won't be big enough to support

workforces trying to access data remotely.

Also consider the impact of VPNs, which may allow employees to bypass standard office-based internet restrictions, even accidentally. This could present potential security issues.

The DR strategy needs to be both embraced and driven by the C-suite, and budgets should reflect expectation. All too often, companies want the slickest, most fool-proofed solution available, yet won't dedicate financial resources to match. And the last thing firms should do is cut IT spend.

It's important to communicate the DR plan to staff in advance, if applicable, but ongoing conversation is just as important to maintain morale too.

Specific policies need to be clearly defined and circulated to provide guidance and/or stipulate protocol, on everything from browsing habits to the usage of personal devices.

Fraud, hacks and scams are all too common, particularly during crisis.

COVID-19 phishing emails professing to offer much-needed information on the pandemic are reportedly up by 40%, so employees need to be educated on cyber safety to remain vigilant against threats.

It goes without saying that the implementation of firewalls – as well as up-to-date patches – is also critical. For example, does the organisation have the right level of IT support either internally or on an outsourced basis, to help activate and continually manage the DR strategy?

Resources need to be carefully evaluated, ideally secured in advance and if it becomes clear they don't exist when the DR plan is activated, appointing an outsourced tech firm is probably the quickest way to fill any gaps. A DR strategy should achieve multiple business objectives, with the priority invariably being to keep the organisation running. But customer and employee experience must be a close second.

## PRODUCTS

**StorageCraft OneXafe Solo** is said to provide "a radically simple, anytime, anywhere, cloud-based business continuity solution" in a compact plug-and-play device. It apparently delivers enterprise-class data backup and recovery at an SMB price point. The company further claims



OneXafe Solo is extremely easy to configure, deploy, and manage.

There's more; the device can stream data directly to the cloud via a simple internet connection, there is no need for costly onsite infrastructure. The solution is built us-

ing the same advanced data protection technology platform that powers StorageCraft ShadowXafe. OneXafe Solo features the powerful functionality of reliable and flexible restore, SLA-based data protection and workflow, instant restore with StorageCraft Virtual Boot, and cloud-based management with StorageCraft OneSystem. Furthermore, due to its flexibility, OneXafe Solo is said to be perfectly suited for deployment in a wide range of environments, including virtual, physical, agentless (i.e. host-based), agent-based, as well as with multiple local storage options. [storagecraft.com](http://storagecraft.com)

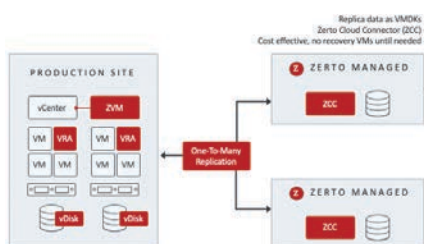
**Pod** claims "it has business continuity written into its DNA". With regard to on-site business continuity / disaster recovery provision, designated end-user admin staff can make changes to call-flows, messaging and even handsets via a 100% secure portal from any device. That means "no more hours spent on hold to your telecoms provider to ask them to divert all of your calls to a mobile number because a truck reversed into your local BT street cabinet". Also, in the words of Pod, "calls can failover from site A to site B with the click of a mouse, and even a home-worker's wobbly domestic broadband service cannot prevent them from staying connected to their colleagues". The smartphone app

running on 4G/3G will give them access to the same extensive call function suite, Instant Messaging, audio & video conferencing & document-sharing capabilities as they would have sat at their desk in the office with a leased line running under their feet. What's more, visibility of all colleagues'



availability across all sites ensures that business continues no matter how widely colleagues have been dispersed by world events. Furthermore, Pod also reckons none of the outages experienced by some of its competitors whose 'Unified' Comms solutions fall over whenever one of the retro-fitted video / IM / call-recording / call stats functions decides to update itself without telling the other functions or the old VoIP software at its core. [24sevencloud.co.uk](http://24sevencloud.co.uk)

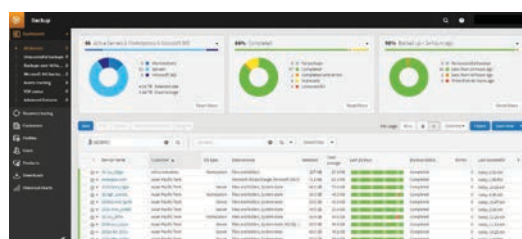
**Zerto** claims to lead the industry in DRaaS, "being the first IT Resilience Platform built with the cloud in mind".



Zerto enables CSPs to offer a robust, cost-effective DRaaS solution that can take place within the private cloud, to the public cloud and within the public cloud. The IT Resilience Platform powers more than 350 cloud service providers, including 9 out of 10 leading providers participating in Gartner's 2018 DRaaS Magic Quadrant. Enterprises may want to move disaster recovery to the cloud because of the huge cost and resource savings to be gained, in comparison to creating a replication

site and other necessary systems. It replaces large upfront investments with predictable monthly bills and ensures higher performance and reliability via CSP services. Other benefits of utilising Zerto's IT Resilience Platform include: DR as OpEx, not CapEx – DRaaS replaces upfront capital investments with flexible monthly billing. Gain higher performance and reliability by leveraging CSP services, while maintaining control over production environments. [zerto.com](http://zerto.com)

**SolarWinds Backup** is a cloud-first backup system designed to provide streamlined data protection for physical and virtual servers, workstations, business documents and Microsoft 365 data, all managed from a single web-based dashboard. The vendor claims that SolarWinds Backup can help reduce the cost and complexity of data protection without sacrificing speed or reliability. Storage in SolarWinds' global private



cloud is included. The goal of cloud-first backup is to get a business' data offsite.

If a company's data doesn't exist in at least two places, then it may as well not exist, the company says. Disaster recovery is a top concern for many backup administrators, as the environment available for restoring workloads may not be identical to the original. To address this, SolarWinds Backup offers a flexible and powerful Recovery

Console that can be used to create and update standby images of selected devices in a secondary location that is always ready to take over at a moment's notice, in the event of an outage. A SaaS application means there is no need to install or maintain a local application servers and cloud storage included at no extra charge in data-centres located worldwide. [solarwinds.com](http://solarwinds.com)



**Datto SIRIS** is a business continuity and disaster recovery (BCDR) solution built specifically for managed service providers (MSPs) to keep their clients' businesses running in the wake of a disaster. The company says the intuitive, reliable solution enables MSPs to ensure their customer's business is always on and resilient to disasters, with an all-in-one solution that includes verified backups, restore options for any scenario, instant virtualisation and ransomware detection. What's more, Datto SIRIS can, apparently, scan every backup to ensure they are free of ransomware and include all data, ensuring the customer will have a successful recovery. SIRIS uses Datto's patented Inverse Chain technology to protect backups from being compromised. The technology, which leverages the snapshot and clone capabilities within an open source file system for efficient storage management, provides the most efficient backup and disaster recovery available, while supporting a variety of recovery options. Datto says the result is a more efficient and resilient backup solution, a more cost-effective unified business continuity model, and faster recovery. Additionally, it is backed by Datto's private cloud with locations worldwide, so businesses have full control over where their data resides. What's more, the solution can be fully adapted to each customer's specific needs. It can be delivered as a hardware appliance that is sized to fit the use case, as a virtual appliance in the private or public cloud, or by building the SIRIS image onto a repurposed, existing BDR appliance or other hardware. SIRIS is available for a simple, all-inclusive monthly cost with no overages or additional fees - enabling predictable, consistent margins for MSPs. [datto.com](http://datto.com)





# Please meet...

*Networking+ chats to Jürgen Hatheier, CTO for EMEA at Ciena*

## What is the best thing about your job?

The best thing about my job is the people. I know it sounds cliché, but I love my team and I am surrounded by some of the best people in the industry. I joined Ciena in February and I felt like part of the team immediately. I really do believe I work alongside some of the best people in our industry.

We spend so much time working I think it's important to be passionate and enjoy what you do. I would always recommend weighing up the culture of a company before committing to a job. For me, having a supportive team is a critical factor. You want people who are striving to achieve the same goals and visions, but also to be on a team where you support each other, work hard and have fun at the same time.

## Who has been your biggest inspiration?

Jack Ma – and it's not because of his net worth at over \$40 billion, but because of his persistence and never give up attitude.

He embodies the underdog starting from nothing and working his way up. He was rejected several times along the way but never accepted no for an answer and his story acts as proof of what we can achieve. I will always remember the quote, "if you don't give up, you still have a chance. Giving up is the greatest failure."

I also love the fact that Jack Ma is now so successful – embodying a true 'rag to riches' story. It gives us all something to aspire to and shows we really can do anything we put our mind to.

## What is your biggest regret to date?

There isn't one big regret which comes to mind although if I take the time to think about it I am sure something will come. Even if things don't work out as planned there is always something we can take away. I believe everything happens for a reason.. If I had to pick something, I would say, I wish I had more confidence earlier on. I will always remember that when I was younger, I wanted to be a fighter jet pilot, but my dad talked me out of it. I'm glad he did, but I love flying so instead I have settled on having my private pilot's license.

## If you had to work in a different industry, what would it be?

If you are asking my ten-year-old self I would stick to becoming a fighter jet pilot.

But I also loved the idea of medicine. If I couldn't work in the technology industry think I would have pursued a role in medicine and tried to become a doctor in the field. They do some incredible work and I genuinely want to do good and help others.

## Who was your hero when you were growing up?

My uncle was my hero for many reasons. He could fix absolutely everything and anything and he always made it look so easy. It also seemed like he knew the answer to every question, and he could work 24 hours without getting tired... he is still kind of my hero and would be probably my first point of call.

I generally admire everyone who has a pragmatic approach to solving problems and can think creativity and outside of the box. While of course studying some of the core disciplines such as science and math's is incredibly important in our line of work, in order to develop new products and technologies, but we also need to bring these to the market and this type of creativity is an

art. It requires people to think differently and positively and this isn't always an approach which comes naturally.

## What would you do with £1m?

I would convert them to Euros first (given that I live in Austria) and then invest them in a thinktank. I think a good investment would be a company which researches new methods for large corporations to deal with our dynamic market environment.

Adapting and flexibility are incredibly important to the success of today's

businesses and while smaller companies are more readily able to deal with change, big corporations often fail in that transformation programme. From my perspective, this is often due to lack of available tools and methods available to support them.

## The Beatles or the Rolling Stones?

They are both awesome but for me there is a clear winner - The Rolling Stones. Who doesn't love Mick Jagger! I also love the song, "Beast of Burden" – although I never feel that way about my job!

## Which rival do you most admire?

This is a tricky one, but I think I would have to say Cisco. They are doing great things in the industry. It is quite an accomplishment to manoeuvre a company of that scale through that many industry disruptions.

## What's the weirdest question you've been asked at an interview?

I once went for an interview for a product management position in telecommunications and I was asked to draw a cross section of a toilet... I'm still not sure why.

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