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NETWORK+

Getting crowds back safely

Could mobile devices hold the key to getting doors open?

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Smart cities in a changing world

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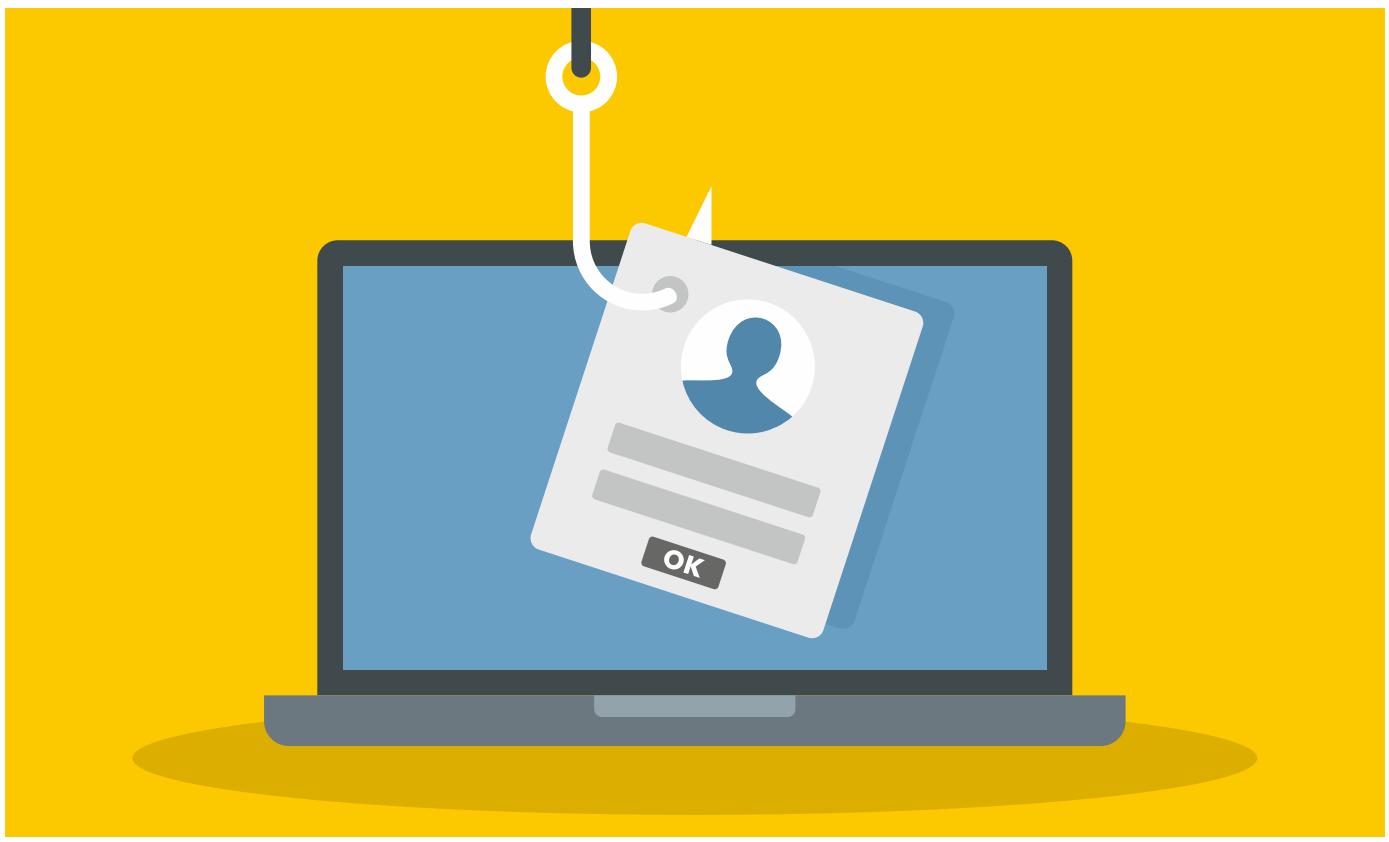
HMRC 'serious' data incidents come to light



Her Majesty's Revenue and Customs (HMRC) reported 11 "serious" personal data incidents to the Information Commissioner's Office (ICO) in the most recent financial year, according to official figures released by the government department.

The tax agency said the incidents are estimated to have affected more than 23,000 people in total and that the most widespread and serious personal data incident recorded in the report occurred in May. In that instance, National Insurance number letters relating to 16-year-old children were sent out with incorrect details, impacting up to 18,864 members of the public.

In February, there was a fraudulent attack resulting in 64 employees' details being obtained from three PAYE schemes. Various personal information was obtained with 573 people said to have been impacted.

Often impersonated by cyber criminals, usually via email, the tax agency recently introduced new vulnerability management and threat hunting capabilities, as well as an automated anti-phishing email management tool. HMRC said this was capable of automatically initiating over 80% of malicious website takedown requests without human intervention.

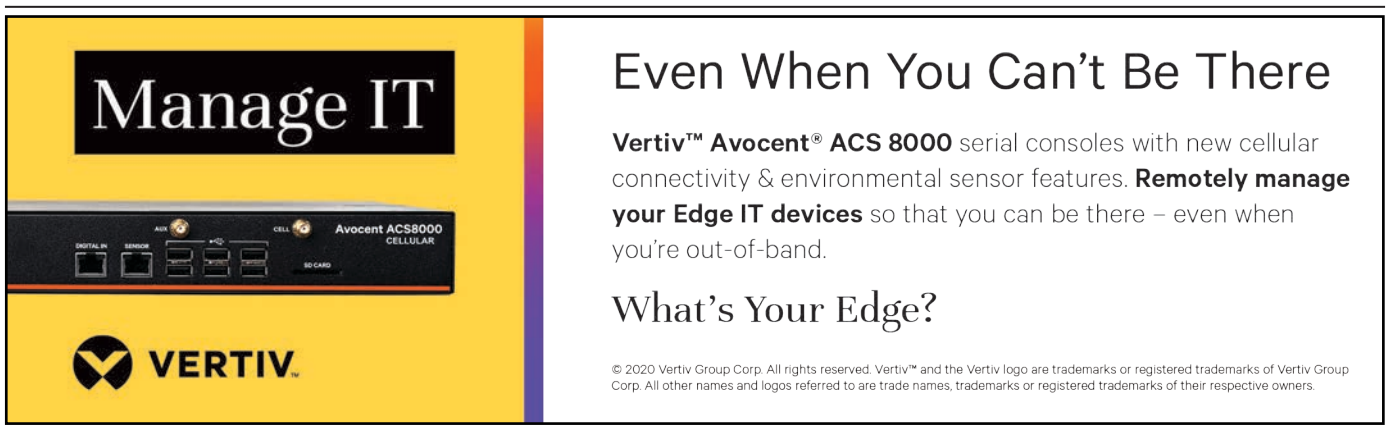
Nigel Thorpe, technical director at SecureAge Technology, told Networking+ that "human error is always going to be a factor", but more can be done to mitigate the effects of data loss. "Rather than building more fences around data, and developing more stringent processes around information handling, organisations need a new security focus on the data itself," he said. "By encrypting data at source, information that is stolen or mistakenly sent to the wrong people, will remain secure and not readable."

HMRC also recorded a small number of non-notifiable incidents, including the loss or insecure disposal of electronic equipment, devices or paper documents, and 3,316 security incidents that were centrally managed. It said that against the backdrop of a highly complex threat landscape, it was continuing to enhance the activities undertaken by its Cyber Security Command Centre to guard against the risk of cyberattacks, insider threats and other risks in an ongoing learning process.

Commenting on the report, HMRC said: "We deal with millions of customers every year and tens of millions of paper and electronic interactions. We take the issue of data security extremely seriously and continually look to improve the security of customer information. We investigate and analyses all security incidents to understand and reduce security and information risk. We actively learn and act on our incidents."

Meanwhile, official data released under a Freedom of Information (FOI) request has revealed that HM Revenue & Customs has faced 367,520 email phishing attacks in 2020.

continued on page 2



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Data incidents come to light

Continued from page 1

The figures were obtained by accountancy firm Lanop Outsourcing under a Freedom of Information request, which reveals that HMRC faced an average of 26,100 phishing attacks in January and February of this year. That number soared to an average of 45,046 attacks per month from March through until September (a 73% increase).

"Cyber criminals have not missed a trick when it comes to using the devastating coronavirus to lure unknowing victims into leaking their own private information, such as passwords and payment details, via a phishing scam," said Mohammad Sohaib, director at Lanop Outsourcing. "In one such example, scammers impersonated HMRC to trick business owners into believing that their VAT deferral application, a key government support initiative during the pandemic, had been rejected. They would then redirect victims to a website with official HMRC branding before stealing credit card details."

The lowest recorded number of phishing attacks during March to September took place in August when 38,096 attacks were detected by HMRC. However, this figure then rose to 57,801 cases in September.

In addition to phishing attacks, HMRC also reported nearly 200,000 cases of phone scams and 58,921 via SMS. April saw the lowest number of phone scams and SMS referrals was with 425 and 2,515 of each respectively.

Sohaib also predicted that the percentage of successful scams would increase "as the sophistication and quantity of these attacks continue to surge". ■

WBA's OpenRoaming introduces 'highest security' to public Wi-Fi

The Wireless Broadband Alliance (WBA) said users of its new OpenRoaming service will be granted enterprise-level security, as the result of a partnership with infrastructure security expert, Kyrio.

This service, which removes the barriers to connectivity typically associated with public Wi-Fi, such as the need to constantly re-register or re-enter log-in credentials, will now offer the tightest level of security available on any public or guest Wi-Fi network.

The partnership is one in a series of milestone moves by the WBA to make Wi-Fi more readily accessible to all and should lay to rest any concerns around the security of guest and public Wi-Fi networks.

As part of the new partnership, Kyrio a subsidiary of CableLabs, will join Google and Cisco as an Issuing Intermediate Certificate Authority (ICA), providing agent and registration authority services to the broader WBA family. This includes networks, operators, hubs and identity providers. Certificate Authorities are governed by the WBA Public Key Infrastructure Certificate Policy and provides a critical foundation of trust between OpenRoaming federation participants as membership grows.

Kyrio said it would also enable management and attribution of the WBA Unique Organisation Identifiers that are critical for their partner identification on the OpenRoaming system. This information is centralised on a WBA global database to guarantee system harmony and enhanced security.

The partnership is one in a series of milestone moves by the WBA to make Wi-Fi more readily accessible to all and should lay to rest any concerns around the security of public Wi-Fi networks

The company is currently engaged with many global standards groups spanning the energy, healthcare, industrial and commercial IoT sectors, and recently formed a strategic alliance with Sectigo, one of the world's largest commercial Certificate Authorities.

WBA OpenRoaming apparently simplifies the Wi-Fi experience, matching the convenience and coverage of most cellular networks, but with better reliability and often greater speed. Now, users will be able to enjoy levels of security that, until recently, were enjoyed by large-scale private enterprises.

News of the partnership comes just months after WBA CEO, Tiago Rodrigues, announced that OpenRoaming was, "Open for business" with WBA members such as AT&T, Boingo Wireless, Cisco, Comcast, Deutsche Telekom, Intel, Orange, Samsung and more all throwing their support behind the project. ■

Eurosat and TP-Link UK future proof London office with business-class wireless network

Eurosat, the satellite and aerial equipment distributor and TP-link, a provider of consumer and business networking products, have provided a cloud-enabled business-class wireless network to a London-based office.

The 17,000 sq. ft space in Richmond was transformed when work began in July 2020 and a full Grade A refurbishment was conducted across five floors. Eurosat supplied the site with a complete enterprise-grade infrastructure, featuring TV satellite feeds, 760 Cat6A points and 48 patch panels. This included full implementation of wired and TP-Link wireless networking solutions, designed to future proof the office as the connectivity requirements of the office building increase.

To create a seamless wireless network, a total of 25 TP-Link AC1750 wireless MU-MIMO gigabit ceiling mount access point (EAP245) units were supplied and installed throughout the building. As part of TP-Link's Omada cloud software-defined networking (SDN) range, the EAP245 provides business Wi-Fi and supports seamless roaming, to ensure video streams and voice calls are unaffected as users move between locations.

"From enterprise equipment to everyday digital communication tools, the office of the future will be increasingly underpinned by connectivity, with networks at the heart of these efforts," said Will Liu, managing director of TP-Link UK. "Working closely with our longstanding specialist partner, Eurosat, we have successfully provided the network infrastructure required to keep offices and the businesses in the buildings operating effectively within the space."

A total of 25 TP-Link AC1750 wireless MU-MIMO gigabit ceiling mount access point units were supplied and installed throughout the building

The companies said cloud-controlled access points streamlined network configuration to save time, whilst the centralised management, various authentication options and monitoring through the Omada app will simplify ongoing management and security for the office's network managers. With advanced 802.11ac Wave 2 MU-MIMO technology, EAP245's deliver 1750 Mbps Wi-Fi speeds and long-range coverage over 2.4GHz and 5GHz wireless bands. ■

Epsilon brings multi-cloud networking with Aviatrix

Connectivity service provider Epsilon has partnered with Aviatrix, a cloud network platform, to provide a multi-cloud networking service for enterprises.

Epsilon Cloud Networking is an end-to-end multi-cloud service with the automation, operational visibility and control that enterprises need to simplify cloud networking, the company said.

The multi-cloud service directly controls native cloud networking constructs and is based on the Aviatrix multi-cloud network platform with the ability to move data between cloud environments, including Amazon Web Services, Google Cloud Platform, Microsoft Azure and Oracle Cloud.

It leverages a multi-cloud network architecture with a common network data and operational control plane. Through point and click workflows and infrastructure as code automation, enterprises using the multi-cloud service no longer need to undertake the complex and manual processes of native cloud networking.

In addition, the Epsilon service allows customers to consume security services, such as FQDN filtering and service insertion of next-gen firewalls, to meet their security and compliance requirements.

"Business transformation has driven enterprise IT organisations to embrace public cloud as the new centre of gravity for applications and data," said Chin Woon Lee, data services director at Epsilon. "With the pandemic pushing the pace of this transformation, cloud operations teams are facing more challenges including limited visibility, lack of network control and skill gaps. Our cloud networking service will enable businesses to take on these challenges more effectively."

Aviatrix chief executive officer Steve Mullaney added: "Our partnership allows Epsilon to deliver a complete end-to-end service for businesses looking for better visibility and control over their multi-cloud environment.

"Our enterprise-class multi-cloud network architecture is specifically tailored for large-scale enterprises, so that they can transform their operations with the help from cloud experts.

"We look forward to evolving our solution to further enable Epsilon to meet the changing cloud requirements of enterprises across the globe."

Epsilon said the service "provides everything an enterprise needs" to transform its cloud networking through a single relationship.

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NTT launches new London data centre

NTT has launched London 1 Data Centre, which will more than triple its UK data centre footprint. The milestone in a commitment to invest £500 million into new UK data centres follows the confirmation of a trade deal between the UK and Japan and it is expected that the new NTT London 1 centre will go on to employ 100 people with technical and operational skills.

Based in Dagenham, east London, it is close to an already established internet hub, which facilitates the majority of the London Internet Exchange's (LINX) infrastructure. The new centre will have 25,600 sqm of IT space and a maximum IT load of 64 MW once fully operational.

"The London 1 Data Centre is the latest addition to our NTT global portfolio," said Masaaki Moribayashi, senior executive vice president, services for NTT. "Offering flexible, scalable and secure infrastructure along with customizable solutions, London 1 Data Centre has been designed to accommodate a wide range of NTT clients and partners, from large scale cloud/SaaS providers to enterprise clients who require full-stack services such as managed hybrid cloud solutions with global network services delivered from an industry leading and carrier-neutral colocation facility. It is a great advantage that we can provide a variety of cloud infrastructure services such as private cloud, public cloud, and colocation within the same data centre."

Florian Winkler, chief executive officer of the global data centres EMEA division of NTT added: "We're extremely proud to be opening London 1 Data Centre. UK data centers are a critical enabler of global business and ensure business continuity 365 days a year. The pandemic has demonstrated the vital importance of effective connectivity and reliable infrastructure for businesses to operate."

Its operations will provide businesses with physical and technical infrastructure that's supported by N+1 UPS systems and generator backup, while promising to only utilise guaranteed renewable power. ■

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Eutelsat launches UK satellite broadband

European space operator Eutelsat said its new all-electric (propulsion) broadband satellite, Konnect, is now serving the UK. The internet service provider which offers fixed broadband access services, currently up to 100Mbps.

Paris-headquartered Eutelsat said businesses in the UK unable to access terrestrial broadband connectivity through traditional means can now enjoy superfast satellite broadband, no matter where they live, via the Eutelsat next-generation Konnect satellite.

This new service is provided by Eutelsat's new direct operation, which, like the satellite, is also called Konnect. It offers packages specifically tailored to the needs of small businesses and institutions currently operating beyond the reach of fibre.

"Connecting reliably to broadband, particularly in rural areas, has been a real pain point for internet users in the UK including those who can't access services from terrestrial networks," said James Soames, marketing director Konnect Europe. "With the huge switch to working from home this year, this kind of fast, affordable and easily available service is needed more than ever. This new launch offers connectivity for everyone to superfast broadband packages wherever you live. It opens up exciting new opportunities for anyone struggling to achieve a reliable internet connection, whether for business or pleasure."

Eutelsat said the service is available now in the UK through a growing network of channel partners. It is also available in other European countries, as well as Africa. ■

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FROM THE COVER

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Vertiv has today introduced the Vertiv™ Avocent® ACS 8000 advanced console server with cellular capabilities, ensuring seamless, integrated management of Vertiv and third-party equipment even when no wired network is available. The Avocent ACS 8000 cellular models are available today through the Vertiv sales team and value added resellers.

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In addition to managing devices, Avocent ACS 8000 cellular lets users provision new equipment and troubleshoot issues, with or without functioning ethernet connections, for more efficient and secure network operations. It can be used in enterprise, edge, colocation, cloud and hyperscale applications and is ideal for remote environments either without wired internet or in sites without a primary network. It is also a fit for edge environments with a single wired internet connection requiring failover resiliency or for locations that do not want the complexity of adding failover traffic.

Market intelligence firm IHS Markit ranked Vertiv the No. 1 supplier of remote IT management solutions worldwide in its KVM Switches and Serial Consoles Report 2019. For more information on the Avocent® ACS 8000 cellular and the full portfolio or remote IT management solutions, visit Vertiv.com.

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GCHQ to investigate possible hacks

GCHQ spies are investigating whether Russian hackers stole UK government secrets following extensive cyberattacks on US agencies which used the same security software. The FBI and the Department of Homeland Security are investigating what was described as a large-scale penetration of US government agencies. The attack has been apparently linked to the same months-long cyber espionage campaign that also afflicted the prominent cybersecurity firm FireEye. The apparent conduit for the Treasury and Commerce Department hacks - and the FireEye compromise - is a hugely popular piece of server software called SolarWinds. The software is used by a number of government departments including GCHQ itself.

Plymouth's digital future to be transformed with £52m full fibre roll-out

Enterprises in Plymouth will benefit from an investment of at least £52m in its digital future, as part of CityFibre's plans to upgrade the nation's legacy networks with gigabit-capable full fibre connectivity. The "state-of-the-art infrastructure" is expected to boost business productivity and innovation and deliver millions in economic benefits for the port city, while giving businesses access to the UK's fastest broadband services. Detailed planning is already underway as CityFibre, the UK's third national infrastructure platform, designs a network capable of serving Plymouth's current and future demands. Upon completion, the network will be in reach of nearly every business in the city and will provide a platform for a new generation of "smart city" applications, as well as the roll-out of 5G mobile services.

'Hackers change tactics to inflict more damage'

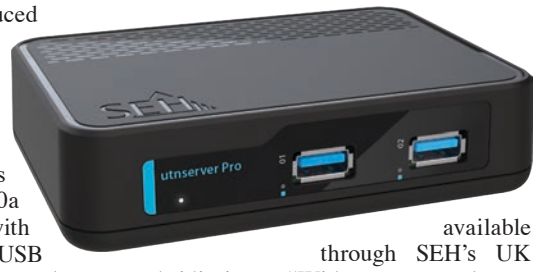
Ransomware gangs are diversifying their tactics to inflict harm on businesses. Studies by Accenture Security show that these gangs are using more advanced methods such as "living off the land" tools, shared hosting infrastructure and publicly-developed exploit codes to target corporate email systems and extort ransom payments. "Since Covid-19 radically shifted the way we work and live, we've seen a wide range of cyber adversaries changing their tactics to take advantage of new vulnerabilities," said Josh Ray, leader of Accenture's global cyber security practice. "These gangs can then steal data for espionage and compromise email systems therefore enterprises must raise the level of their cyber security."

Reading gets £58m broadband investment from CityFibre

Nearly every business in Reading will gain access to next-generation broadband thanks to a major investment by CityFibre. The "state-of-the-art infrastructure" is expected to boost business productivity and innovation and deliver millions in economic benefits for the town, while giving enterprises access to the UK's fastest broadband services. "We welcome this private investment by CityFibre into Reading to deliver a modern, fit-for-purpose digital infrastructure that will futureproof residents and businesses," said cllr Jason Brock, leader at Reading Borough Council. "CityFibre's full fibre network will be vital in ensuring Reading has a resilient and dynamic economy for years to come and Reading Borough Council continues to work closely with the private sector to facilitate economic growth in the digital age."

SEH releases USB remote-working device

SEH Technologies has introduced the utnserver Pro with USB 3.0, which adds the new transfer rate referred to as "super speed". Designed to enable users to access the USB devices across the business network, this device replaces the myUTN-50a USB device server, bringing with it additional features for using USB devices more easily across a network. The utnserver Pro is apparently ideal for remote working in that it gives users the option of not only using external hard drives, dongles, card readers, barcode scanners, measuring devices or printers but also throughput-hungry RDX backup systems through the network to their home office. This allows employees to access the resources from home. This device is now available through SEH's UK subsidiaries. "With many employees accessing the network from home, there are emerging opportunities for cybercriminals to breach the network, track internet traffic and potentially collect confidential data," SEH said in a release. "Businesses can be confident that its data is protected with an exclusive point-to-point connection, password protection, user list and SSL 3.0 encryption. "



SSE connects 22 public sector sites

SSE Enterprise Telecoms has delivered gigabit-capable connectivity to 22 public sector sites across the city of Aberdeen, including priority NHS and education facilities in the area. The project is part of £10.5m full fibre investment project, a drive to create better infrastructure across the UK to improve the connectivity of local public sector organisations and businesses. SSE was awarded the Dark Fibre project for Aberdeenshire Council, NHS Grampian and Aberdeen City Council in March 2020. The project spans 275km across the Aberdeenshire region and is being rolled out in stages from now, throughout 2021, and into 2022. It will help to deliver improved public services to key public sector locations in a number of towns around Aberdeen city.

Virtana launches unified platform

Virtana has launched a unified platform for migrating, optimizing, and managing application workloads across public, private, hybrid and multi-cloud environments. Using artificial intelligence for IT operations (AIOps) technologies, including machine learning and advanced data analytics, the cloud agnostic Virtana platform is designed to solve the difficult challenges facing enterprises as they seek to leverage public clouds. The platform enables a "know before you go" approach by providing observability into which workloads to migrate. It also ensures that unexpected costs and performance degradation are avoided once workloads are operating in the cloud.

Word on the web...

A view on video conferencing, by Zabrina Doerck, director of product marketing, global enterprise, Infovista

To read this and other opinions from industry luminaries, visit www.networkingplus.co.uk

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It was the autocorrect, your honour

There's more reliance on email now as employees work remotely, writes Andrea Babbs, Vipre Security

With pressure on employees to work harder and faster, it's easy to think you've sent an email to the right person, to then realise you've sent it to the wrong person. But for the legal profession, the stakes are much higher. It's not just a simple mishap to send an incorrect email, or attach the wrong document, it could spell disaster.

By their nature, law firms deal with sensitive and confidential information daily, including client financial data and insurance claims, which is subject to strict compliance and regulatory requirements. The fact that law firms rely on email to share data with relevant parties is a risk in itself – documents covered by legal professional privilege that are accidentally emailed to the wrong person could constitute a breach of confidentiality.

Law firms will implement IT security across the company, including authentication and encryption protocols. But the nature of cyber crime means that hackers are constantly striving to stay one step ahead, and as such, law firms remain vulnerable to cyber threats that focus on email as a gap in the defence.

The business landscape

While eternal threats such as ransomware attacks garner much media attention, including Grubman Shire Meiselas & Sacks, who had confidential documents stolen from their database, unintentional security incidents don't make the headlines as much. Yet they are both as dangerous as each other. In fact, human errors are almost twice as likely to result in a confirmed data disclosure.

In a world where international communication is instantaneous, employees are under pressure to work harder, faster and smarter than ever before. As such, these human errors can be quickly attributed to busy employees juggling deadlines that don't have the time to double check each recipient's email address is accurate. The business landscape of today fundamentally makes mistakes more likely.

Fallout

It's impossible to predict what the precise fallout of a breach could be as the size and scale will differ. What we do know is that there are a number of variable consequences that will happen, including short and long term financial costs. The legal firm will need to run a technical audit to find out what happened to cause the breach, identify gaps in security and manage any external communications for damage control.

Consequently, the firm will need to pay penalties for the breach and invest further in security protocols. It's also probable that the company's credit rating will drop and the cyberthreat insurance will rise, even with additional security measures in place. Beyond financial damage, arguably the harm to the firm's reputation will be the most painful. A breach will affect client trust, potentially resulting in the devaluation of the brand and damaged client relationships.

Second chance to double check

Given the potentially severe consequences that can come from an email breach – most law firms identify 'protection and prevention' as the best course for a cyber security strategy. There are three key components that teams should consider to minimise the risk of data theft:

Authentication and encryption: Hackers may try to attack your systems directly or intercept emails via an insecure transport link. Security protocols are designed to prevent most instances of unauthorised interception. Encryption and authentication, however, do not safeguard you against human errors.

Policies and training: Security guidelines and rules regarding the circulation and storage of sensitive information are essential, as well as clear steps to follow when a security incident happens. You must ensure that employees are fully aware of them and undergo training when they join the team. It is key that training is an ongoing programme with quarterly or monthly short, informative sessions delivered online. This reinforcement of the security messaging ensures that everyone is capable of spotting a phishing attack or knows how to handle sensitive information as they are aware.

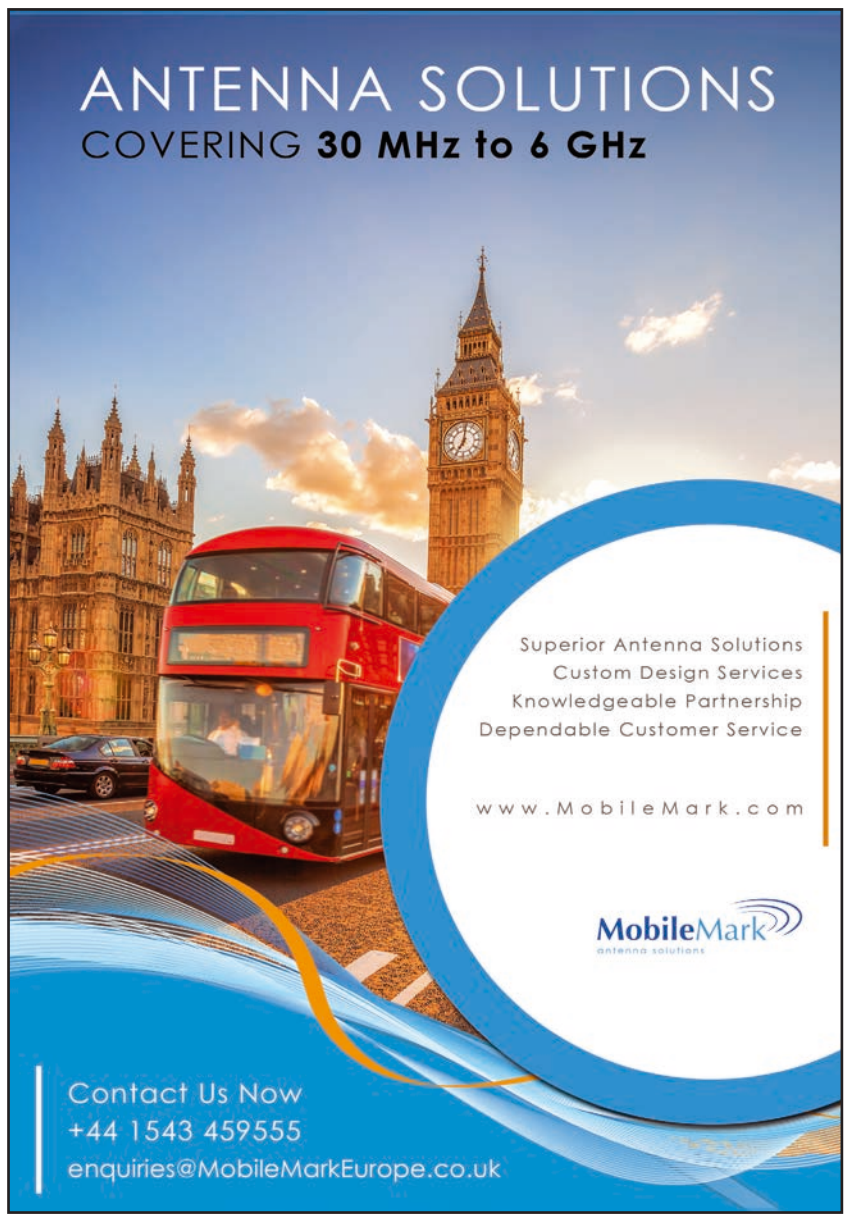
Data loss prevention (DLP): DLP solutions enable the firm to implement security measures for the detection, control and prevention of risky email sending behaviours. These solutions do not impede the working practices of users but instead gives them a critical second chance to double check.

This chance to double check means that users can be prompted based on specific parameters. For example, a lawyer exchanging confidential documents with other colleagues means that there could be numerous contacts within the TO or CC fields, as well as attachments going back and forth. The likelihood of a misspelt email address or replying to a phisher is high, but with extra precautions in place, they can be prompted to check the email addresses, remove any unwanted recipients and ensure that the attachment is appropriate.

Conclusion

Law firms must realise that sitting on confidential and personal information makes them a prime target for hackers and cyber thieves. Your cybersecurity strategy is not a one-time or occasional solution, so it's, therefore, time to prioritise. Risks must be regularly assessed, innovative technology implemented and workforces educated to provide your business and clients with strong and effective security against cyberattacks.

By Andrea Babbs, head of sales UK and Ireland, Vipre Security



Getting the crowds back safely

Alastair Williamson, CEO, Wyld Networks

Covid-19 has had a massive impact on live sport and the latest lockdown measures preventing the return of crowds, is a further blow. Governments, scientists, venues and clubs are desperately exploring safe ways to get the fans back. Despite the problems with rolling out nationwide track and trace mobile apps, our smart mobile devices could still hold the key to getting doors open, complying with social distancing expectations and filling up stadiums.

One of the emerging technologies that may provide an answer is new mobile mesh networking. Mobile mesh harnesses the power of our mobile devices by connecting smartphones directly to other smartphones and other internet connected wearables and devices without the need for cellular 4G/5G or Wi-Fi. Data simply finds the quickest and easiest route by hopping between phones. The technology is embedded in an existing or new branded mobile app, which could belong to a venue or club, for example.

The mesh is a mass expansive, robust, self-forming and self-healing resilient network created through multi-hop routing. Importantly, real-time messages and notifications can be sent to everyone on site with the app to meet social distancing objectives and provide up-to-date advice and guidance, as well as delivering live fan and community-based social content and retail offers.

Social distance monitoring and virtual geozones

Geozones are virtual walls to contain the mesh, which could be around a stadium, arena, fan zone, bar or VIP area, for example. It is also possible to create one or two metre personal geozones around individuals to monitor movement and enable social distance monitoring within a geozone.

This opens up a wide range of applications which were previously not possible. For example, a mesh network can provide digital access management, while analysis of data and use of graphical 'heat maps' can be used to monitor social distancing and make informed adjustments to layouts and visitor routing to help fans and visitors avoid unintentional close contact. And by integrating a mesh network of smartphones and IoT devices, administrators can better manage and understand the effectiveness of practical measures such as hand sanitising.

Of course, data security and privacy are paramount, so it is important that all user information is fully anonymised and only smartphones with the app installed that are inside the geozones are meshed together. As the smartphone leaves the geozone, it is automatically disconnected.

It's all about communication

As fans return to live sport, mobile mesh technology also offers venue owners and marketers new opportunities to communicate and engage with supporters to create experiences to enrich live events. While many fans are desperate to return to live events, others may have become used to watching their sport from literally 'the best seat in the house'. This combined with a rise in ticket prices for sporting events, parking, food and drink at stadiums means that clubs need to do more to attract back large crowds.

Poor in-stadium communications only make the living room more attractive. In most cases, there simply isn't enough bandwidth for everyone to share images, videos and messages, when their team scores, let alone have access to fan-based apps to browse details about players, stats, merchandise offers and competitions - or find out information about the closest food stands, bars or emergency exits.

Deloitte questioned 15,000 US sports fans about their stadium experience and level of engagement. When asked if: 'My mobile device enhances my experience through increased interaction with the team, sponsors, and fans in the stadium,' only 28% of casual fans said they were satisfied. While this figure rose to 42% for 'fanatics'. There is clearly more that can be done.

Instead of relying on overloaded cellular or Wi-Fi networks, a mobile mesh network linked to a rich content platform could change this, creating community engagement and improved stadia experiences.

For example, a branded fan-based app could promote ticket offers for future games and pre-booking at retail outlets and restaurants. When a player scores, shirts could be purchased to be picked up at the nearest exit. Pop-up social networks also give the ability to gamify an event, so clubs could incentivise fans to cheer more by having one stand compete with another.

Season ticket holders could engage together in localised groups to win benefits and it is also possible to set up friend groups for meeting up or sharing chats. The combination of always-up technology and geofence information can create great opportunities for people to have more engagement, more fun and get discounts.

For sporting event organisers and fans, it's a win-win situation. Supporters get a far richer and more interactive experience, while hard pressed venues and clubs gain new revenue streams as well as getting data insights to help them deliver a safer and better managed environment.

But it's not just live sport where mobile mesh can help. The same technology can be used for entertainment venues, retail centres and transport hubs, for example. But that's not all. Designed for busy, crowded environment, mobile mesh networking is also being used in care homes to help protect residents, staff and visitors and prevent the spread of Covid-19 or other viruses.

Register for Networking+

Working from home was the norm in 2020 as we adapted to the global pandemic. Now, as we approach a 'new normal', we asked the industry how things will look as we split home and office working in 2021

Hybrid working

Henry West

Alan Hayward

Joe Bombagi

Andrew Halliwell

Will the overall quality of broadband capacity in UK homes have to improve considerably to make hybrid working a reality?

Henry West, commercial director, Truespeed: If I had a pound for every time someone moaned about the state of their home broadband, I'd give Jeff Bezos a run for his money. How many of us have been on a virtual team meeting in 2020 and someone hasn't turned on their camera because their broadband isn't up to the job – though it could be a very convenient excuse of course. Joking aside, people at home are literally tearing their hair out because substandard broadband means spending too much of the working day looking at spinning wheels and buffering percentages on screen.

Things are definitely moving in the right direction but it's still the fortunate minority - around 22% of the UK according to the latest figures - who have access to the gigabit capable broadband speeds that the UK government is keen to unleash across the UK to underpin growth, improve opportunities, increase productivity and bridge the digital connectivity divide.

But, at the other end of the scale, over 600,000 UK properties are still unable to get a decent fixed broadband service of 10Mbps – with rural areas in particular bearing the brunt. Levelling up in terms of broadband capacity is not a case of north versus south, but rather harder-to-connect communities versus major conurbations where the build economics look far more impressive.

And homeworkers themselves – through bitter experience in many cases – are now much savvier about what good broadband actually is and what infrastructure they need to work productively and effectively at home. The trend is looking at what bandwidth you have rather than simply what speeds you get. Just as the mobile phone industry has moved the focus to the amount of data rather than speeds, I think we'll see a shift to discussing bandwidth capacity.

Joe Bombagi, director, solutions engineering at Riverbed Technology: In short, yes. Workers may believe they have sufficient network capacity to successfully operate from home, but they are underestimating the effect other users will have on bandwidth. For example, those with young families may find themselves contending with kids playing bandwidth hungry video-games or other family members using high-capacity video conferencing. This will cause congestion and ultimately negatively impact performance if broadband capacity is not increased.

However, improving capacity is only half the solution. Users that are accessing applications and websites from further afield, for example internationally, may find that increasing broadband capacity has little impact on improving application performance. This is because the performance challenges with geographically distant applications and websites are related to the high latency caused by the size of the roundtrip, not the bandwidth. To overcome distance-related performance delays, businesses should consider implementing technologies such as application acceleration and optimisation. In doing so, organisations will be able to successfully make hybrid working a reality for their employees.

Andrew Halliwell, product and transformation director at Virgin Media Business: Last year, when I spoke to business leaders about remote working, the majority would have said that it would be impossible for organisations to keep their staff and customers connected if everyone worked from home all the time. For all its challenges, 2020 has flipped that idea on its head.

At the peak of the first national lockdown when home working was causing a huge leap in use of video calls, cloud applications, UC tools and file sharing, Virgin Media saw some daytime broadband traffic almost double. And, despite this dramatic increase in demand which occurred practically overnight, the network remained resilient. What this demonstrates is that the quality is there, and this has made homeworking not only possible in the short-term but desirable in the long term.

Ultimately, remote and hybrid working is here to stay. If 2020 was a trial run, we passed with flying colours. However, as we move into 2021, organisations need to continue to invest in scalable and adaptable network solutions to ensure they reap the full benefits that hybrid working can offer.

Alan Hayward, sales & marketing manager at SEH Technology: Hybrid working is nothing new to modern business culture, as a number of organisations offered flexible working to its employees prior to the Covid-19 pandemic. The vast majority of work that most businesses tend to do from home is fairly high-level in terms of data impact on broadband capacity. This includes sending or receiving emails, writing reports, meetings and replying to online messages, all of which would be possible on most home broadband networks. However, in some instances, video conferencing calls or more complex tasks can often place a strain on broadband links and will slow down service speeds on some connections.

Some businesses will consider establishing its own dedicated Virtual Private Network (VPN), which will not only improve connectivity when implementing hybrid working, but it will also allow employees to access their work remotely. VPNs create an encrypted network connection that authenticates the user or devices and secures data in transit between the employee and the organisation's services. If the organisation is already using a VPN, it needs to ensure that it is fully patched. It may also require additional licenses or bandwidth due to the increased number of employees working from home.

Are most enterprise broadband packages good enough?

Joe Bombagi, director, solutions engineering at Riverbed Technology: Not necessarily. Having a good broadband package cannot guarantee good network and application performance for the user. This is why enterprises need to invest in technologies such as application acceleration and optimisation. In conjunction with a high-quality broadband package, these tools will enable employees to access applications with minimal disruption, quickly and efficiently. This will ultimately improve their performance, drive productivity and ensure the business can continue to operate smoothly.

Alan Hayward , sales & marketing manager at SEH Technology: Most enterprise broadband packages are sufficient for home working, especially for day-to-day activities, including emailing, web browsing, video conferencing, and uploading or downloading files to online document sharing platforms. Experts believe that the minimum speed for web browsing is between 1Mbps and 5Mbps. However, with a number of people accessing the internet at the same time or working from home in a household, some broadband connections could struggle. Today, most download speeds for enterprise broadband packages are at 16Mbps or more, which should be able to handle multiple devices using the internet at once.

Will broadband ISP networks be able to cope if millions more people start working from home?

Joe Bombagi, director, solutions Engineering at Riverbed Technology: Yes, but the ability for broadband Internet Service Providers' (ISP) networks to cope with an increase in remote workers will largely depend on the usage patterns of users. The largest and fastest interlinked networks of the internet, referred to as the ISP backbone, are likely to manage and will continue to expand regardless. This is because as businesses and infrastructure connected to the Internet naturally grow, so too must the networks that support them. However, the Internet connection leading into individuals' homes, also known as the last mile, will become more contended as employees – and their family members – continue to flood the network. For the infrastructure as a whole to deliver capacity and performance to its users, all elements of the network must be able to cope with the increased demand. IT teams within the business must therefore take a holistic approach to solutions deployment and not just focus on the broadband ISP network. This will involve having the right technology in place that can monitor the entire network from end-to-end – from the data centre right through to the last mile and employee's applications.

Henry West, commercial director, Truespeed: The main issue is not all broadband networks are created equal. Any form of copper-based broadband infrastructure is outdated, unreliable and slow, giving variable bandwidth and an asymmetric service as well as contention with other network users at busy times. Fibre optics are the answer but even then, there are fibre copycats – FTTC services labelled superfast fibre or fibre broadband that still rely on old fashioned copper phone lines for the final connection to homes.

We're making great inroads in getting the full fibre show on the road - recent figures suggest that nearly 15% of premises can now order a gigabit capable fibre-to-the-premises (FTTP) service but obviously there's much more to do to accelerate roll-out.

The UK government's plan to get gigabit-speed broadband to every home by 2025 has been rolled back to a "minimum of 85 per cent coverage" as part of the Chancellor's recent spending review but the ambition remains. And the overall budget for the planned rollout was not touched, remaining at £5 billion, although only £1.2 billion of the budget will be made available up until 2024.

As an industry, we need to pull together - the Government needs to accelerate the pace at which it green lights full fibre rollouts – particularly in harder to reach areas. And infrastructure providers need to continue apace with competitive offerings to accelerate rollout not just for towns and cities, but in rural areas and traditionally hard to connect historic cities so those working and living in these areas don't get left behind.

Will the introduction of 5G help take the pressure off broadband?

Andrew Halliwell, product and transformation director at Virgin Media Business: The vast majority of people working from home will turn to fixed connectivity rather than 5G. Whilst 5G will offer users great speeds and experiences while on the go, we have a long way to go until we have widespread 5G coverage. 5G will help provide more flexibility in future, though. Today, our SD-WAN services combine fixed and 4G mobile services which increases resilience at low cost, and of course we're looking to wrap in 5G services, too. As such, for home working, we think most customers will carry on looking to high performance fixed broadband, but for Wide Area Networks we think fibre and 5G will be combined within SD-WAN solutions to provide the high performance and resilience businesses need.

Alan Hayward, sales & marketing manager at SEH Technology: 5G mobile data is set to disrupt how businesses and users use fixed line home broadband. Looking ahead, many homes will no longer need a separate home broadband connection and will instead combine the two contracts to make some cost-savings. 5G will offer speeds of up to 10 gigabits per second, making it an acceptable alternative to fixed line copper or fibre services. It will help make wireless broadband possible anywhere, from smart cars to IoT, which can connect all kinds of devices and allow communication with ease.

Which products do you expect to grow in popularity?

Alan Hayward, sales & marketing manager at SEH Technology: USB dongle servers have been growing in popularity, with the Covid-19 pandemic only emphasising the importance of ensuring remote access for employees. These devices allow remote or hybrid workers to access and share USB dongle devices securely via the business network. With an encrypted point-to-point connection between the user and the dongle server, businesses can dynamically assign which user is authorised to access each dongle, ensuring everyone can retrieve everything they need. Users can also request access as soon as a license becomes available, and once the software has been used by that individual, it will be securely relocated to the next in line.

Joe Bombagi, director, solutions engineering at Riverbed Technology: Nearly 50% of businesses expect an increase in employees working remotely post Covid-19. As a result, it will be the solutions that provide robust yet flexible remote access, security and connectivity that will continue to grow rapidly over the course of the next year. In particular those that remove the need for separate solutions for on-premise and off-premise access. For example, we will see a rise in network performance management tools that enable businesses to easily monitor, troubleshoot, and analyse what's happening across their hybrid network environment. With these solutions in place, enterprises will be much better positioned to gather information on all their environments. In turn, allowing them to quickly rectify any performance issues their employees may be experiencing.

Henry West, commercial director, Truespeed: We'll see continued and increasing appetite for cloud-based business tools, voice over IP and access to video conferencing and online business tools, all of which need underpinning with a robust, reliable and ultrafast fibre broadband infrastructure to banish buffering and the dreaded spinning wheel icon – especially during peak periods.

Andrew Halliwell, product and transformation director at Virgin Media Business: We're going to see a lot of demand for services in three main areas that ensure staff are connected, protected and empowered.

We've already seen a spike in demand for cloud-based services this year, brought on by the pandemic. Ultimately, 2020 has shown organisations that they need flexible, agile and scalable solutions, so we'll see continued growth in demand for cloud-based applications which support staff wherever they are working.

In addition, we'll see sustained demand for unified comms and collaboration tools. While staff may no longer be collocated, their need to connect with one another isn't going away. This means a continued need for fully-integrated collaboration and communications tools as well as remote contact centre solutions. As remote and hybrid working becomes the norm, these services offer businesses the flexibility and agility that they now need to keep staff connected, wherever they may be.

Lastly, with remote working increasing the number of access points to corporate networks, businesses will need to increase the security of those networks to support this, and ensure they're effectively managing their corporate traffic. Technology such as SD-WAN is ideal for this as it provides security at every gateway through encryption and gives network managers the ability to prioritise critical traffic.

What will management teams need to put in place to ensure staff can 'work as normal' from home?

Joe Bombagi, director, solutions engineering at Riverbed Technology: Employees are going to be working across a mixture of on-premise and off-premise environments, also known as a hybrid network, for the foreseeable future. Network management teams must therefore invest in tools that offer insight into performance across the hybrid network. For example, adopting network management tools that gather information on how the whole network and the applications that operate on it, are performing. With this holistic view of the entire IT estate, they will be able to quickly resolve any issues employees are experiencing and deliver a 'work as normal' environment regardless of where the workforce is located.

Andrew Halliwell, product and transformation director at Virgin Media Business: All organisations rely on the connections between employees but remote working has made this aspect of work more challenging. That's why unified communications and collaboration tools, be it Microsoft Teams, Cisco Webex or 8x8, where colleagues can work together in real time, are key to securing a strong 'work from home' culture and in turn, business success.

As I mentioned already, security can't be an afterthought and must be baked into corporate networks to enable successful hybrid and remote working. With employees increasingly accessing corporate networks from remote sites, security becomes more complicated and organisations should be adopting 'zero-trust' networking. More flexible and agile networks such as SD-WAN can help address this while also giving network managers greater control of how traffic flows across corporate networks – something which will ultimately ensure a high-quality end user experience.

Alan Hayward, sales & marketing manager at SEH Technology: Most employees will be working from home for the foreseeable future, where they can secure their broadband network, but others may use unsecured public networks. This will open up opportunities for cybercriminals to breach the network, track internet traffic and potentially collect confidential data. It's also important for businesses to consider the personal devices that employees may be using at home. These will often lack the same level of security tools built into corporate devices, such as antivirus software, customised firewalls or automatic online backup tools. As a result, this can increase the risk of malware finding its way onto devices, leading to information or data leaks.

The network management teams need to assess the cyber risks associated with their employees working from home and remotely accessing the network. The resulting cybersecurity policy should determine the processes that need to be put in place to minimise the risk of attacks or data breaches. Employees should also be trained on the use of their devices in the remote locations that they will be working in. This will include secure storage and management of user credentials or passwords and how to report a cybersecurity incident as well as building an awareness of the risks and the ways that they can be prevented.

Data centres to the rescue

Three businesses needed help storing their data and three data centres duly obliged

Helping Lypy provide connected solutions for the health centre

Lypy provides connected solutions for the health sector from infrastructure to systems integration, ensuring the highest level of security for healthcare data.

The company wanted a data centre provider that could support future scaling of its business and meet the high demands of power and security. Elijah Charles, the director of Lypy, has been working within the healthcare sector implementing secure solutions for 15 years and a partnering with a data centre with a central London point of presence was a key requirement for him.

Lypy had recently experienced a number of power outages with its incumbent Data Centre provider which has caused its services to deteriorate. This was impacting the experience Lypy provided to its customers and therefore sparked a search for a replacement provider. Lypy wanted a data centre provider that not only had a highly secure Data Centre that could guarantee 100% uptime, but also a partner that had the capacity to grow with the business and add racks without having to have them split on different floors or have a cross connect between different racks.

"We were searching for a central London data centre that could match the very high level of business requirements our customers demand," says Charles. "After suffering with recent outages, the two rings of power supply, plus additional generators, give me the confidence that Volta can meet my power resilience requirements."

Volta invited Lypy to attend one of their data centre tours to view the facility and speak to the engineers on site. It was immediately apparent, from process and not just the certification, that Volta adhered to the ISO 27001 accreditation laws and regulations with strict management of data and storage, including the requirements for the assessment and treatment of any information security risks for the sensitive data it holds for its clients.

Volta provides the space and flexibility Lypy requires to scale its business with the benefit of being close to the core N3 point of presence for one of the lowest latency links possible. Now Lypy can offer N3 connectivity out of Volta, which is the national wide area network for the NHS and connects all NHS locations and its 1.3 million employees. The ability for Lypy to scale its footprint in Volta, based upon how much power they consume, is a very cost-effective and straight forward approach.

Sweet success

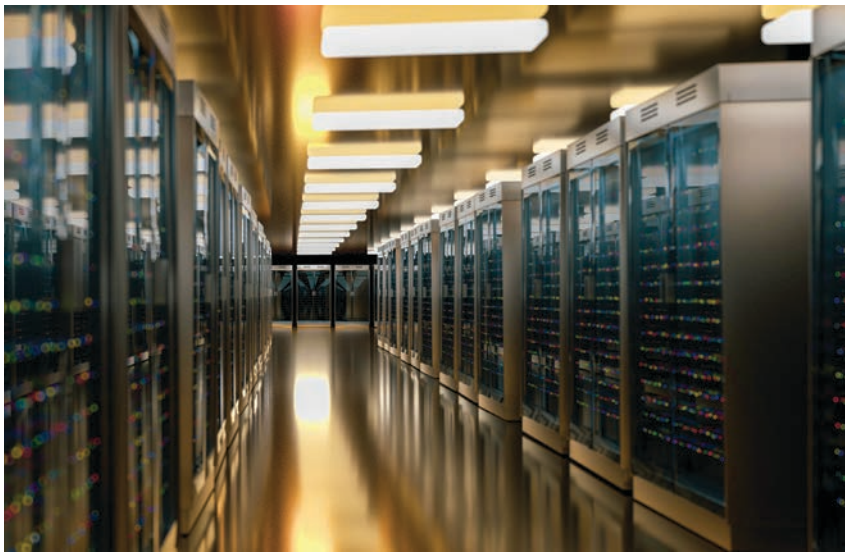
Sugarcube Hosting, located in Matlock, Derbyshire, is run by a team of hosting engineers, headed up by founder Chris Tebb. It has been hosting servers, websites, databases, email and backups for over 20 years. It prides itself on its own experience of knowing "the day-today problems business owners, designers and developers face with hosting and we know it can be done better".

However, Sugarcube needed a hosting partner who offered a divergent network to host customer data which offered high availability, performance, and maximum uptime — at an affordable price.

Being such an essential element to the provision of their customer solutions, the choice of hosting partner absolutely needed to match Sugarcube's own quality commitments to their customers whilst delivering a technically strong portfolio of hosting solutions.

TeleData provided Sugarcube hosting with their powerful 'Cloud Data Centre' product — built on its ultra-secure hosted cloud infrastructure platform — that exceeded the requirements and expectations of Sugarcube's clients. The VMware powered Cloud Data Centre solution provided unrestricted cloud capacity on demand within a fully featured infrastructure as a service environment — allowing Sugarcube to create its own virtual machines and configure the network and platform to suit customers' needs. All of this was provided with levels of support that backed up their promise to extend a high level of service to all Sugarcube hosted customers.

"TeleData's approach throughout, their excellent telephone manner, timely answers to inquiries and keen pricing made them stand out in an overcrowded market full of sales companies that happen to provide hosting," Chris Tebb, director of Sugarcube Hosting. "The results and benefits of working with TeleData Speak for themselves, fast service, great infrastructure and high levels of professional courtesy. If you're considering using TeleData, tell them as much about yourselves as you can, they really listen and can make suggestions you had not considered."



Not-for-profit org LINX up with Telehouse

The London Internet Exchange (LINX) is a not-for-profit (NFPO) organisation that was set up in 1994 to create an opportunity for people to exchange traffic without having to buy costly connections.

It is one of the largest Internet exchanges in the world, connecting approximately 960 member ASNs from over 80 countries around the globe. It specialises primarily in peering and interconnection, allowing networks to meet and exchange Internet traffic more cost effectively and with increased resilience.

Telehouse has been a key partner of LINX from the very beginning with LINX placing its first node in Telehouse's data centre in 1994. LINX continues to expand its London presence with 16 locations across the capital along with UK regional exchanges in Wales, Manchester and Scotland.

The technological landscape is ever-changing, and never more so than in recent years. The introduction of cloud technology changed the entire dynamic of the market; and to keep pace with consumer needs, LINX continues to future-proof its technical services.

With greater pressure on data centres to facilitate large-scale digital transformation, automation and completely new ways of working, LINX recognised early on the benefits of working closely with Telehouse in order to evolve and continue to be able to offer its members the best possible services.

From the very beginning, LINX partnered with Telehouse due to the unparalleled levels of connectivity that its data centres provided. As global connectivity is central to the entire LINX operation, there were clear grounds to initiate a partnership; and this relationship has only grown and strengthened over the last two decades, culminating in a re-engagement agreement in 2019.

In tandem with this, LINX and Telehouse identified the opportunity to create a strategic, mutually beneficial sales and marketing partnership, working in a collaboration to strengthen both businesses.

Since LINX originally engaged Telehouse the two organisations have been focussed on continuing to deliver 100% uptime, deploying new and improved infrastructure and improving connectivity by creating a network that runs between all four Telehouse buildings – making it easier for people to connect into LINX's fabric.

There has been extensive collaboration between operational, commercial, and technical teams in the two organisations, supporting LINX to expand and evolve to meet its customers' changing requirements.

The Telehouse engineering team worked very closely with the LINX engineering team to design a new network solution and offering continual support to deliver 100% uptime. Once this was completed, a joint plan was agreed on how implementation of the new network would avoid any disruption to service.

Telehouse has deployed the new setup within its data centre, achieving complete continuity of service despite on-site difficulties caused by the Coronavirus pandemic. This has built a new level of mutual trust between the two organisations' engineering teams, enabling even closer collaboration.

In addition, LINX and Telehouse have also formed a strategic sales and marketing partnership, collaborating on vertical campaigns, and leveraging each company's strengths to create one strong, united front.

Since its origin in 1994 the LINX and Telehouse relationship has developed from a professional collaboration into a mutually beneficial long-term strategic partnership. LINX's membership has now expanded from 100 in the year 2000, to approximately 960 member ASNs (autonomous system numbers), and CEO, Kurtis Lindqvist says LINX and Telehouse have aided one another's growth.

"We have both benefited and enjoyed working together to create this unique environment. Obviously, a lot of our data centres are our strategic partners, but Telehouse is exceptional in terms of how much infrastructure we've got there. The relationship is very strategic for us in the long run, because it's where we began, and we've experienced a lot of growth as a result. So, we need to make sure that we do carry on working very closely with Telehouse, because that is where so much of our infrastructure lies," comments Lindqvist.

To maintain momentum, Telehouse has continued working collaboratively with LINX on new colocation initiatives, where LINX is able to leverage and resell Telehouse's colocation facilities; providing cross connects and a cabling infrastructure to equip customers with a wide range of operational abilities.

Smart cities in a changing world

Alistair Fulton, VP & General Manager, Semtech's Wireless and Sensing Products Group

It is universally acknowledged that we are currently living in unprecedented times where the "new norm" is an increasingly contactless world. At the centre of this world is the realisation that it is more important than ever to be capable of monitoring and analysing people's movements as well as the contacts that they have had as individuals. Alistair Fulton, Vice President and General Manager of Semtech's Wireless and Sensing Products Group, believes that the need for data transmission and analysis in this altered environment is driving greater adoption of long-range (LoRa), low-powered sensor-based technology that is capable of gathering and communicating in real-time accurate and powerful information across the most robust of wide area networks (WANs).

In recent years, LoRa-based networks have matured and increasingly have been adopted in a wide range of industries and applications across the world. Typical applications have included development of intelligent buildings (such as apartment blocks, offices, hospitals and medical care facilities, intelligent lighting, traffic management, factories and warehouses) which form the backbone of today's smart cities and communities. Other applications include intelligent supply chains and logistics, smart agriculture, intelligent metering and smart industrial control. COVID-19 has now accelerated the need for solutions for a new range of critical sensor-based applications and cities who have implemented smart technology will be able to take advantage of the technology.

As the world learns to live with COVID-19, a large number of businesses have begun a wholesale reassessment of how they operate in order to make the workplace a safe environment for employees. There is now a strong focus on companies preventing staff from becoming infected as production levels increase and industry begins to revive. The problem, as some recent cases have shown, is that total protection can be extremely difficult to achieve in such high-density environments as the construction industry, logistics, power generation, manufacturing and the chemical/petrochemical sectors.

The disturbing impact the pandemic has been having on industry and health professionals on a global basis has driven a growing level of interest and demand from customers, even though supply chains on all sides have been disrupted. Areas that have seen significant developments recently include tracking applications (with greater emphasis on monitoring individual people, their movements and even their health condition and temperature). This can also feed into occupancy monitoring using door sensors – a 'smart doorkeeper' solution – as well as proximity sensors and motion sensors. Another area of growth that has been led by the new requirement to be as contactless as possible is the use of LoRa and the IoT to control entire manufacturing lines to minimise human interaction and so remove the risk of cross-contamination.

However, using LoRa it is now possible to create IoT solutions that can deliver the kind of data that is required to monitor, manage and limit the likelihood of workplace infections. For example, workers can be fitted with sensor-based devices that warn them if they come within a set distance of others. The same sensors can be used for contact tracing should a worker be found to have contracted the virus. Using LoRa technology, up-to-the-minute data can be shared via Cloud-based applications to ensure compliance with the very latest government legislation and guidelines while offering workers in even the most intensive environments the maximum possible level of protection.

In this new world – and even in a post-pandemic environment – there is now a firmly established market for network providers and systems integrators who are able to deliver cost-effective, low power yet reliable IoT solutions based around the kind of unintrusive technology that LoRa provides. Already, governments and other bodies are realising the win-win potential for embracing such proven yet innovative data communications technology that is both off-the-shelf and versatile and is capable of being implemented within the tightest of timeframes without the need for those implementing it to have extensive knowledge of IoT technologies. For example, Semtech's Smart Building Reference Kit enables companies to deploy their own smart building applications within existing buildings without the need for rewiring or concerns about signal strength from dense walls.

We are at an inflexion point where city planners and business leaders now have access to the data necessary to be able to make informed decisions, therefore removing the guesswork as to how to make cities more efficient, safe and commercially successful. The value of data is now understood and appreciated not only by network developers and CTOs but also by CEOs, CFOs and COOs as future decisions can deliver measurable results quicker and more reliably than before. History shows us that key events can significantly change both the way we live, and the world we live in. The COVID-19 pandemic is likely to create long-term sustained changes to our work, our lives and our cities. Technologies such as LoRa will be helping accelerate the development and implementation of large-scale IoT systems that make smart cities become the new norm.

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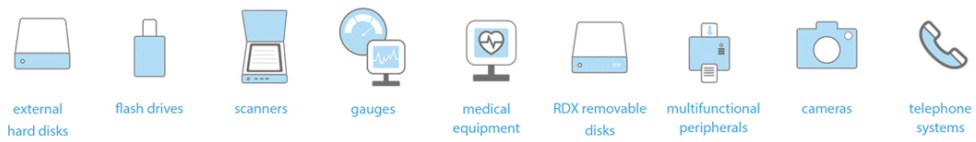

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Internet of Things - the ultimate forecaster for machine downtime?

Lukas Baur, VP IoT at TeamViewer, discusses the rising role of IoT in business and how manufacturers can use tools to remain one step ahead

If 2020 has taught us anything, it's that there is no such thing as being too prepared for a crisis. Yet one crisis the manufacturing sector still needs to prepare effectively for is machine downtime. Just this one change, could save manufacturers an estimated $50 billion per annum, according to Deloitte. Downtime is often the result of disjointed supply chains and outdated machinery. But there is hope. IoT is emerging as the ultimate forecaster for preempting downtime, fixing machine failure and, in turn, it is fast becoming a critical tool for business survival.

The true cost of downtime

The cost of downtime affects more than the balance sheet. Manufacturers lose out on production, increase their waste levels, and if it becomes a regular occurrence, their reputation is also on the line. The first step to addressing machine failure once and for all is to recognise the size of the issue and the impact of downtime. Then manufacturers need to shift their mindset onto tackling the problem. In the UK, the up-side is that progress has been made. Through its Manufacturing Made Smarter Challenge, the government has just announced a £300 million tech boost to streamline manufacturing and supply chains. This is a strong start, but if manufacturers are to see a real difference, save costs and minimise failure, leaders in the sector must change their entire mindset around downtime and plan around prevention, rather than solutions.

Prepare for failure

The Internet of Things (IoT) is central to today's prevention strategies around downtime. Thanks to IoT, manufacturers can connect predictive maintenance solutions across their entire network. This allows them to remain one step ahead of machine failure and not get caught out before it's too late. Predictive maintenance means machines can be monitored, fixed and maintained before downtime occurs, and run at optimum rates without causing unplanned outages. This is a huge benefit for manufacturers as it does not just increase uptime, but also the bottom line as they are able to be as efficient as possible in their production.

IoT is a critical tool for predictive maintenance as it enables manufacturers to connect legacy systems and analog equipment. Businesses can apply predictive analytics to all monitored machine and sensor data in real time. Manufacturers are then able to use 24/7 monitoring to understand a machine's current condition, estimated future performance, and anticipate degradation state

Furthermore, IoT is a critical tool for predictive maintenance as it enables manufacturers to connect legacy systems and analog equipment. Businesses can apply predictive analytics to all monitored machine and sensor data in real time. Manufacturers are then able to use 24/7 monitoring to understand a machine's current condition, estimated future performance, and anticipate degradation state. This information is gold dust for manufacturers looking to mitigate the risk of downtime as it can determine when a machine part needs to be replaced before it malfunctions. Or when to call in remote support to fix issues — eliminating unneeded on-site maintenance calls.

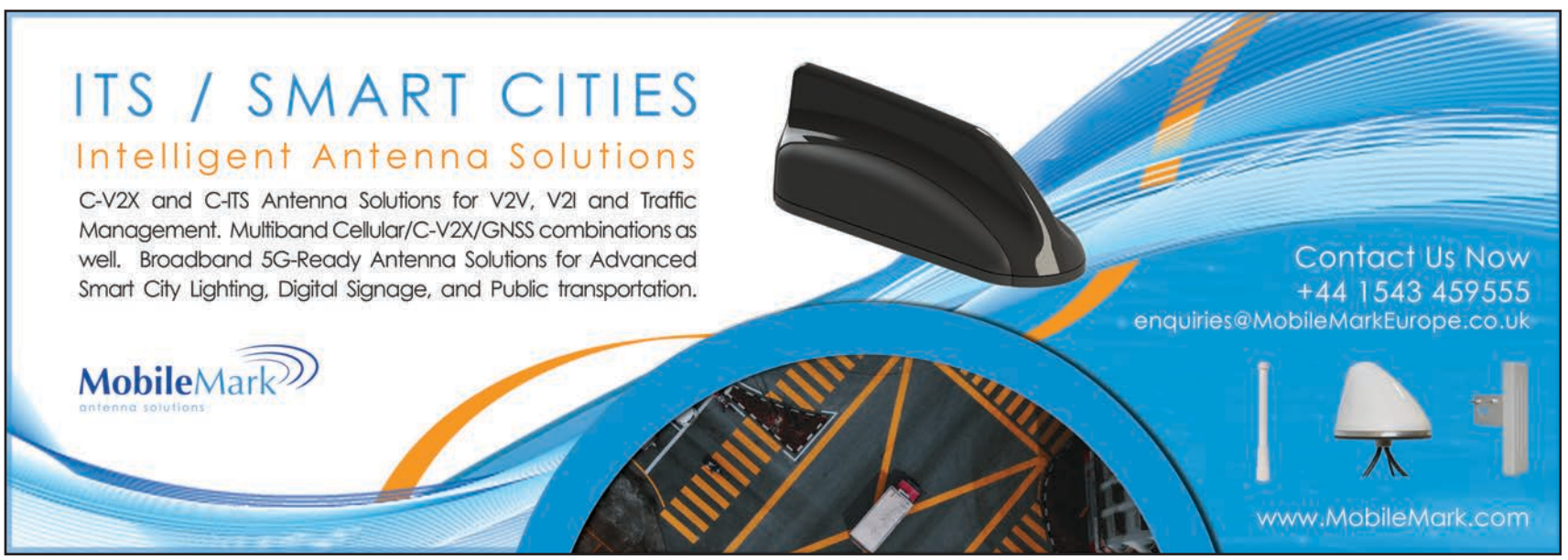
Four is the magic number

To ensure manufacturers implement IoT predictive maintenance successfully, four simple steps need to be taken into consideration: Connect, Analyse, Determine, Support (CADS):

- Connect sensors to legacy analog equipment for real-time monitoring and logging of information on a machine's status, or use embedded sensor capabilities from new machinery.
- Analyse machine and sensor data to detect anomalies and faults by applying predictive analytics to diagnose the condition of machines:
- Get a full assessment of the state of the machine and its faults or failures.
- Understand the probability of the state to continue or the likelihood for failures to occur.
- Determine if the machine is operating within acceptable parameters with a rule-based engine. If the machine exceeds predefined thresholds, the rule-based engine automatically determines the level of severity and triggers the next conditional action to take.
- Support and resolve issues remotely. Seamlessly integrate IT Service Management systems to automate maintenance support and activate conditional actions such as initiating support requests. Technicians can then immediately provide remote support for the detected use and resolve problems, preempting downtime and driving productivity across the team. If helping hands are needed to fix the problem, integrated AR solutions can help workers and technicians to get a step by step guidance or connect to an expert to get support. All hands free with Smart Glasses.

Maximising ROI through IoT

By integrating legacy systems and analog equipment on the manufacturing line and following the four step CADS process, IoT isn't just streamlining operations but enabling manufacturers to accelerate digitalisation through connecting all of its machines, smart or not. Manufacturers can increase uptime and mitigate machine failure by getting a more accurate forecast of machine conditions and preempt issues before causing major disruption, which results in an overall equipment efficiency. This doesn't just impact the bottom line, but means manufacturers really can accelerate their digital strategies to secure a leading position in their industry. ■



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It's time to take DCIM to the next level

Paul Milburn, chief product officer, EkkoSense

One thing that's certain is that data centre teams will be kept increasingly busy in 2021 as they're asked to extract even more performance from existing data centre assets. This will continue to be challenging – particularly as organisations work to accommodate the ongoing impact of the pandemic.

While legacy Data Centre Infrastructure Management (DCIM) tools are useful at helping data centre operations teams manage their facilities, many find them limited when it comes to the kind of deep data analysis needed to really optimise performance at the mechanical and electrical level.

That's why for true data centre infrastructure management, DCIM tools need to get much more granular. They need to draw on the latest low-cost data centre sensor technologies and intuitive 3D software visualisations to make immersive real-time optimisation of data centre rooms a reality. Seeing your data centre environments in a realistic 360° real-time digital-twin view means you can quickly transition from just monitoring critical facilities to identifying and acting on thermal, power and capacity opportunities.

By gathering and visualizing this data at a granular level, operations teams can start to actively manage and maximise the performance of their critical data centre environments, drawing on the latest AI and machine learning analytics capabilities to secure actionable improvements. So what sort of functionality should data centre teams be looking for here?

From a space perspective, data centre operations can use the 3D visualisation approach and a simple drag and drop interface to support a range of M&E capacity planning activity from basic rack changes through to complete new room layouts. Capabilities such as space planning and reserved space allocation can help organisations to unlock any stranded capacity from their existing data centre cooling and power infrastructure – effectively enabling them to do more with less.

Moving beyond legacy reporting

This kind of approach goes beyond legacy DCIM reporting tools to provide tangible M&E insights that in turn allow data centre estates to be run much leaner. Decisions can also be made more quickly, thanks to true live capacity planning functionality.

However, it's also important to look for capabilities that make data centre capacity planning and management even easier for operations teams to action. Transitioning from more static legacy DCIM approaches to true live capacity planning presents a great opportunity to take more control of data centre estates – making the real-time operation of data centre power, cooling and space a reality.

Functionality here that can deliver real value includes the ability to reserve data centre space, power and cooling for future projects, as well as introducing intuitive ticketing and change workflows to simplify activities for operations teams. Examples include making it much easier to add new racks, enable further capacity or reduce space from racks, and also remove existing racks entirely.

These features make a huge difference for data centre teams that are currently limited by complex DCIM systems that they find difficult to manage, or who are still relying on unwieldy spreadsheets to manage capacity changes to their estate. Some next gen DCIM capabilities might appear simple, but they can turn out to be really effective. Take a capability such as power over-allocation identification that helps teams to identify where current data centre racks have locked-in power capacity that's not currently being utilised. Previously this would have taken detailed searching to uncover, now this kind of information is immediately available thanks to the latest intuitive management platforms.

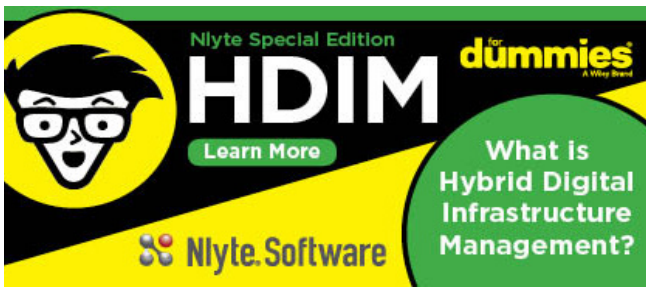
Remote services have never been more critical

While the availability of a COVID-19 vaccine gives us all hope for 2021, the challenges presented by the pandemic are still a reality for the data centre sector. However, the good news is that with new remote DCIM functionality, ops teams no longer need to be on-site to monitor data centre performance and manage their infrastructure.

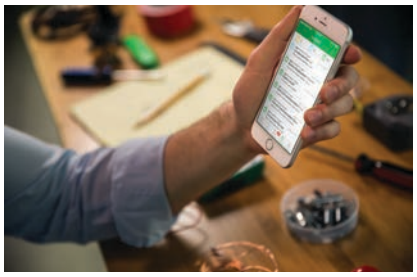
By coupling your data centre digital twin with the latest Internet of Things enabled wireless temperature sensors, it's now possible for data centres to track the condition of every asset of interest across their sites – right down to individual racks where required. Together this approach makes the real-time thermal management of critical facilities such as data centres a reality – even in the most difficult of circumstances.

PRODUCTS

Data centre infrastructure management (DCIM) is the discipline of managing the physical infrastructure of a data centre and optimizing its ongoing operation. DCIM is a software suite that bridges the traditional gap between IT and the facilities groups and coordinates between the two. DCIM reduces computing costs while making it easier to quickly support new applications and other business requirements. This book explains the importance of data centre management, describes the key components of a modern DCIM system, guides you in the selection of the right DCIM solution for your particular needs, and gives you a step-by-step formula for a successful DCIM implementation. Because this is a For Dummies book, you can be sure that it will be easy to read and has some touches of humour too. *nlyte.com*

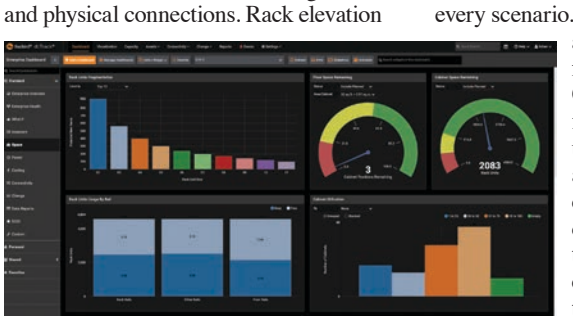


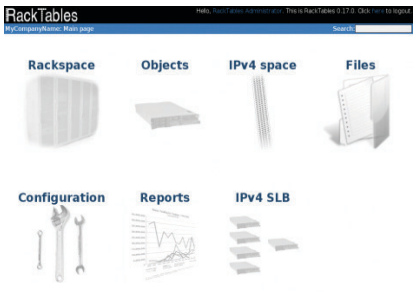
If there's one company in this space that needs little or no introduction, it's **Schneider Electric**. The EcoStruxure IT is the company's next generation data centre management solution featuring remote management from, it reckons, virtually any device – phone, tablet, or home PC – at any time. It also enables data centres to maintain operations and availability when minimal or no qualified staff are available on-site. The solution's UPS battery health assessment provides insight into the UPS with a score card that predicts the end of life for batteries based on the specific conditions of that UPS. This predictive capability, Schneider claims, also generates recommended actions to improve the health score and the lifetime of the batteries, enabling OpEx savings and avoiding unplanned downtime. *se.com*



Vertiv's Trellis Platform is a popular DCIM solution that provides a real-time, integrated view of IT and facility assets, making it easier to collaborate, plan and control changes in the data center. One of the key selling points of this, if not the primary one, is the visibility it provides while offering a simple modular, scalable platform for custom configurations. According to Vertiv, the main benefits that come along with this real-time visibility are high scalability, flexibility, advanced security, and increased time to market through a multi-tenant solution. *vertiv.com*

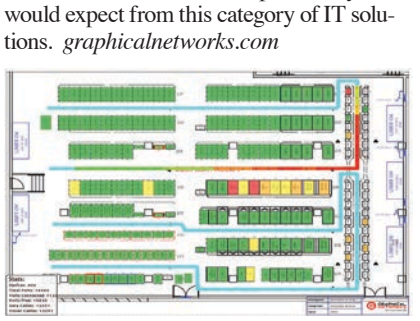
Sunbird has developed a complete solution based on feedback from customers that supports agile remote management. Among its features is the ability to remotely view data centre sites in 3D, visualising all assets and physical connections. Rack elevation views with overlaid live readings from environmental sensors provide dynamic visuals. In addition, it offers 100+ dashboard widgets out of the box to transform data into actionable insights with KPIs for every scenario. Businesses can create, edit and share custom dashboards for data-driven collaboration. Other features include visual floor map reports to see and understand all power, space, and network connectivity capacity with easy-to-understand color-coding. Furthermore, the solution offers extensive asset management tracking for all IT equipment residing in the data centre and all supporting infrastructure assets with relationship mapping down to physical port level and up to virtual machine and application levels. Users can track device subcomponents and spare parts such as transceivers, power supplies, memory modules, network interface cards or cassettes. There are also thermal maps with time-lapse video to ensure environmental health, identify hot spots, and identify overcooling. Moreover, users have the ability to find stranded power and lower risk with automatic capacity planning in which power budget profiles are calculated for each device instance based upon the actual measured load in your environment. sunbirddcim.com *sunbirddcim.com*





Rack Tables is a known data centre and server room asset management solution, designed to help the enterprise document hardware assets, network addresses, space in racks, network configurations and more. The company says this open-source solution provides basic DCIM features you'd expect, such as documenting NAT rules, storing load balancing configurations, attaching files to system objects and assigning permissions for users—all supposedly at a good price. Like most open source DCIM solutions, RackTables requires users to keep everything updated manually, minimising your ability to streamline IT processes. *racktables.org*

netTerrain focuses mainly on DCIM, which means this solution offers strong capabilities for managing aspects of your physical infrastructure—outside plant, site maps, cable management, etc. Known for being simple, customisable, and and apparently affordable, netTerrain DCIM is a good option for data center leaders who aren't looking for additional products, such as CMDB, data center asset management, IT asset management, or application dependency mapping. With netTerrain, you get a GIS-compatible tool with the basic DCIM capabilities you would expect from this category of IT solutions. *graphicalnetworks.com*



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Please meet...

Libby Barr, COO, Avanti Communications

What was your big career break?

I originally started my career in Vodafone, which really accelerated when I moved south to the corporate HQ from Scotland. This really reinforced my commitment to progress within the company along with my flexibility to move around in order to achieve that. It gave me many opportunities I wouldn't have had if I had remained in Scotland.

Who did you most admire growing up?

I was inspired by Diane Von Furstenberg who is a great role model of a powerful, independent woman. She could have conformed to type and played her expected role as the wife of a prince but instead she struck out to set up her own label and designed one of the most iconic dresses of all time and eventually one of the world's greatest fashion brands. She set out to empower women throughout her career, something that I also aspire to do. Diane has perseverance another quality that I admire as DVF overcame bankruptcy, and she then relaunched the brand in the early 2000s.

If you had to work in a different industry, which one would it be?

Wellness and natural healthcare. I always hoped someday I would have a natural health clinic somewhere in the mountains, ideally Vancouver. This is an ever-growing industry and there's nothing more important than one's own well-being and to bring cutting-edge science in all things related to fat loss, muscle gain, and overall wellness would be great.

What's the best piece of advice you've been given?

"Perception is reality." My old boss in the early days at Vodafone taught me about personal impact. Although we may think we are communicating in one way, if the person on the receiving end perceives our approach to be something different ultimately that's how my message is being received in reality. I have got a lot better at effective communication as I have progressed through my career and met with different types of people from various industries, but there is always space for improvement.

Who do you most admire?

Definitely my mother. She is passionate, committed and a free spirit who built a successful farming business alongside my father. As a woman working in that industry, she continues to teach me that it isn't always necessary to conform and that with a strong work ethic and focus you can achieve great things. I look up to my mother and hope to follow in her footsteps and strive to be the best at what I do in satellite communications, traditionally a male dominated industry.

What law would you change?

I would remove all obstacles to higher education by legislating for payment of student fees for disadvantaged students. I don't think that anyone should be put at a disadvantage because of their background, everyone should have the same quality of education offered to them. Help should be given to those who can't afford higher education such as university as it is everyone's right to access an education to the same degree as everyone else.

If you could live anywhere in the world, where would it be?

I would have to say Vancouver. I fell in love with Vancouver on my first trip to Canada. It has the most amazing energy, coastline and hiking and of course the close proximity to the mountains and snowboarding helps – my favourite pastime! It's a wonderful place to unwind whilst taking in the sights. The pace of life is much more relaxed there and I think has a good work life balance with everyone keen to take advantage of all the activities available.

What would you do with £1m

I would use it to do something positive, such as investing it into helping young people reach their potential, irrespective of their background. It's a topic that doesn't get a lot of attention but affects people for life and too many people are willing to turn a blind eye to the subject.

What's been the best technological innovation in your lifetime?

Mobile communications and the internet. Mobile phones are one of the best inventions to have ever come about. They have transformed our lives to the way we socialise to the way we work. No one would have been more surprised at this development than the companies who first invested in cellular mobile phone networks, thinking they might have a market among wealthy businesspeople keen to acquire the latest gadget. Everything that I do on a day-to-day basis involves my phone or the internet, I simply cannot live without it.

What are you planning on doing when you retire?

I can't imagine ever retiring as there are too many great things to do! A few years ago, at an RAF dinner, I was fortunate enough to sit next to Ken Wilkinson at an RAF dinner. Ken was a Spitfire pilot in the Battle of Britain and I asked him about how he had managed to move on from such a monumental period of his career at such an early age. He went on to become a quantity surveyor and he explained that piloting had been a "phase" in his career. I thought that was wonderful.