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PAC slams government for broadband procrastination

MPs and local authorities have accused the government of failing to deliver on its promise to deliver next-generation-speed broadband to most premises by 2025, following a damning report by parliament's spending watchdog.

The Public Accounts Committee (PAC) criticised prime minister Boris Johnson's administration's delivery of the service and warned that it is unlikely to reach even the downgraded target of 2030, which is five years later than the original target.

In its report, published January 19, the PAC accused the government for not having a clear timetable for how it plans to meet even the downgraded target for gigabit-roll out and for relying too heavily on the private sector.

The premises (enterprises and homes) in the UK with access to gigabit broadband rose from 40% to 57% May-October last year. However, this was largely due to Virgin Media O2 upgrading its cable network. According to the PAC's report, the Department for Digital, Culture, Media and Sport (DCMS) "has made little tangible progress in delivering internet connectivity beyond that achieved by the private sector".

"What DCMS does know full well is it can't rely on the private sector to get fast broadband to the hardest-to-reach, excluded and rural areas," said committee chairwoman Dame Meg Hillier MP. "Despite its repeated promises to do exactly that, we are apparently little nearer to closing 'the great digital divide' developing across the UK nor addressing the social and economic inequality it brings with it."

However, a DCMS spokesperson described the report as "misleading" and that the government "remains on track" to deliver next-generation speed broadband in the timeframe it promised.

"We are investing £5bn so hard-to-reach areas can get gigabit speeds, have already upgraded 600,000 premises and in three years national coverage has rocketed from 6% to 65%."

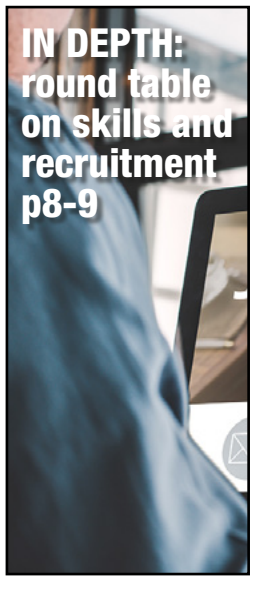
One suggestion made by local authority leaders is for the government to allow councils to create digital champions to help the roll-out of gigabit-capable broadband in the more difficult to reach parts of the country.

Councillor Mark Hawthorne, digital connectivity spokesperson for the Local Government Association (LGA), called on the government for extra funding to make this a reality.

"A local digital champion would be a central contact point for government and broadband providers to help problem solve deployment issues in the local area." Hawthorne said, adding that "tackling the digital divide will be important to levelling up in every community, ensuring everyone has the connectivity and digital skills they need to thrive".

Matthew Galley, director of strategic partnerships at Jurassic Fibre, which is rolling out ultrafast full-fibre broadband network to businesses across the west country, said

"Rural communities have long been overlooked by national providers and left behind when it comes to receiving advanced connectivity. This has been brought to light once again by the latest watchdog report," he added. "We recognise all too well the disparities between cities and less urban areas when it comes to accessing ultrafast broadband. "We are on a mission to change this, building a full fibre-to-the-premises network in rural areas for homes and businesses. We welcome further support from the government, such as through voucher schemes which help us extend the network to the most remote premises." ■



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NetSfere appointed to NHS SBS framework to advance digitisation of healthcare

NetSfere, a global provider of next-generation secure and compliant messaging and mobility solutions, has been named an approved communication supplier on the £250m NHS Shared Business Service's (NHS SBS) patient/citizen communication and engagement solutions framework.

Through the framework designed to enhance interactions with patients and advance the digitisation of the United Kingdom's healthcare system, all NHS organisations have access to NetSfere's portfolio of products.

The company says "it aims to provide a simple, effective, efficient, and compliant route to market for the supply of communication methods" to engage with patients, citizens and the workforce across NHS organisations and wider public sector bodies.

"Helping healthcare organisations streamline communications in a secure and efficient method has been a primary focus of NetSfere," said Franz Obermayer, NetSfere's vice president UK & Europe. "As part of the patient/citizen communications and engagement solutions framework, NetSfere's platforms are available to support NHS organisations' needs for digital tools on a massive scale as the healthcare system looks to improve clinical efficiency and safety to increase patient satisfaction and address concerns that arose from the pandemic."

As one of the selected suppliers, NetSfere's solutions were accepted across five lots: digital (online) communication, email, SMS, workforce communication and all-in-one solutions. ■

Cambium launches enterprise APs

Cambium Networks is launching new Wi-Fi 6E-capable access points to prime enterprise customers for a smooth transition to the newly available 6 GHz band once adoption gains traction.

The 6 GHz band is seen as a boon for enterprises and the Wi-Fi community at large, such as those with high-density needs such as public venues, stadiums and education institutions and education at K-12 schools or lecture halls on university campuses.

"You start to get really dense just regular classrooms, let alone auditoriums or places on colleges," said Bruce Miller, vice president marketing, Cambium. "We've seen a lot of interest because it will open up those scenarios with a lot more flexibility."

Existing 2.4 GHz and 5 GHz bands have fewer channels (compared to up to seven 160 MHz-wide channels in 6 GHz) and are already laden with billions of devices globally.

"This is a pretty watershed moment for Wi-Fi in general when you triple the available bandwidth," added Miller. "If we project how history has worked in the past and the introduction of new technology into devices, we see first part of 2023 is probably when you start to really hit the sweet spot."

According to ABI Research, 6 GHz enabled Wi-Fi 6E chipsets are forecast to nearly tripe year-on-year in 2022. ■

National Crime Agency discovers 225 million previously unexposed passwords

The UK's National Crime Agency (NCA) and National Cyber Crime Unit (NCCU) have uncovered a hoard of 225 million unique passwords and has shared them with the Have I Been Pwned (HIBP) security project.

HIPB allows any internet user to search its database to see if their password has been exposed, and in which company's data breach their email address has been compromised. It also informs users how many times their password has been viewed.

The new passwords were found in a compromised cloud storage facility and included both previously-known and unknown datasets. The find is said to be the largest ever uncovered by the NCA.

"The fact that they had been placed on a UK business's cloud storage facility by unknown criminal actors meant the credentials now existed in the public domain and could be accessed by other 3rd parties to commit further fraud or cyber offences," said the NCA.

Troy Hunt, founder and chief executive officer, HIPB added: "Before today's announcement, there were already 613 million passwords in the live Pwned Passwords service... so the NCA's corpus represents a significant increase in size." ■

UK financial authorities step up scrutiny of cloud trio

UK financial regulators are stepping up their scrutiny of cloud computing providers amid growing fears that an outage or hack of their services could severely harm the nation's banking system.

The Prudential Regulation Authority (PRA) is exploring ways to access more data from the major cloud providers Amazon, Microsoft and Google, including on the operational resilience of their services.

All three companies have in recent years struck deals with UK banks, which have turned to them to reduce IT costs, overhaul antiquated infrastructure and capitalise on technologies such as AI to automate customer service and detect financial crime.

The trio dominate cloud computing, a global market that has boomed as more companies transfer data and IT services to third-party servers run by Big Tech. Moreover, the UK's banking sector has become heavily reliant on them.

It is understood that the PRA is set to publish a joint discussion paper with the Bank of England and the Financial Conduct Authority on issues raised by cloud computing.

Consultancy McKinsey has forecast that 40%-90% of banks' IT operations globally could move to the cloud within a decade. ■

FluidOne acquires SAS Global Communications

Cloud solutions vendor FluidOne has acquired SAS Global Communications, a provider of hybrid SD-WAN-enabled global networks to enterprises.

The former said the acquisition will enhance its service offering to mid-market and enterprise customers, courtesy of SAS Global's extensive network capability through partners, including BT Wholesale, TalkTalk Business, Colt, HP, Lumen, Cisco, Silver Peak and Microsoft.

SAS designs, deploys and manages SD-WAN hybrid networks, which are supported by its monitoring and management portal. It currently serves over 150 customers with sites in 65 countries and focuses on companies with over 1,000 employees.

FluidOne, which runs the Platform One UK national fibre network, said the acquisition builds on the purchase of PSU Business Technology in October 2020, that included skills in IT managed services and unified communications, as with the investment in Cyber Security Associates in November 2020, a dedicated cyber security consultancy and managed services specialist.

Before the latest acquisition, the FluidOne group had £60m in revenues with 240 staff, serving 1,300 customers and resellers.

"I have known Colin Mattey, the chairman of SAS, for a number of years and knew of the quality of the business, particularly in multi-national SD-WAN deployments and their unique network monitoring and management portal developed in-house," said FluidOne chief executive officer Russell Horton.

Mattey added: "Russell saw real value in our ability to deliver managed networks with the best network monitoring and service levels in the market to enterprise and multinational customers. He saw how the business would add value to FluidOne customers whilst providing exciting growth opportunities for the SAS business." ■

Interxion hit with London outage

Data centre operator Interxion suffered an outage at its London site January 10, with no service from its LON1 data centre for several hours.

The incident is understood to have started just after 6pm, with a loss of power at the LON1 site in the capital's East End, which is located near to the financial district and the "Silicon Roundabout" tech hub in Shoreditch.

According to reports, users complained the company provided no updates during the outage.

Interxion later confirmed that its Hanbury Street facility "experienced a critical power interruption, which impacted some of the mains control equipment and caused outages across the services in LON1".

It added that it apologised to all its customers and partners affected and for difficulties communicating during the outage.

"A full investigation is underway to determine the root cause of the interruption, the findings of which will be used to ensure an even more resilient infrastructure in the future," Interxion. "We remain proud of our reputation for global reliability and availability and have maintained five nines uptime over the past 14 years." ■

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Proximity expands UK footprint with Birmingham edge data centre

Proximity Data Centres, the regional edge colocation data centre provider, has further expanded its edge data centre footprint with the opening of a new site in Birmingham.

Situated in the centre of the city and close to the new HS2 rail station and proposed BBC Media campus, the facility is strategically located to all the major fibre networks traversing the UK including BT, ITS, Lumen, Virgin and Zayo in addition to various regional fibre providers. The company says this will make Proximity Edge 8 especially attractive to hyperscalers, CDNs and gaming providers "looking for both high quality and super-connected edge colocation facilities". Enterprises in the region will also be very well served by the outstanding facility.

Built and accredited to The Uptime Institute Tier 3 specifications, the 63,055 sq ft facility has capacity for up to 2000 racks in three separate data halls. There is currently 6MW of IT power available with the potential to increase this to 12MW.

"Located midway between London and Manchester, our new Birmingham edge colocation facility will serve as an ideal low latency communications hub for organisations such as hyperscalers, CDNs and gaming providers looking to bring data, services and content closer to users around the country - while also optimising data transit efficiencies and costs," says John Hall, managing director, colocation at Proximity Data Centres. "Businesses and managed cloud providers within the Birmingham conurbation area will also benefit from the wide choice of connectivity available from both major carriers as well as local connectivity providers. Proximity Edge 8 will help them increase competitive advantage with low latency connections and high-speed bandwidth to ensure their data and applications are always highly responsive to users."

Proximity Edge 8 in Birmingham joins Proximity's expanding UK network of interconnected regional edge data centres which also includes sites in Bridgend, Swindon, Nottingham, Rugby, Liverpool, Chester Gates and Wakefield. The company expects to have 20 sites available within the next 12 months, all in close proximity to major conurbation areas. ■

Hereford & Worcester Fire and Rescue Service picks MLL for tech refresh

Hereford & Worcester Fire and Rescue Service has commissioned MLL Telecom, a provider of secure managed network services to the UK public sector, to undertake a technology refresh of the existing MPLS fibre network.

Commencing in November, the five-year project will include the provision of SDWAN based services to deliver increased network bandwidth, security and resilience. In total 27 sites are involved including the Fire and Rescue Service headquarters in Hereford and 26 fire stations located throughout the region.

"The technology refresh of our existing fibre network will ensure we continue to have access to fast, reliable and secure WAN and internet communications," said Pete Chatwin, head of IT at Hereford & Worcester Fire and Rescue Service. "Our network, and the digital services it provides, is of paramount importance to our efficient operation and safety of the public. We are totally confident in the technology we have chosen to deploy whilst leaving the responsibility for managing the new SDWAN in MLL's capable hands."

Hereford & Worcester Fire and Rescue Service has around 250 wholetime firefighters and 380 on-call firefighters, supported by some 20 fire control staff and approximately 100 support staff. In addition, it hosts one of 29 national Urban Search and Rescue specialist units. ■

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FROM THE COVER

Redoubling digital transformation efforts as we move into 2022

Alan Hayward, Sales and Marketing Manager at SEH Technology

Digital transformation has fundamentally changed how an organisation operates and delivers value to its customers. However, COVID-19 has accelerated the urgency in achieving digital transformation goals, forcing many businesses to speed up their efforts in a short period of time. Therefore, as we move into 2022, businesses are changing their mindsets from doing digital to being digital. The successful implementation of digital transformation strategies is a marathon, not a sprint, with 70% of digital transformations falling short of their objectives. For the best chances of success, there are a number of steps that companies should look to execute.

Defining the digital transformation goals

One of the biggest digital transformation challenges is a lack of well-defined goals. Generally speaking, organisations select a variety of technologies that are most popular, but more often than not, they don't help achieve the business objectives. With this in mind, it's important to research and plan the transformation goals, as well as the tasks, technologies and processes needed to achieve them. These objectives may include optimising business processes, gaining a competitive advantage, increasing growth and improving the customer experience. Companies also need to establish benchmarks for success that allow them to measure if they have achieved their digital transformation goals.

Building an integrated strategy

Following this, a company's operational system relies on a network of business components that are seamlessly integrated across the whole corporation. For many organisations, the reason for digital transformation is to streamline multiple systems and processes to drive success. Ultimately, the more a company automates and integrates each element of its operational infrastructure, the better the employee productivity and efficiency in the long term.

Creating a flexible infrastructure

Another element of digital transformation success is maintaining a flexible and agile infrastructure. In today's marketplace, the most popular method to increase flexibility is to update legacy technologies with modern cloud-based systems. By nature, these applications can help businesses achieve greater agility, scalability and efficiency, as well as often being highly cost-effective in the long term. It is also critical to ensure that employees have a solid understanding of the emerging technologies, what's best to use in different scenarios and where the technology space is going in the future.

Digital transformation best practices

Whilst these steps may seem daunting to businesses who are at the beginning of their digital transformation journey, there are a number of companies that have seen great success in line with the market changes post-COVID-19. Now is the time for businesses to invest in digital transformation to lay the foundations for long-term resilience to future crises, as the global pandemic has demonstrated the importance of prioritising these strategies as we move into 2022.

Cyberattack on UK's Defence Academy had 'significant' impact'

A cyberattack – possibly carried out by China or Russia – hit the academic arm of the UK's Ministry of Defence and had a "significant" impact, according to the officer in charge at the time. Air Marshal Edward Stringer, who retired from the armed forces in August last year, said the "sophisticated" hack - discovered in March 2020 - prompted the Defence Academy to accelerate plans for its entire network to be rebuilt and made more resilient. The targeting of an academic institution is a sign of how the frontline in modern warfare can be anywhere, the former director general of the academy told Sky News. "The consequences for the operations were significant, but then manageable," Stringer said.

RingCentral and Vodafone Business partner for new cloud service

Cloud communications solutions specialist RingCentral has partnered with Vodafone Business to create a new co-branded, cloud-based service that will be the lead unified communications as a service (UCaaS) solution for the mobile operator. Under the terms of the deal, its customers will also be offered contact centre as a service (CCaaS). Bringing together Vodafone Business' mobile first approach, global brand, reach and scale with RingCentral's deep UCaaS and CCaaS background, the platform is designed to deliver flexible, easy to use and secure services. The platform will be available to enterprises of all sizes offering all businesses benefits from next-generation communications and collaboration capabilities.

Teledata installs 1.2MW of bloom fuel cells

Colocation provider Teledata is installing 1.2MW of Bloom Energy's solid oxide fuel cells at its data centre in Manchester, which it claims are the first Bloom fuel cells to be fitted in the European market. They will be installed by Conrad Energy, which signed a deal in November, along with Electricity North West (Construction and Maintenance) to bring the products to the UK market. Conrad Energy will fully fund the installation of the efficient hydrogen-ready Bloom fuel cells, potentially allowing Teledata to switch to fuel cells and thence to green hydrogen, when that is available. The latter said it will use a power purchase agreement (PPA) to fund the supply of gas for the fuel cells.

Teneo partners with Exium to deliver SASE platform

Work from anywhere IT services company Teneo has partnered with Exium, the full-stack cybersecurity and 5G clean networking firm, to assist lean enterprise IT teams in their transition to a secure access service edge (SASE). The partnership further strengthens Teneo's capabilities across SASE, cloud networking and digital experience monitoring (DEM). It is expected to help busy IT leaders with stretched resources time and transform faster. "Many organisations are looking for ways to accelerate their digital transformation, to secure mission-critical applications and to deliver more compelling user experiences but they are hampered by their inflexible infrastructure," said Michael Casey, chief revenue officer at Exium.

Worcs school in Covid data mix-up

A data breach at a school in Worcestershire caused parents to receive the Covid-19 test results of other people's children. The mix-up, reported by the Evesham Journal, occurred at co-educational secondary school and sixth-form college The De Montfort School (TDMS) in Evesham, which is part of the Four Stones Multi Academy Trust. After the Christmas break, students returning to education underwent asymptomatic testing for the coronavirus at TDMS. In a security incident ascribed to "human error," some students' test results were sent to the wrong guardians. The headteacher at TDMS, Ruth Allen, confirmed that the data breach had taken place while the test results were being uploaded to the school's network. She added that
the incident had involved the personal data of only a small number of students.
and was "found to be the result of a human error".

Virtus to build new DC in Slough

Virtus Data Centres has commissioned construction giant Skanska to build a premises in Slough to the tune of £53m. The LONDON11 data centre includes fit-out of six new data halls, construction of external steelwork plant gantries, plant rooms for mechanical and electrical, as well as public health services. The construction of LONDON11 is expected to add more than 13MW of new capacity within 5,500m2 of net technical space. The investment increased Virtus' total data centre estate to north of 178MW and 77,000 sq m. construction on the new campus is underway and set for completion by early 2023.

Managed IT Services Group acquires CSS group

Managed IT Services Group (MITSG) has acquired CSS Group, a managed IT services provider, for an undisclosed sum. The latter encompasses Charles Street Solutions, MICL and Opus UK, specialising in IT services to the legal and professional services sectors. "The acquisition of CSS is the ideal time to 'announce ourselves' as a new player on the UK managed services space and gives us the scale needed to aggressively target the UK small and medium business market." This is the latest in a series of acquisitions MITSG has made since its foundation. In May 2021, it acquired MITSG acquired IT Farm, a Manchester-based provider of cloud services to the legal and professional services sector.

Jisc selects Neos for new NW gigabit fibre network

Digital solutions vendor Jisc has selected business connectivity provider Neos Networks to deliver a new dark fibre network spanning the northwest of the county. The new network will replace Jisc's existing Janet North network, which currently serves the region. Both companies said it will provide gigabit capability to all the sites using the new network, with some seeing a ten-fold speed increase compared to the current offering and all achieving high-capacity speeds up to 100Gbps." Deployment of the network will begin immediately and Jisc expects it to begin offering services to member institutions as early as Q3 this year.

Word on the web...

An intelligent approach to ransomware

By Kate Mollett, regional director, Commvault

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

The networks laying the foundation for our green energy revolution

Chris Barlow, innovation director, Data Communications Company (DCC)

Britain finds itself at an important juncture in the development of its national infrastructure – the decisions made now to achieve the government's target of net zero carbon emissions by 2050, will begin to shape life as we know it over the next few years.

One of the biggest challenges to meeting this target is comprehensively digitising the energy network. The current apparatus we have in place is not best suited to future longevity, and will be unable to sustain the massive influx of green energy applications the country is quickly moving towards.

A nationwide energy platform with common standards is needed to digitise Britain's power monitoring and consumption, which will help smaller business flourish. To effectively manage the increasingly complex needs of an economy whose energy demands are subject to frequent change, a smarter approach to power management, fuelled by data, is required.

Modernising energy through data

Britain's current energy system needs to be modernised, and enhanced connectivity and big data is the way forward. As we look towards decarbonisation, microgeneration and renewable energy sources, such as solar and wind power, are now greatly adding to Britain's sustainable energy production capabilities.

The smart metering rollout – which recently surpassed 13.5 million devices connected to the secure network across Britain – is one of the clearest examples of how connected networks can improve energy consumption. Small businesses in Britain with standard energy needs are eligible for a smart meter, and this opens a new level of control over their energy and the future of smart applications.

But what is special about this network? Once a smart meter is installed and begins to get to work, it can send detailed usage information back to the power grid. The interconnectedness of this network and the data it transfers allows the grid to see changes quickly in use and reallocate resources – always attempting to make the most of renewable energy sources, creating a far more cost-effective and efficient energy network.

The DCC's nationwide smart meter network is helping pave the way to this ongoing digitisation journey. It will underpin the proliferation of smart buildings to be used by the nation's businesses, which will help lower their overall running costs and positively impact corporate rental agreements.

Inspiring future solutions

In a recent survey of businesses, which found that more than three quarters (79 per cent) indicated that energy usage is the major contributor to carbon emissions in their organisations. That's why to meet Britain's decarbonisation agenda an ecosystem for energy innovation needs to be at its core.

The smart network enables the grid to reallocate power as usage or generation changes. With an effective, secure and standardised digital spine in place, we can facilitate the network innovations, applications and devices that will work together to reduce our carbon output over the coming years.

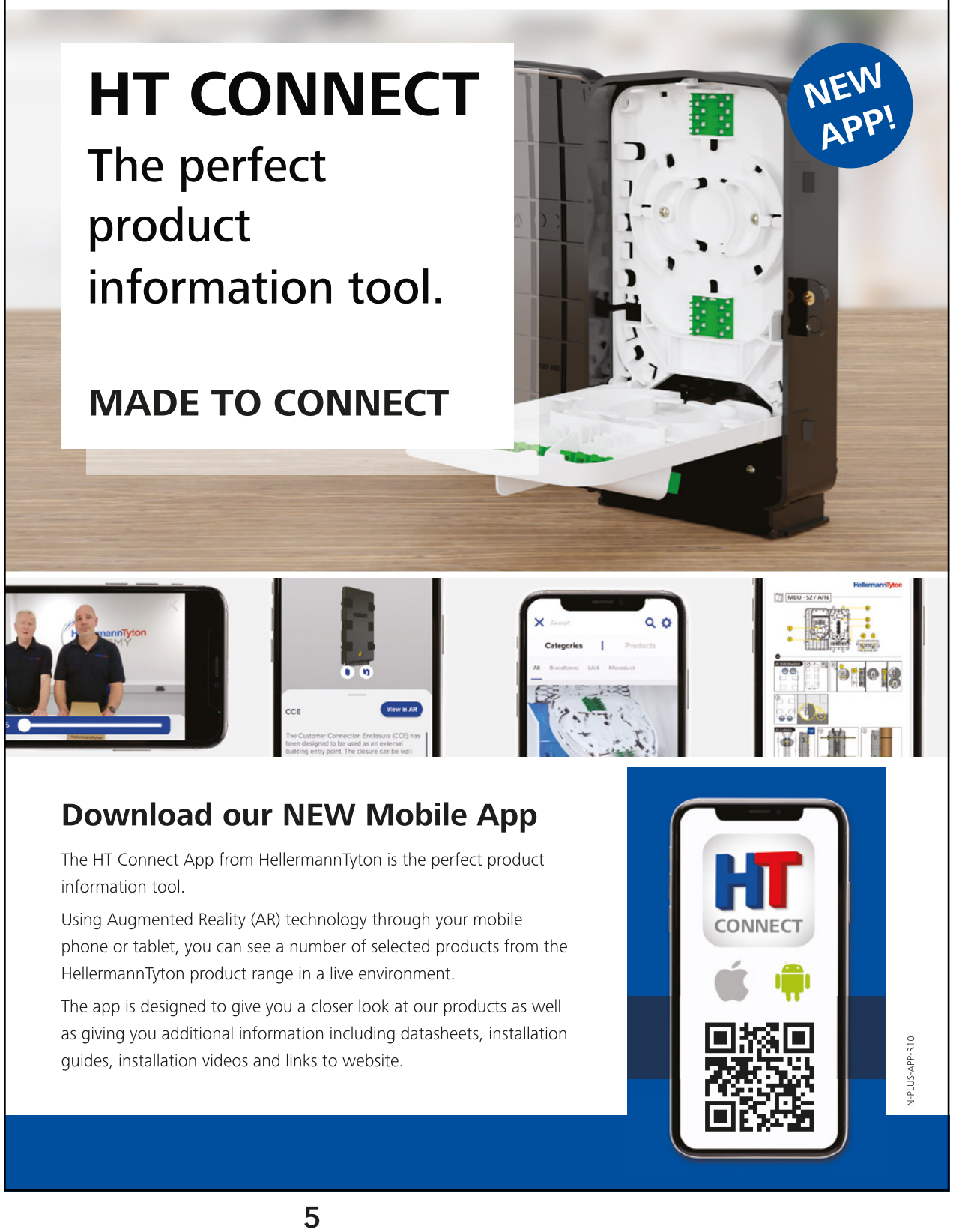
Looking further ahead, smart network could be a fantastic solution if you are generating surplus energy at home or at a small business. This excess could be stored in your batteries and sold back to your supplier at a profit to meet peak demand. Additionally, there will be an opportunity to distribute surplus energy for community uses. A smart grid would be vital here to make sure that this energy is flowing correctly across the country.

Green energy for a bright future

Investment into digitising our energy now will put Britain on track to becoming a world leader in sustainable energy. It requires a concerted, collective effort from both the public and private sectors to lay the groundwork, but it will pay dividends in years to come.

A fully connected smart energy infrastructure will allow small businesses to plan their energy spend and ultimately lower their carbon footprint, by charging when energy is at its greenest and most affordable. As the energy network is brought into the digital age, it's up to everyone to play their part in seeking out the greenest energy tariffs and harnessing the power of their data, to help create a more sustainable energy system.

The DCC's ongoing digitising of Britain's power grid will enable the country to move to a lower carbon economy and will ultimately contribute to the phasing out of fossil fuels forever – a bright future we can all look forward to. ■



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IoT providing benefits in every sector

By Alex Bufalino, vice president of marketing, Quectel

Beyond the economic benefits for manufacturers, retailers, etc., internet of things (IoT) devices are providing socio-economic advantages that benefit every industry.

Economic benefits of IoT devices include enabling manufacturers to know when a machine's production starting to deteriorate so that it can be taken offline during a slow period; helping warehouses and brick-and-mortar stores keep better track of inventory and enabling utilities to accurately charge for energy consumption without the cost of sending a meter reader to the customer's home or place of business.

Outside of those business deployments, IoT is increasingly being used by health care providers conservation organisations and formal and informal educational organisations to offer patients better care, benefit wildlife and provide educational resources to students who do not have access to more traditional forms of schooling.

The IoT deployments take advantage of the technology's relatively low cost and the ability to collect large amounts of data in real time.

For example, IoT sensors have been placed in critically endangered black rhinos in Mkomazi National Park, Tanzania, to enable park rangers to accurately monitor the whereabouts and activities of the large mammals and protect them from poachers. Their positions are reported a couple of times per hour so that rangers can respond quickly if anything seems awry.

Similarly, the Virginia Aquarium & Marine Science Center, Virginia Beach, records the history of each fish in its 45,000-gallon aquarium via an RFID system to better the health, lifespan, and behavior of each.

There are several other examples of various IoT technologies in controlled (like the above) and uncontrolled environments to monitor the health of different animals to help protect their habitats and the ecosystems that support them.

More and increasingly robust deployments of such capabilities are expected as 5G and AI continue to mature to provide an increasing amount of complex data and intelligence (i.e., malnutrition) to help with conservation efforts.

In all cases, these systems need to be able to track wildlife easily and cost-effectively. While controlled environments may already have robust internet and technology infrastructures in place, many of the uncontrolled environments don't have the necessary technology infrastructure, so instead they rely on the ability to use GPS in conjunction with a cellular network to gather the critical data.

In healthcare, IoT devices are increasingly being used to monitor a patient's vital signs outside of the walls of a hospital or other care facility. This enables patients to be in a more comfortable home environment while also saving the patient the expense of being in the facility and freeing the limited number of beds for more critically ill patients.

Uses of such devices range from monitoring the health of infants for post-natal care to seniors for fall detection (including alerts to first responders) and for post-surgical care. The ability to monitor a patient's health in real time means quicker attention to any issues and lessens the need for time-consuming office visits.

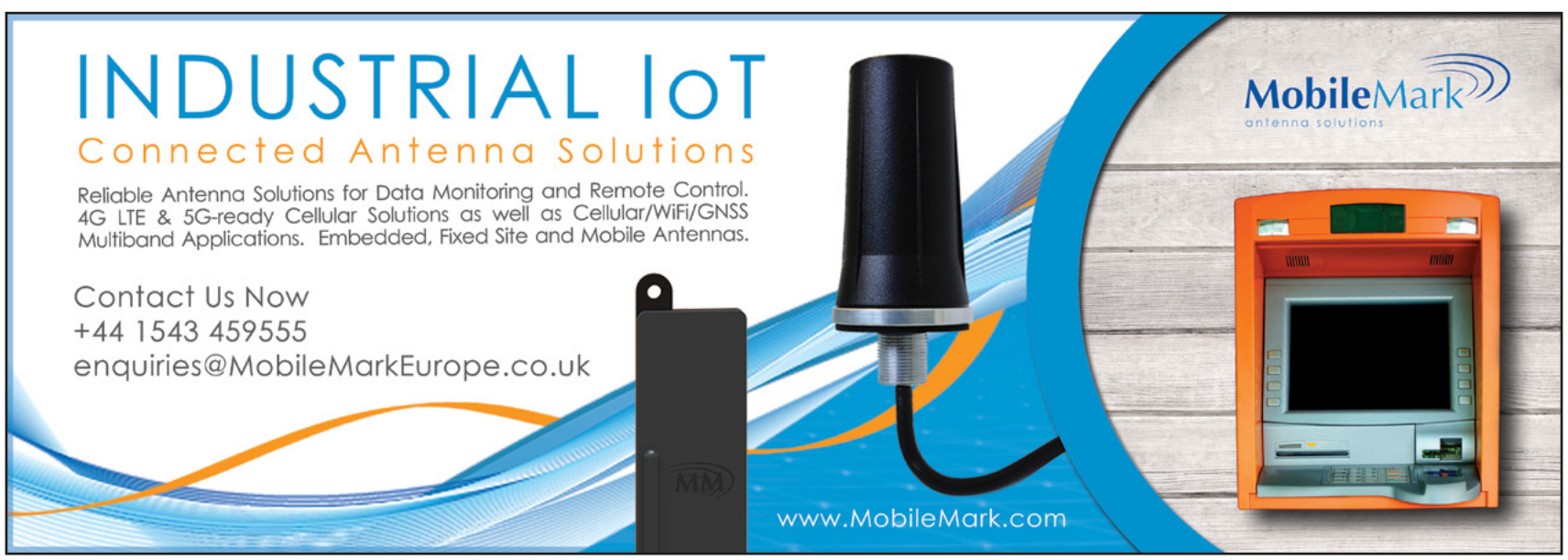
Similarly, there was an explosive rise in telehealth consultations as a result of the pandemic. The telehealth visits are less costly and time-consuming for all parties, enabling more regular consultations than would be possible if an in-office visit was the only option. So urban and rural patients alike can have more regular visits and earlier detection of any health issues.

The educational benefits of IoT became apparent during the Covid-19 pandemic as the majority of junior, high school and college education went from in-classroom to remote. While classrooms have reopened, there are still occasional shutdowns due to Covid or other considerations (i.e., "snow days,") that no longer mean the educational process stops, it simply shifts to a different mode.

Beyond the remote learning, IoT makes possible the use of virtual reality, augmented reality, and other related devices to provide students with richer learning experiences, whether in the classroom or remote.

But, as with conservation and healthcare, there are rural areas in the U.S. and developing areas in other parts of the world that don't have access to robust internet infrastructures. These areas can still access vast educational opportunities via cellular connectivity and IoT devices.

The uses of IoT devices have just started to scratch the surface of the various socio-economic benefits that they can provide. By continuing to deploy the devices in traditional network settings and in settings using a combination of GPS and cellular networks, the world will continue to benefit. ■



2022: a year to virtualise a more insightful customer experience

Brian Atkinson, vice president and general manager EMEA at Five9

As we leave the last 18 months of uncertainty and accelerated change behind, what's next for customer engagement? Brian Atkinson, vice president and general manager EMEA at Five9 discusses his top five predictions for customer experiences in 2022.

1 – IVR to IVA

2022 must see the complete uprooting of the 'press 1' tree of frustration that is IVR. With accelerated investment across channels such as webchat, SMS and WhatsApp, investment in voice and call experiences is sorely lacking.

This needs to change, and we are already seeing forward-thinking organisations enhancing the voice experience through next-level IVAs (intelligent virtual agents) technologies that shift away from poor, legacy IVR technology and into a natural language, conversational experience underpinned by AI (Artificial Intelligence). It's time to embrace seamless customer experiences powered by modern technologies and consign frustrating IVR experiences, bogged down in obsolete technology, to the bin.

2 - Rise of the digital workforce

AI has been slow to realise its potential while organisations have been asking what it can actually deliver in the CX arena, and how. The confusion is now lifting as we are seeing how AI capabilities can holistically impact the entire customer journey. We're now at a point where we can entrust a 'digital workforce' of intelligent virtual agents, underpinned by AI to deliver experiences for us.

With more AI deployments coming to life in the next 12 months, this interest will turn from curiosity to action. We will see more organisations seeking to harness AI to enable a digital workforce of intelligent automation while empowering 'real-life' customer experience agents to deliver that ever-vital human touch.

3 – An end to siloed data is in sight, with innovation in its wake

We've been talking about silos for many years but are now truly starting to see those break down, especially in the large enterprise. In the next 12 months, organisations that want to exercise innovation must focus on ending data silos and embracing boundaryless and secure access to data across their systems.

This can even go beyond stamping out internal silos, to embracing a decentralised data link approach, leveraging technologies like blockchain, and using cloud-based AI services by vendors.. Here, third-party services can anonymously analyse millions of customer interactions to help train natural language processing systems, for example. This feeds back into application innovation for all. For example, the development of automated dashboards for agents, who can gain amazing insight into the customer, immediately, at the right time and the right place.

Without boundaryless data, this type of innovation cannot be realised.

4 - Empathy through disruption

With supply chain issues looking to roll forward into the next year, there must be a continued focus on empathy as part of the customer experience. While organisations may not be able to exert control over many of the variables affecting the supply chain they can return to the six pillars of customer experience, in particular empathy, personalisation, and effort.

This means clear and regular communication, flexibility and understanding. At its most basic, sticking to rigid returns policies at a time like this won't serve anyone. Levelling up, this can mean offering customers personalised options when disruption does hit. For example, if a customer has ordered a new car and we know that chip delays will delay delivery, can they be contacted in advance to choose whether the cruise control option they selected is essential, or just a nice to have? If not, perhaps they would be happy to accept a different model sooner?

It's not about delivering the impossible, but about having the data and tools we need to be able to communicate empathically, and provide options and flexibility. Technology can help identify these opportunities and then deliver feedback on how that flexibility was received by the customer, helping to power the next experience, for the next customer. As such, technology will open more doors for companies to deliver empathy-driven, personalised experiences that engender loyalty even in the face of disruption.

5 - Cloud ubiquity to unleash innovation

Without widespread cloud adoption, none of the previous innovations will be realised. Innovative organisations know that, and 2022 will see the continuing march towards cloud ubiquity enabling smarter, more powerfully personalised customer experiences. The benefits of cloud adoption are myriad: flexibility, reliability, agility. Testament to that, around 75% of organisations are now taking a cloud-based approach to customer experience.

Both smaller organisations and large enterprises are moving to cloud models to take advantage of the latest technologies powering application development. When it comes to novel adoption of AI, of NLP and IVAs, cloud is the enabler. It allows organisations to take advantage of third-party innovation, layering of APIs, and access to capabilities way beyond the capabilities of on-premises. In the next 12 months there is no question that the cloud will dominate customer experience conversations, and those that are still wavering are set to get left behind. ■

Register for Networking+

Training, skills and the job market in 2022

It's that time of year when many of us look to train, re-train and look for a new job – but how have our plans been affected by leaving the EU and the pandemic? Networking+ asks the experts

Which are the most difficult roles in IT/tech to fill?

Phil Boden, Robert Half: The most in-demand roles are also the most difficult to fill in the tech sector, and there are a lot of open roles for software developers and data experts right now. The demand is so high that there just aren't enough people to fill these roles – and competition is fierce as a result. Available candidates are being offered up multiple roles to choose from at increasingly high salaries, which makes it harder to fill roles at the bottom end of the pay scale.

Marko Gargenta, PlusPlus: This tends to change all the time as certain technologies start delivering significant value yet not enough people know how to do them. A decade ago, that was Mobile and Cloud Computing. Then we saw the rise of Big Data, and lately it seems to be around Machine Learning and Artificial Intelligence.

Carol McGrotty, Vapour: From personal experience I would say AI – demand has never been higher, and it will only continue to grow. The market is evolving at pace, but skillsets are generally still in their infancy.

Caroline Baker, CityFibre: Across the IT and technology market as a whole, there is a perennial lack of specific talents in key areas. It is why CityFibre works locally with organisations to promote STEM courses and careers in the locations where we are building. For CityFibre specifically, we would like to see more candidates in the engineering and development fields. This can range from core network engineers through to senior developers.

Andrew Stevens, CNet Training: I'm not sure if there are specific difficult roles to fill, but there is a general lack of readily available skills. There is a need to find the right people first, those with the right ability and some experience, but you have then got to be prepared to allow these people the chance to gain the skills. A lot of companies are implementing formal training plans for employees, almost in-house apprenticeships. Having a training plan in place enables organisations to upskill staff quickly, a key benefit in an era in which technologies and digital strategies are evolving rapidly. Training and education programs also help establish a culture of self-motivation, continuous learning and professional development.

Which roles are the most oversubscribed?

Carol McGrotty, Vapour: Cloud engineers, whether that be at MSP level or companies internally needing their in-house IT to be truly cloud proficient. At Vapour we've been ahead of the game, but the pandemic has accelerated transformation to the cloud across all industries.

Caroline Baker, CityFibre: We can never have too much of a good thing and as a high growth, rapidly expanding organisation, it's about picking out the best talent from the applications we have.

Andrew Stevens, CNet Training: In the gaming space, developers and such like, the younger generation are excited about these kinds of roles, they are familiar with them and see them as fun which makes them want to get

into them. A lot of the roles we at CNet see advertised for, are those generally within the data centre space, such as data centre technician, may appear 'boring' in comparison, and as a result the younger generation might not be inspired about them. This comes back to the topic that everyone in the data centre sector has been talking about for years and that is the need for those working throughout the digital infrastructure industry to talk about what they do, talk about the exciting jobs and the constant evolution of roles. The children may spark an interest if you talk about AI for example.

Phil Boden, Robert Half: No roles are oversubscribed by candidates. Demand is outpacing supply for all tech roles at all levels.

What advice would you give someone who lacks the experience for a role but can't actually get it without doing the job?

Carol McGrotty, Vapour: Drive, determination, and a willingness to learn, go such a long way – one of the core reasons we look for personal values so much at Vapour. So, let this side of you flourish and don't be afraid to demonstrate your work ethic when in front of potential employers – that passion will come across and make you stand out, trust me!

Use platforms such as LinkedIn to build your network, raise your profile, attend industry events, and remain on the lookout for relevant industry courses. Many certifications are even free, which helps enhance your CV and build confidence.

Research growing companies that might take a chance on you too – being ahead of the curve on their recruitment drive could prove crucial. And don't be afraid to put your name and CV forward to companies – particularly start-ups – with a personal note as to why they've caught your eye. What's the worst that can happen?

Marko Gargenta, PlusPlus: This is a catch-22 but one way around it is to have a mentor. Acknowledge that you don't have the required experience but demonstrate that you have the willingness to learn and a support from a qualified mentor to help you bridge that gap.

Andrew Stevens, CNet Training: I would look at the supply chain and try to secure a role within it, that will allow individuals to gain some experience and get an understanding. You will find a way in; you just have to find the route and a direct route may not be the way.

Phil Boden, Robert Half: If you're just starting out, bootcamps and training courses where you can get certified and get on-the-job training are a great place to start. Some of them are paid for, but others like the AWS re/Start programme we support with Amazon are completely free – either way, once you have the qualification, you're guaranteed a role in dev or cloud computing.

Is the skills gap as big as it was last year?

Andrew Stevens, CNet Training: It's bigger. And it's not helped by the fact that the role profiles, the experience, the educational requirements that are required for many roles don't match, there is no reality to it. Recruiters are cutting and pasting from one thing to another and asking data centre technicians to have five years of experience and a BSC Honours, it isn't going to happen, these people aren't there. To compound this, companies are all vying for the same people and there are only so many people in the 'net', then they are competing for people in adjacent industries, such as oil and gas, or the service industry. The net needs to be widened to get a greater pool of people involved in the sector.

Marko Gargenta, PlusPlus: The skills gap is ever widening. Workplace complexities are only increasing and we need a deliberate method of upskilling the workforce. Yet, at most organisations, this knowledge sharing is ad hoc and poorly managed.

Carol McGrotty, Vapour: This isn't something Vapour has personally encountered, but I do hope we don't see a gap emerge further down the line. School and college leavers have undoubtedly been hindered when it's come to securing placements, whether that be full time roles or work experience as part of their curriculum. I can see why businesses would delay until we're all back in the normal routine of office life, but will we ever see this true return to working practice? If they can avoid deferring the decision to support young people, I'd encourage them to act now. I'm a huge advocate of developing young talent and we've seen many brilliant apprentices come through the ranks at Vapour. We shall continue to support this employment model and work with local colleges to provide work placements, being agile and adapting where necessary.

Phil Boden, Robert Half: The skills gap is as big as ever, and it's unlikely to ever completely close because of the nature of the sector. The pace of new technologies and enhancements means that workers will continuously need to upskill or reskill throughout their careers – and that takes time, so there'll always be a bit of a lag that leads to a skills gap.

Has Covid changed the way training and recruitment is conducted?

Phil Boden, Robert Half: It's changed completely. Before Covid, everything was done face to face, but now 90% of the work we do takes place virtually. It has meant that we can offer a faster service, and it has also opened up the market. As remote and hybrid working looks set to stay in the tech sector, we can access a national rather than a local talent pool to fill roles.

Andrew Stevens, CNet Training: When Covid first hit, building sites were closed and the network infrastructure installers were furloughed. Then the Government confirmed that people were allowed to undertake education during furlough, so things changed quickly. The training and education organisations had to adapt quickly, how to deliver learning content, demonstrations and class exercises online, often via live Instructor-led remote attendance classes. This is quite complex as you can't simply move from classroom-based learning to remote attendance without some careful consideration and changes to the way you teach. Things have changed but not to the extent where things will not go back to the way they were, it will be a hybrid version. Attitudes have changed to online and remote attendance learning; people are more accepting of this now but that is a generalisation across business. Personally, I would travel to London three times a week and meet three people, in the height of the pandemic I was meeting 15 people a day and didn't leave my office, so for productivity it was very positive. I think covid will have changed the 'hybrid working model', where people just do what they need to do. The danger is that there are some people where it is important to meet 'face to face' but the other side of that is it's given that you can have access to people that don't have much space in their diaries, you wouldn't see them otherwise, they just wouldn't have the time to do it.

Carol McGrotty, Vapour: Inevitably yes, but we haven't found it's been to the detriment of the employer or employee experience. It's certainly not a reason to avoid recruitment and training – we're in the tech space after all, so let's utilise tools and apps to our advantage to remain connected. Video has allowed us to successfully continue our recruitment drive, for example, and we've even found many candidates appear a little more relaxed in their own setting. Perhaps they feel more inclined to share their personality, without being daunted by an unfamiliar environment. Training plans have required a little more effort – mainly when it comes to techniques for maintaining interactions, engagement and momentum. But again, lots of great technology exists so with a creative mindset, this needn't be an obstacle. It may even help you stand out in the eyes of employees, which is particularly important in today's competitive environment. Employers that haven't yet adapted need to quickly, or they'll find themselves being held back.

Caroline Baker, CityFibre: From a recruitment perspective, there has been less of a personal touch during interviews and we have had to adjust the way which we test technical ability. What it has done is act as a catalyst for moving training from old fashioned and traditional classroom delivery, to a 'just in time' blended learning approach. The pandemic has highlighted the need for improved use of technology, such as gamification, and created a need for skills such as content authoring and instructional design. With these digital tools, much more of the learning is 'in the flow of work' so new recruits are having training integrated into the work they are doing on site. It's just one of the ways we have had to adapt to the pandemic where larger group sessions have not been viable.

Has Brexit had an impact?

Carol McGrotty, Vapour: Whilst almost two years on, the true impact of Brexit still feels relatively unknown, not least because its impact has been masked by the shockwaves caused by Covid-19. Rather than wait to experience the consequences – significant or otherwise – it's important that we don't let paperwork or other challenges deter us. Brexit is here to stay after all, and we are not an industry to stand still.

Caroline Baker, CityFibre: There is huge competition in the market for workers at all skills levels. Both Brexit and Covid have affected the traditional supply of labour into the telecoms market from the EU. We are in active dialogue with Government to maximise the impact of existing initiatives, and address bottlenecks in training and mobilisation.

Andrew Stevens, CNet Training: Yes, certainly in the supply chain and the network infrastructure area, there are a lot less available workers in that area and there is a knock-on effect. Obviously, network infrastructure is part of the 'construction' industry because of the rate of the growth of either data centres or office refurb, it all needs network infrastructure and that has been badly hit. ■

Register for Networking+

Multi-cloud security doesn't have to be complicated to be effective, it just has to be consistent

By Kumar Vaibhav, solution architect, In2IT

Despite cloud having been around for more than a decade, there is still this perception that it is 'new' technology, which makes people uncomfortable. Cloud is many things, including scalable, reliable and cost-effective, but it's no longer new. While on-premise security and own data centres is what most organisations think they need to secure their digital assets, the reality is that this is no longer sustainable - it's time-consuming and cost-intensive to operate and manage, particularly in comparison to the cloud.

So how does cloud security compare to on-premise security? Essentially, there isn't that much difference. It's easy to think that on-premise is more secure because one has direct control over all the servers, systems and data living in that data centre. However, it's important to remember when moving to the cloud that all cloud service providers, like Microsoft, Bing and Amazon all have their own security measures in place. The main concern that businesses have when it comes to moving data to the cloud is that they're uncertain where it will live, but realistically, it's possible to have the same controls in the cloud as with on-premise security. The two go hand-in-hand and security in the cloud is a responsibility that must be shared between the cloud service provider and the customer, depending on the service they're using.

Proper user management is particularly important now that the workforce is split between working at home, in the office or out in the field as 80 - 90% of all cyber breaches or attacks happen because of users. Whether it is users being tricked into giving out credentials, or credentials being compromised by exploiting vulnerabilities, the effect is the same, making it critical to implement and utilise Multi-Factor Authentication (MFA) as part of a stringent Identity Management Program. Password sniffing or spoofing is easy, and there are thousands of ways that attackers can gain unauthorised access to data, but having MFA drastically reduces the chances of getting defrauded from the inside. In addition to MFA, it's necessary to have a proper access control program in place. Role-based access is one of the most important keys to preventing data leaks. Here, it's important that not everyone gets the same level of access, and specific users must be granted only the permissions necessary to fulfil their job description.

Securing web-based applications to ensure they're not used as attack vectors is as simple as proper testing. One of the main problems with the DevOps approach that's becoming increasingly popular because of the agility it enables is that the fast pace of work can lead to an increase in coding mistakes, which can result in undetected bugs and errors. Attackers can exploit these coding mistakes to gain access to digital assets. To counter this risk, it is necessary to pay more attention to thorough vulnerability testing on the web app continuously while following best practices for maps. Although penetration testing can be expensive, this cost needs to be evaluated against the real possibility that a single breach can cause untold damage, both reputational and financial. Protecting against network threats and vulnerabilities in the cloud isn't much different to securing web apps, and it's important to ensure that all applications and operating systems are up to date in terms of security patches, along with proper access control through a firewall and a secure perimeter.

Secure access service edge (SASE), as defined by Gartner, can make a difference here. SASE is a security framework specifying that security and network connectivity technologies should come together in a single cloud-delivered platform to enable rapid, secure cloud transformation. In addition to providing a singular point through which services are delivered to the client, this also streamlines network access and security measures, while eliminating operational complexity by reducing the number of vendors involved and helping to protect the business from third-party vulnerability. This plays a massive role in achieving visibility and transparency in cloud environments, along with the fact that public cloud providers generally have their own compliance requirements to meet such as ISO 20 001, PCI, DSS and HIPAA - all of which can be passed onto the customer.

Ultimately, the most effective approach to securing anything in the cloud will be one that focuses on securing data both in transit and in motion. Asset protection is important, and visibility is critical given the scalability and flexibility of the cloud. Endpoint protection is required to secure servers or workstations or any machine in the cloud, along with operational security which ensures that when any changes are made, these occur without accidentally opening system loopholes. Monitoring is just as vital, along with vulnerability and penetration testing. Finally, to ensure security and continuity, businesses should avoid putting all their eggs into a single cloud basket. Using multiple clouds ensures that if one goes down, there's another ready to take its place and ensure security through business continuity. ■

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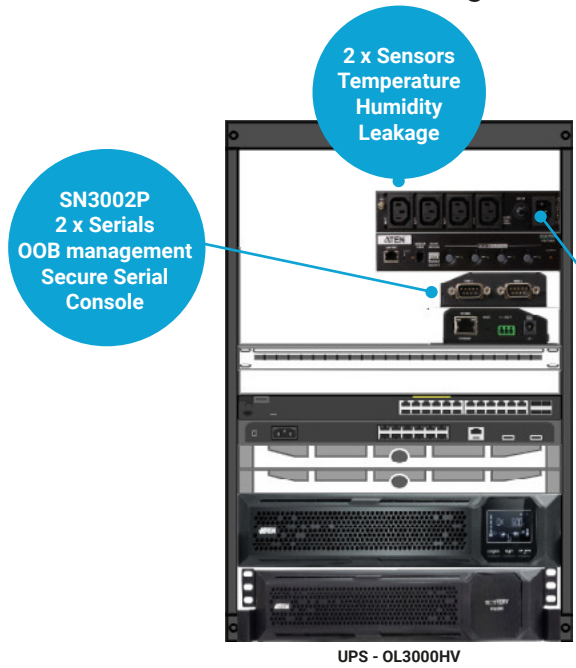

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Glasgow's cutting edge

How Scotland's most populous city became one of the world's smartest

Before its digital upgrade Glasgow City Council already had existing contracts in place providing CCTV traffic management camera network services across the city. Both were due to expire and needed to be replaced to ensure these critical services continued to operate efficiently.

A strategic decision was made that both components should be brought together and delivered through a single supplier.

In addition to the basic needs of CCTV and traffic management, the new replacement network needed to support:

- future requirements for the implementation of 5G over the next decade
- improving the ability to deploy (Internet of Things) IoT technology
- economic regeneration and growth by breaking down digital barriers
- the council's future cities ambitions.
- The council also needed to deliver social value through the contract.

After consideration, the council ran a further competition through CCS's Network Services 2 framework. This commercial agreement was well-suited to the council's requirements as it has robust terms and conditions, enables access to a supplier market with the skills and experience required to deliver the contract, and allows social value elements to be assessed alongside other criteria.

The solution was to appoint a single supplier to install, manage and support a brand new robust, scalable and flexible full fibre network.

Consisting of 633 circuits, the network will support the delivery of CCTV, traffic control and other services across the city. This will enable the roll-out of leading-edge IoT technologies – including sensor-enabled automation such as noise and pollution monitoring, footfall, flood and water management as well as measuring of footfall.

Commsworld was awarded a 10-year contract for £5.8m. This represented a cost avoidance of approximately £4.4m, calculated by comparing the successful bid against the average value of all bids received including the winning bid.

The solution delivered as part of the contract gives the council advanced technological capability to make more informed operational and strategic decisions in the future. For example, data harvesting will enable it to deliver more efficient, targeted services for the benefit of citizens.

Key to this is the availability of high-speed fibre infrastructure that could help drive forward the implementation of 5G across the city – increasing the reach of 5G to all areas of Glasgow.

In addition, the council successfully leveraged the terms of the Network Services 2 framework in order to achieve a variety of social value outcomes focused on tackling the digital divide and economic regeneration in the city. As part of the contract the successful supplier, Commsworld, agreed to recruit an apprentice, provide a mentoring programme for digital skills and offer work experience placements to those from digitally deprived backgrounds.

"We recognise the vital role that our digital infrastructure plays in the smooth running of Glasgow, which in turn impacts on the city's prosperity and productivity," says Councillor Angus Millar, Chair of the Digital Glasgow Board. "Working closely with Commsworld, we are firmly committed to enabling a CCTV and traffic control system that makes Glasgow's road network more efficient, while at the same time bringing quality job opportunities to our city.

Laura Moffat, Category Manager at Glasgow City Council, adds: We chose to use the Network Services 2 framework as it met all of our assessment criteria. In addition to the framework's suitability, we received excellent support from CCS's category team throughout the procurement process."

Moffat says that the council "was really pleased" with the final outcome. "As well as investing in our city's infrastructure, we were able to build community benefits into the procurement which will have a lasting impact beyond the lifetime of the contract," she concludes.■

Register for Networking+

Smart city technology for next-generation living

Wembley Park is an exciting new urban heart for Brent and north west London. It is a far cry from the previous acres of car park that was only used on event days. Today, Wembley Park is a place to enjoy 365 days a year, thanks to developer Quintain, which invested over £2bn in the neighbourhood to date.

Quintain, a development and asset management team, was challenged to create a smart city environment with next-generation fibre-to-premises technology at Wembley Park. To do this, it needed to build a resilient service provider network to provide high-speed internet services with up to gigabit speeds, to the 7000 new homes, retail, and office buildings. In addition, an outdoor transmission network was necessary to provide connectivity for Wi-Fi access points, digital signage, CCTV and public announcement systems.

Working together with Quintain, fibre optic broadband supplier Velocity1 was responsible for the design, build and deployment of a fibre optic network across the 85-acre site.

Before choosing any technology vendor, Velocity1 undertook three broad considerations – technical, operational and commercial. As a technology provider, Alcatel-Lucent Enterprise delivered solutions from the Alcatel-Lucent OmniSwitch family of next-generation technology to meet the following requirements:

- Technically it had to meet Velocity 1 requirements and allow for easy service enablement, with easy upgrade paths and proven scalability.
- Operationally it had to be robust. Given the critical importance of the in-building systems, broadband networks, and public realm services this infrastructure supports, the product must perform in this demanding environment from a hardware and software perspective. It must fit into the OSS ecosystem so that issues are easily diagnosed and resolved.
- Commercially it had to deliver value for money, as well as deliver the right technical and operational features.

The Optical LAN network offers technological benefits for large campus network deployments like Wembley Park. For example, a simplified network topology with long fibre rings served from two central data centres provides geo-redundancy. Furthermore, based on GPON technology and passive fibre splitters, distances of up to 20 km can be reached without any active intermediate node and with a limited amount of fibre.

At the site, Omniswitches were connected to the GPON using Nokia GPON SFPs and deployed on light poles, providing Ethernet connectivity for WiFi, CCTV, screens, audio and other services. The network is currently managed from a single Optical LAN management platform (POL Command Center) making it easy to add new services and deploy across the area. A future-proofed solution provides an Optical LAN network that can be upgraded to 10G without having to replace the existing infrastructure.

Discussing the development, James Canty, Chief Technology Officer, Velocity says, "We are privileged to be deploying infrastructure on behalf of Quintain in the largest urban regeneration project in the UK, if not Western Europe, and we treat the responsibility that comes with that very seriously." James adds, "Alcatel-Lucent Enterprise has been an excellent fit for us in helping Quintain deliver on the Wembley Park vision."

The Wembley Park development is not just a success technically. From a financial perspective, the site supports a passive network yielding savings in space, power consumption, air conditioning and maintenance. Built with green initiatives in mind, the complex includes seamless same-shelf upgradeability for NG-PON, fewer active conditioned equipment racks with lower CAPEX/OPEX, and less floor space requirements.

Those living, working, and visiting Wembley Park can now also enjoy; comprehensive management and provisioning; easy troubleshooting with no maintenance required; high throughput and low latency on fibre for Qos with rich end-user services; redundant fibre loops for high service availability; and flexible topology to define and easily add customer services on the network. ■

Register for Networking+

Land mobile radio options expand

Ken Rehbehn, principal analyst at CritComm Insights and contributing principal analyst for Omdia

Even as high-speed mobile cellular data services expand, the tremendous utility offered by simple push-to-talk voice communication is tough to beat. In the 2021 edition of Omdia's Licensed Mobile Radio Report, the installed base of these handheld portable and vehicle-mounted radios continues to expand. The lurking question, however, is what changes are in store as push-to-talk over cellular gains traction in the years to come.

Land mobile radio spans a variety of radio technologies, ranging from simple analog systems to complex, computer-driven digital trunked networks. But at its core, the land mobile radio market is focused on a fundamental goal: simply and efficiently getting a voice transmission to a group of listeners. For the user, the key to simplicity is a single button that initiates the voice transmission.

Push-to-talk simplicity wins

The simplicity of push-to-talk means that a user does not have to unlock a screen, look up a number, or make multiple button taps when initiating a conversation. This feature makes push-to-talk the preferred voice communications tool for enterprise teams on construction sites, airfields, bus fleets, and other dispersed work activities. All users need to hear the same message, and push-to-talk makes this possible. Likewise, in public safety agencies, the simplicity of push-to-talk is an essential feature that aids police and fire operations.

Land mobile radio (LMR) systems deliver the push-to-talk capability with narrowband radio signals in the spectrum below 1 GHz. As a narrowband technology, data transmission capabilities are minimal. Digital LMR systems such as TETRA or DMR support data transmission, but only as short messages. Older analog LMR systems are voice only, with no data functionality. For heavy data sessions supporting graphics, cloud applications, or video, users must turn to LTE or 5G mobile broadband technologies.

Analog begins to fade

Omdia's Licensed Mobile Radio Report tracks the market dynamics for push-to-talk radio communications. The 2021 edition concludes that the installed base of LMR users continues to grow, even as shipments slipped during the Covid era. Omdia found more than 53 million LMR active users at the end of 2020, an increase of 1.7% from the prior year.

Significantly, Omdia found 65.4% of the total 2020 installed base were digital subscribers. These users will continue to grow, increasing by 35.8% in 2025. The reason for the growth is the efficiency and expanded features enabled by digital land mobile radio systems.

Europe remains a TETRA stronghold

A mature land mobile radio market, Europe's subscribers primarily operate on digital land mobile radio technologies. Of these, TETRA remains the technology of choice for public safety operations that demand high security, short data messages, and flexible trunked radio operations. The TETRA radio standard originated in the European Community and is designed to provide interoperability between government agencies across the region.

A sign of Europe's advanced status is the proportion of LMR subscribers operating on digital systems. In Europe, 71% of the subscribers were using one of the digital technologies at the end of 2020. Omdia expects this proportion to grow to 83% by the end of 2025.

LTE and 5G disruption

Though land mobile radio systems have proven valuable tools for group coordination, the data limitations and high deployment costs are forcing enterprises and governments to shift from narrowband to broadband technologies. For enterprises, a variety of push-to-talk over cellular solutions are available that operate over mobile LTE networks. Government users are turning to a standardized mission-critical push-to-talk over cellular technology that incorporates quality of service, priority, and preemption.

Unfortunately, however, a shift to LTE presents a particular challenge to public safety operations. The ability for users to communicate with nearby users, even when the network is not reachable, is paramount but not available with today's LTE devices.

Though the 3GPP standards effort that created mission-critical push-to-talk included the proximity services feature as a direct mode alternative, the capability has not entered the market. This gap means that the shift towards LTE and 5G depends upon hybrid push-to-talk devices that can handle LTE and a legacy LMR radio technology. Most major LMR device suppliers now provide hybrid options.

As the options for land mobile radio expand and users contemplate a future shift towards LTE and 5G communications, the fundamental need for simple group voice communications remains. For many years, and in many parts of the world, narrowband land mobile radio coverage will remain the foundation for enterprises and public safety.

Europe: a mature market

The installed base of active LMR radios was close to 10 million at the end of 2020. OMDIA projects that the total number of active users will continue increasing until 2025 consistently.

The European LMR market is a mature market and one of the most digitized in the world. The number of digital LMR users increased but at a slower rate than originally expected. OMDIA predicts 83% of installed active radios will be digital at the end of 2025.

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Standby power solutions need to be reviewed against the power they can support, the runtime they provide in a mains outage and the overall management they provide of your power, for example runtime, power capacity, servicing your UPS and remote management via network communication or remotely rebooting your UPS Solution / output power receptables.

It is worth while remembering that even a Edge UPS solution these days needs to be commissioned to ensure predictability of the edge solution and its life cycle managed and Critical Power Supplies can again help here with load banks – ensuring the specification purchased is the specification actually experienced.

Batteries – don't ignore them

A vital part of your Standby power solution is the battery section and like any key part of solution suffer from age, usage and the environment they are installed in. A battery replacement program is a key aspect of owning and selecting a UPS. As a result, continual battery monitoring, preventative maintenance, and planned battery replacement is required to ensure operational continuity and battery longevity and ensure the maximum runtime, rather than a 20% less runtime than your purchased UPS due to poor battery aging over 4 years.

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- Poor installation.
- A lack of regular maintenance are the primary factors that shorten UPS and battery life.
- Battery technology and quality.
- Storing then for longer then 6 months prior to installation etc.

Bypass switchgear or Bespoke switchgear

Along side traditional bypass solutions we provide a range of bespoke switchgear solutions designed with your power requirements including branch level metering and power factor correction as required.

How to buy outright

We offer an excellent selection of single phase UPS systems, PDUs, Bypass systems and associated products for sale online at criticalpowersupplies.co.uk or call our dedicated UK sales on 0800 978 8988.

Dedicated Account Managers

We provide a dedicated account manager, who is trained in power solutions and datacentre solutions. Your account manager will be available to help you via team calls, conference calls or site surveys. To ensure you get the best out of your Critical Power Solution.

In many nations across the world, the technology used to generate and distribute electricity provides are either a three-phase or single-phase supply.

Outright buy or hire?

We provide a number of flexible purchasing options including outright buy, leasing over preferential terms and Hire solutions from UPS, Generator to emergency lighting solutions. Which can also include maintenance contracts and installation services. Contact your dedicated account manager for more information.

Overall

We are a standby power specialist who provide complete turnkey solutions or supply and maintenance only and can work with your in house teams or appointed contractor to have the UPS installed.

We sell a variety of products from leading manufacturers including single phase UPS and three-phase UPS systems from 325VA up to 1MVA from renowned manufacturers throughout the world at Critical Power Supplies. Our supported brands include APC, Eaton, Vertiv, Riello, Salicru and Cyberpower and SDNMO to name a few but we provide 24 hour sales and service capabilities on over 100 different brands including Exide and Yuasa Batteries.

Call us today on 0800 978 8988 or email sales@criticalpowersupplies.co.uk and try our free site survey.

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Practical tips for selecting the best UPS system

Alex Emms, operations director, Kohler Uninterruptible Power UK

Demand for uninterrupted power continues apace, with OMDIA forecasting in its 2021 Hardware Market Tracker Report that the global UPS market will grow 35% from around $9bn in 2021 to over $12bn in 2025.

Apart from basics like whether the load is single or three phase and the kVA rating, when considering a UPS it is also necessary to identify if it is a traditional IT load, a mechanical load (with potentially damaging back-fed current) or a life-safety load, covered by special regulations.

The level of protection required must also be determined – if the equipment will be affected by a break in power then an "offline" VFD (Voltage and Frequency Dependent) UPS will be unsuitable. In addition to a complete outage, "online" UPS systems can either protect from just voltage variations (VI – voltage independent) or voltage and frequency variations (VFI – voltage and frequency independent). Modern equipment generally requires continuous VFI protection but when comparing UPS quotes it is not always clear which models offer what protection.

Similarly, the output power factor of a UPS must be suitable for your load. Many modern UPS systems have a "unity" power factor of 1.0, meaning for example a 100kVA UPS will support a 100kW load. However, there are still many UPS systems in the market with power factors of 0.8 or 0.9, meaning that although they may be a 100 kVA UPS system, they could only support a load of 80 or 90 kW respectively.

The redundancy level for an IT UPS system will usually be specified in line with facility "Tier categorisation", so for example a Tier II facility would normally have an N+1 arrangement with a single feed, Tier III would require twin feeds and Tier IV twin feeds and a 2N or 2(N+1) arrangement. However, approaches to providing the "+1" aspect of the redundancy have changed greatly.

Historically the redundancy would have been delivered by adding a complete second system of the same size as the first, so for instance 2 x 100 kVA systems. With the rapid growth of modular UPS systems an "N+1 100 kVA system" could instead comprise 6 x 20 kVA modules. A full set of components in the sixth module provide all the redundancy required but with only 20% extra power instead of 100% extra.

If designed for hot swappability, modular systems also allow faster repairs in the event of a problem and for individual modules to be maintained without the whole system being turned off. Duplication of components in modular systems inevitably increases initial costs per kVA compared to "standalone" or "monolithic" systems where everything is in one box, but if only 120 kVA of capacity is being bought instead of 200 kVA this can offset things.

Furthermore, as most systems are planned to grow over time, a modular approach may allow less capacity to be bought initially and additional modules slotted into unpopulated, pre-connected bays as loads increase.

More advanced modular systems will optimise load sharing across modules to optimise efficiency, with some such as Kohler's even determining when unnecessary modules can be put into standby to further increase efficiency. (As a benchmark, modern, transformerless UPS systems typically offer 96% to +97% efficiency in the key online VFI mode).

If power fails, batteries will be called upon. Typically, "VRLA" lead-acid type these are heavy and bulky so there may be compromises between time battery back-up power will last, the space there is to house them and the weight the floor in the proposed location can handle.

Often excessive runtimes are specified that increase space, weight and cost so consider carefully what autonomy you really need, especially if generators are also available.

As chemical stores of energy batteries need keeping at the correct temperature – too warm and the chemicals in them react overly fast, decreasing lifetime; too cold and slow reaction means the power given up by the battery will be insufficient to support the load. Generally, 20˚C is recommended, so in the UK some form of climate conditioning is required. If space, weight or temperature challenges exist then lithium-ion based solutions are now common. At around half the weight and size these can be a great solution and include battery management systems as standard to ensure safety. Given widespread competition for lithium-ion materials though these remain significantly more expensive than VRLA battery systems for power protection, and many still wonder about their sustainability. (In contrast an established network already today recycles over 98% of lead-acid batteries.)

PRODUCTS

Schneider Electric brings to market the Galaxy VL 200-500 kW (400V/480V) 3-phase UPS, the newest addition to the Galaxy family. It claims "this highly efficient, compact UPS offers up to 99-percent efficiency in ECOnversion mode for a full return on investment within two years (model dependent) for medium and large data centres and commercial and industrial facilities".

Schneider says that with data centre floor space at a premium, the compact design of the Galaxy VL is half the size of the industry average at .8 m2. Its modular and scalable architecture enables data centre professionals to scale power incrementally, from 200 kW to 500 kW with 50 kW power modules, providing flexibility to grow as their business demands.

Furthermore, with Galaxy VL, Schneider Electric introduces Live Swap, "a pioneering feature which delivers a touch-safe design throughout the process of adding or replacing the power modules while the UPS is online and fully operational, offering enhanced business continuity and no unscheduled downtime". Additionally, Live Swap's touch safe design offers increased protection for employees who no longer have to transfer the UPS to maintenance bypass or battery operation during the insertion or removal of the power modules.

"The new, energy-efficient Galaxy VL sets a very high standard for UPS innovation and is designed to help our customers grow while minimising footprint and cost of ownership," says Mustafa Demirkol, VP, 3-Phase global offer management for Schneider Electric. "It is in keeping of our focus on the future requirements for data centres and meeting the demands for adaptability, resiliency, efficiency, and sustainability. The newest addition to the Galaxy family is a Green Premium product that delivers top performance, supports sustainability objectives, and fills a previous gap in the market for the midrange power segment." *se.com*

AEG brings to market its "highly flexible and compact" Protect 1 LCD. Thus transformer-less UPS, AEG reckons, combines high efficiency values with compact footprint and flexible configurations. Thanks to its full IGBT technology, Protect 1 LCD features low input THDi with almost unity input power factor. The UPS is settable as 3/3, 3/1 or 1/1 and offers an adjustable range of recharging current up to 13 A. The system, AEG claims, "is an ideal power supply solution" for small and medium critical applications when the power consumption, the footprint and the maintainability are key factors of choice. Features include Adjustable battery recharging current up to 13A and a graphic LCD touchscreen display with multilingual user interface. *aegps.com*

Described as a compact and practical pluggable power protection solution, the Socomec Netys PL 600VA integrate a larger number of sockets adapted to computer and IT peripherals in small office and home office environments. This, the company says, facilitates connection and tidier cabling. It is also a "modern design suitable for positioning over/under the desk or floor installations" and a complementary USB port on the top for recharging mobile devices (e.g. phones, MP3, etc.). It also comes with six UK output sockets for easy distribution directly to your applications and four sockets protected against power cuts and overvoltage's, aimed at the most sensitive applications (professional desk top systems, workstation and monitors). The back-up time (up to 30 minutes) enables standard PC tasks and configuration to be saved. There are also two sockets protected against overvoltage alone for use with less critical applications and high absorption consumers (e.g. laser printers). It is also supposedly "easy to use" with an operating mode indicated by means of the smart LED indicator lights, as well as easy battery maintenance and replacement. Furthermore, the integrated mains input cable on the side allows all six sockets to be used. *socomec.com*

The **Legrand Keor MOD UPS** (uninterruptible power supply) is a three-phase system supplying online double conversion with PWM high frequency technology. It apparently uses four 25kW UPS modules rated at unity power factor in a 125kW UPS frame, which can also accommodate internal batteries.

What's more, the 25kW UPS module, the company reckons, is a high-frequency PWM online double-conversion module that can be arranged in capacity or N+X configurations from 25-250kW. Parallel cabinets can be operated up to 600kW.

The UPS frame has a 10inch front panel touch screen display, Legrand claims, provides simplified control, information, alerts and access to set points, with interactive icons and an easy to navigate menu system. Moreover, the display can be rotated 180°, which can assist with the configuration and maintenance.

Other key features, include reduced battery recharge times, multicoloured status bar LED and temperature-controlled fans to reduce energy usage and noise level.

The Keor MOD, Legrand says, is the ideal solution for all critical computer applications such as data centres. *legrand.com*

Owing to its aesthetically pleasing design, sleek finish and quiet operation, the **Eaton 3S** reflects the modern office environment. This piece of kit comes with 6 or 8 IEC sockets, which the firm claims lends itself to easy connection of typical IT equipment, including peripherals.

The 700VA model offers two USB ports (2A maximum), which apparently offers even faster charging of all types of mobile devices (mobile phone, tablet, etc.).

All the different models have a HID-USB port (cable included) for automatic integration with the most popular operating systems. The device can be placed on or under the table or mounted on the wall and the batteries are easy to replace. *Eaton.com*

The **Vertiv Liebert EXM2** is described as a "monolithic uninterruptible power supply (UPS), designed to address the rising need of highly reliable and efficient UPS for next-gen mid-size critical applications". It is equipped with three modes of operation and coupled with intelligent paralleling function that delivers operating efficiency up to 98.8% without sacrificing the availability. Its robust and flexible design optimizes the space and seamlessly adapts into multiple applications and infrastructure. The product is available from 100 to 250 kVA/kW power ratings. *vertiv.com*

Please meet...

Simon Michie, chief technology officer, Pulsant

Who was your childhood hero?

It was definitely my physics teacher at secondary school. We'd watch him carefully waiting for the next lab "accident" – fire, electrocution, you name it. He really knew how to keep the whole room engaged. It is not a technique I employ myself.

What was your big career break?

I've always felt very lucky to have landed in the technology sector where my hobby could become my career. Being co-founder of a start-up set me on a new path, although I didn't specifically recognise it as a "break" at the time. I learned a lot of hard lessons during that experience which have served me well in every job I have done since, whether it has been managerial or technical.

I had to overcome a few setbacks and solve quite demanding problems early on in my career which has been immensely helpful and stood me in good stead right up to the present. You quickly accumulate a cache of experience without always realising. The key is to keep updating it.

For me, the work I'm doing now at Pulsant to develop a UK edge computing platform is arguably another huge opportunity. I'm privileged to be part of something unique and market-leading that will not only enable positive change - chances like this don't happen often.

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

When I was 16 my careers tutor somewhat bafflingly told me I ought to be a programmer or a DJ. I love collecting vintage jazz and R&B from the 1920s to the 1950s and regularly DJ at period dance events, which is great fun and provides a hugely enjoyable contrast with the day job. Having now ticked those two career recommendations off, I'd choose space science or oceanography – both fields where there is true exploration still to be done.

For the time-being however, my exploratory ambitions are in the cloud and its limitless potential, especially as we enter the era of the edge. As a boy, I loved reading science fiction books set in the future. It fired my imagination about what might be possible and now as an adult, it's exciting to see fiction becoming fact. This is a dramatic shift that will have far-reaching implications for the way businesses operate and will improve the quality of life for millions of people living in "the regions" outside the main metropolitan areas.

What would you do with £1m?

Use half to briefly set up a venue to support live jazz musicians and invite all my friends. Then I would invest the other half so I could do it for longer.

If money was no object, where would you live?

I would continue where I live now – London – which I love for its cultural diversity and nightlife. If you love jazz it's the place to be in the UK.

Although I'm deeply attached to London it does dominate the world I work in, to an undesirable degree. The capital and its immediate hinterland are where the major cloud providers, their partners and ecosystems are all based.

It makes it unnecessarily hard for businesses outside the South East to gain high-speed access to the cloud. And this metropolitan bias also renders it difficult for those organisations to get the kind of highly expert advice and technical know-how they need to become truly data-driven.

The Beatles or the Rolling Stones?

Both great, but if you force me to make a choice, I'd choose the Stones for using the African American blues pioneers as their inspiration and then creating a unique and very British sound.

Which law would you most like to change?

The EU Withdrawal Act. Yes, really.

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

I would say it's "do what makes you happy". I have three decades of experience in the technology sector now, so I must be enjoying it. I started off in sales and have run consulting, operational and development teams. I've founded successful businesses and learned from mistakes.

It's always important to listen to advice, regardless of your role. Even though I have plenty of experience now as CTO and at director level, I am always open to advice from people I respect. I may set out a clear vision and build a team with what I want in terms of motivation, expertise and organisational abilities, but it's important to me that I have access to advice. That often comes best from people with no skin in the game, who are free to be frank, drawing on their own experience.

What's the strangest question you've been asked?

This one.