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Cyber security best practices

Organisations must maintain good cyber security hygiene

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Edge is enabling growth in IoT

For IoT to accelerate, access to connectivity is essential

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LockBit locks down Royal Mail

Royal Mail was in January struck by a ransomware attack.

The system that has been affected is used by Royal Mail to despatch mail abroad, as well as to track and trace overseas items. It is in use at six sites, including the Heathrow distribution centre in Slough. Accordingly, Royal Mail urged customers not to post international mail, although domestic services and imports were unaffected.

The ransomware, which exploits gaps in organisations' security to install its own software and render files unusable through encryption, has been identified as LockBit. Following the attack, printers at a Royal Mail distribution site near Belfast began to print ransom notes, reading: "LockBit Black Ransomware. Your data are stolen and encrypted."

"As the Royal Mail continues to face widespread disruption from a ransomware attack, it's clear that cyberthreats are showing no signs of abating," said Richard Meeus, director of security strategy, Akamai. "Companies providing support and overseeing logistics are a prime target for bad actors: Akamai found that business services were the second most targeted vertical by the large ransomware group Conti. Bad actors know that these targets lead to broader disruptions."

Royal Mail has reported the incident to the UK's government-run National Cyber Security Centre, the National Crime Agency and the Information Commissioner's Office.

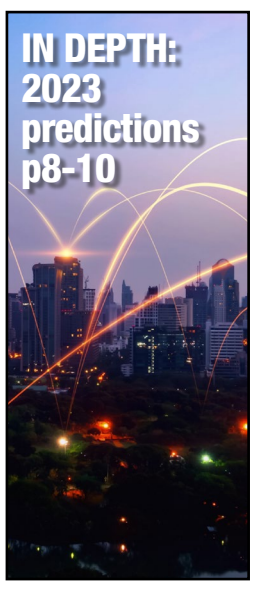
"Royal Mail's recent cyber incident within its 'back office' systems responsible for delivering mail internationally follows hot on the heels of November's personal data breach within its Click and Drop website," said Dominic Trott, UK head of Strategy at Orange Cyberdefense. "This earlier breach means it has had recent 'practice' of the UK Information Commissioner's Office (ICO) mandatory breach notification process."

The import of this attack stems from its impact on the UK economy. Royal Mail is considered critical national infrastructure, affecting not just the company itself, but countless national and international customers. Moreover, "as a component of the UK's critical national infrastructure as determined within UK law by the Network and Information Systems Directive, it must adhere to higher standards of operational resilience – including from a cyber resilience perspective – than most organisations," added Trott.

With the growing prevalence of cyber attacks on large scale enterprises, prevention is key in protecting organisations, data, and systems.

"Organisations need to look at how they can prevent, detect, and mitigate these attacks," said Meeus. "Segmentation tools are especially useful for this as they can provide the necessary levels of visibility and required security to ensure that these kinds of attacks can be reduced to manageable events rather than front page news."

"In recent years the incident response containment process has been simplified due to the rise of endpoint detection and response technologies, one of the benefits of which is providing network containment capabilities at the push of a button," said Trott. "Nonetheless, even with more traditional network containment tools, the task of network containment is not always an easy one. To address these challenges, in addition to technical specialties, experienced incident response analysts will also benefit from extensive preparation on their assets and their adversaries, prioritisation of tasks and making quick decisions when required." ■



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North completes WiFi 6 upgrade to British Library

Visitors to the British Library's flagship St. Pancras premises will now enjoy improved internet connectivity, thanks to innovative WiFi 6 technology implemented by North.

The move to an upgraded WiFi system is part of a £1.7 million contract extension for North from the British Library – a partnership which has been ongoing for more than eight years.

North has replaced 126 WiFi access points at the St. Pancras building, which will allow for faster internet connections across the iconic building through next generation WiFi 6 technology for higher speed and superior performance.

The state-of-the-art upgrade will help to futureproof the venue's WiFi network, with North also ensuring that hardware devices and software are upgraded to the best-in-class technology available. Both visitors and staff are expected to see a significant improvement to connectivity, enabling consistently excellent and free access to digital services going forward.

"We are constantly looking at ways to improve user experience and, in our now digital-first era, ensuring that we can offer users free access to best-in-class WiFi is essential," said Simon Wilcock, head of Technology Operations at the British Library. "Our partnership with North has underpinned and strengthened the services we're able to offer and we are delighted to extend our relationship with the team that fully understands our specific needs. The British Library is for everyone and we are looking forward to welcoming more visitors with the confidence of our enhanced free Wi-Fi network."

In addition to the connectivity improvements, North is also overhauling the British Library's core WiFi network infrastructure to ensure that all equipment exceeds modern-day business standard. Remediation of the existing core structure is almost complete which will create an intelligent, integrated network solution for the British Library to benefit from.

"Our ongoing relationship with the British Library is testament to the experience, local knowledge and flexibility of the North team. The extension of our contract with the team is a significant milestone for North as we drive forward an ambitious pipeline of public sector contracts," said Andy Parr, head of Sales Operations at North. "For more than eight years, we have worked in partnership with the British Library to mobilise innovative and effective network and connectivity services that will help them to flourish digitally. We are really pleased to be continuing this work and look forward to building on our relationship." ■

Neos Networks completes regional Metro Access Networks

Neos Networks has completed the delivery of its three regional Metro Access Networks in Liverpool, Birmingham, and Manchester along with phase one of its deployment in London.

The business connectivity provider announced plans to enter the market for last-mile services as part of its major Metro Network Expansion programme, targeting key metropolitan UK cities. With services now live in all four regions, Neos Networks is bringing fibre connectivity direct to thousands of locally based businesses across the cities.

Neos Networks is currently ahead of schedule on its fourth Access Network build in London. Four of a planned eight routes are now live across the capital with the remaining phase of deployment on track for delivery over the next year. The entire Metro Network Expansion project makes up over 60km of Neos Networks' national fibre footprint.

The move into last-mile access means Neos Networks no longer has to rely on third-party connectivity across these business hubs. As a result, it will now offer its customers improved timescales and lower costs to deliver the higher quality of service associated with the company's nationwide UK backbone business network. The move provides Neos Networks customers with the same level of commitment, but with an easier path to upgrade, quicker response for break fixes, and the network characteristics that meet their needs and growth ambitions.

The multi-million-pound investment has helped Neos Networks build out its on-net presence in the four cities to deliver a full end-to-end fibre connection to the doors of many. Neos has invested further into adapting its products to work over its own Access Tails, addressing opportunities to meet the connectivity needs of customers in multi-business units (MBUs) by driving a better overall quality of experience.

The delivery of high capacity, high bandwidth, low latency fibre connectivity will provide a critical foundation of digital infrastructure to support the growth of businesses in metro areas. New developments in key business districts will benefit from business-grade fibre connectivity to support the adoption of new applications and technologies underpinned by business resiliency, growth, and efficiency improvements. The breakdown of fibre deployed in each city is 3.6km in Liverpool, 7.1km in Birmingham, 13.7km in Manchester, and 37km in London once the whole build is complete.

Neos Networks has already begun identifying early adopter customers in each region, working with those partners to understand the depths and requirements of businesses in their respective cities. As the business case grows within each region, Neos will explore additional opportunities to extend the reach of these access networks. An opportunity to grow the network has already been captured in Liverpool with the network extension having gone live in December.

"I'm thrilled that we're nearing completion of our Metro Access Network builds in these four key UK cities. This project will underpin the growth of UK PLC by creating new opportunities for enterprises and driving investment within several new business districts," said Sarah Mills, chief revenue officer at Neos Networks. "The ambition for our network expansion project has always been to help UK businesses realise the growth potential associated with resilient, secure, high-capacity business connectivity services. We look forward to engaging businesses on how we can support their network resiliency and priorities with the right connectivity solutions." ■

Belfast Harbor chooses Oracle for cloud business

Belfast Harbor has selected Oracle cloud-based business applications to streamline its financial operations, increase agility and improve insights.

The Port of Belfast is Northern Ireland's main maritime gateway. It chose Oracle Fusion Cloud Enterprise Resource Planning (ERP) and Oracle Fusion Cloud Enterprise Performance Management (EPM) to fuel its growth. It also aims to connect pools of data more effectively across the enterprise.

"Belfast Harbor is a major contributor to Northern Ireland's economy and is pursuing a cloud-first strategy as we continue to deliver on our 'Smart Port' ambitions," said Maurice Bullick, director of Finance and Compliance at the Port Authority. "More efficient and flexible business operations are crucial for us to continue on our growth path. Oracle will help us connect data across the enterprise, giving us better visibility into our business and enabling us to adapt and scale our operations at the pace we need."

The Port of Belfast is the province's main maritime gateway for trade and bills itself as a 'key socially responsible economic centre.' The port handles more than 25 million tons of trade each year, accounting for more than two-thirds of the region's maritime trade activity. It now needs to automate and streamline its finance and planning processes to better manage resources, improve planning and reduce operating costs as it continues to expand its operations.

After a tender process, Belfast Harbor decided to move its finance and planning processes to the cloud using Oracle Cloud ERP and Oracle Cloud EPM. The company believes Oracle Cloud EPM will enable it to better connect operational and financial data across its HR, sales, finance, and procurement functions. It stated that quarterly updates from Oracle would help it "regularly unlock a continuous stream of innovation and advanced automation capabilities."

"By leveraging Oracle Cloud ERP and Oracle Cloud EPM, Belfast Harbor will be able to improve productivity, leverage continuous innovation and make more informed decisions to help the Northern Ireland economy grow and prosper," said Guy Armstrong, senior vice president of applications at Oracle UK and Ireland. ■

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NGN chooses IOTICS for data ecosystem

Northern Gas Networks (NGN) has selected technology from IOTICS and unique architecture to enable a multi-party, cross-sector data ecosystem.

Northern Gas Networks deliver gas to 2.7 million homes and businesses in the North East, Northern Cumbria and much of Yorkshire and the data ecosystem will provide a decentralised digital spine for the recently announced NGN Customer Energy Village that aims to help its customers move to lower carbon, lower cost energy.

"We're delighted to be working with IOTICS to provide us with valuable performance data from our Customer Energy Village. The village will help us understand the performance of different technologies and solutions to decarbonise homes and access to real-time digital data will play a vital role," said Keith Owen, head of Systems Development at Northern Gas Networks.

NGN Customer Energy Village is a testbed of nine homes from different building eras, from the 1910s to 1990s. They are representative of the millions of homes that will require new energy solutions to meet the UK's 2050 Net-zero target. Through the Customer Energy Village, a team of industry, academics, and engineers from an initial six organisations, utilities and enterprises will work together delivering breakthroughs in the decarbonisation of heat, energy storage and transport. The aim is to identify the most affordable and practical solution to moving customers onto low-carbon, low-cost energy.

Construction of the new Customer Energy Village began in February 2022. Each stakeholder will leverage IOTICS to securely share across a decentralised cooperative ecosystem. Learning at scale, the multi-party, cross-sector undertaking will evolve as insights, solutions and new business models are tested and scaled.

Each stakeholder has an IOTICS pace, to selectively share information and inputs across organisational boundaries. Semantically linking asset data, context, and inputs across the ecosystem, while ensuring that all parties maintain ownership and control of their own data, analytics, and application. IOTICS-enabled digital cooperation provides an easily navigated ecosystem, where real-time and synthetic dynamic data is shared. It also has the flexibility to add and change participants, sources and consumers without the need for costly and labor-intensive development or data governance issues.

"United Nations Secretary-General Antonio Guterres stated at the recent COP27 summit "Humanity has a choice: cooperate or perish." We are delighted to be able to play a part in enabling world-leading, ambitious, vital projects like Northern Gas Network's Customer Energy Village to cooperate with their corporate, utility, enterprise, and academic partners. It is only through developing a shared understanding of people, assets, and places across boundaries that we can embrace the complexity of the situation and identify the right solutions to drive the change we all recognise is needed," said Ali Nicholl, head of Engagement at IOTICS. ■

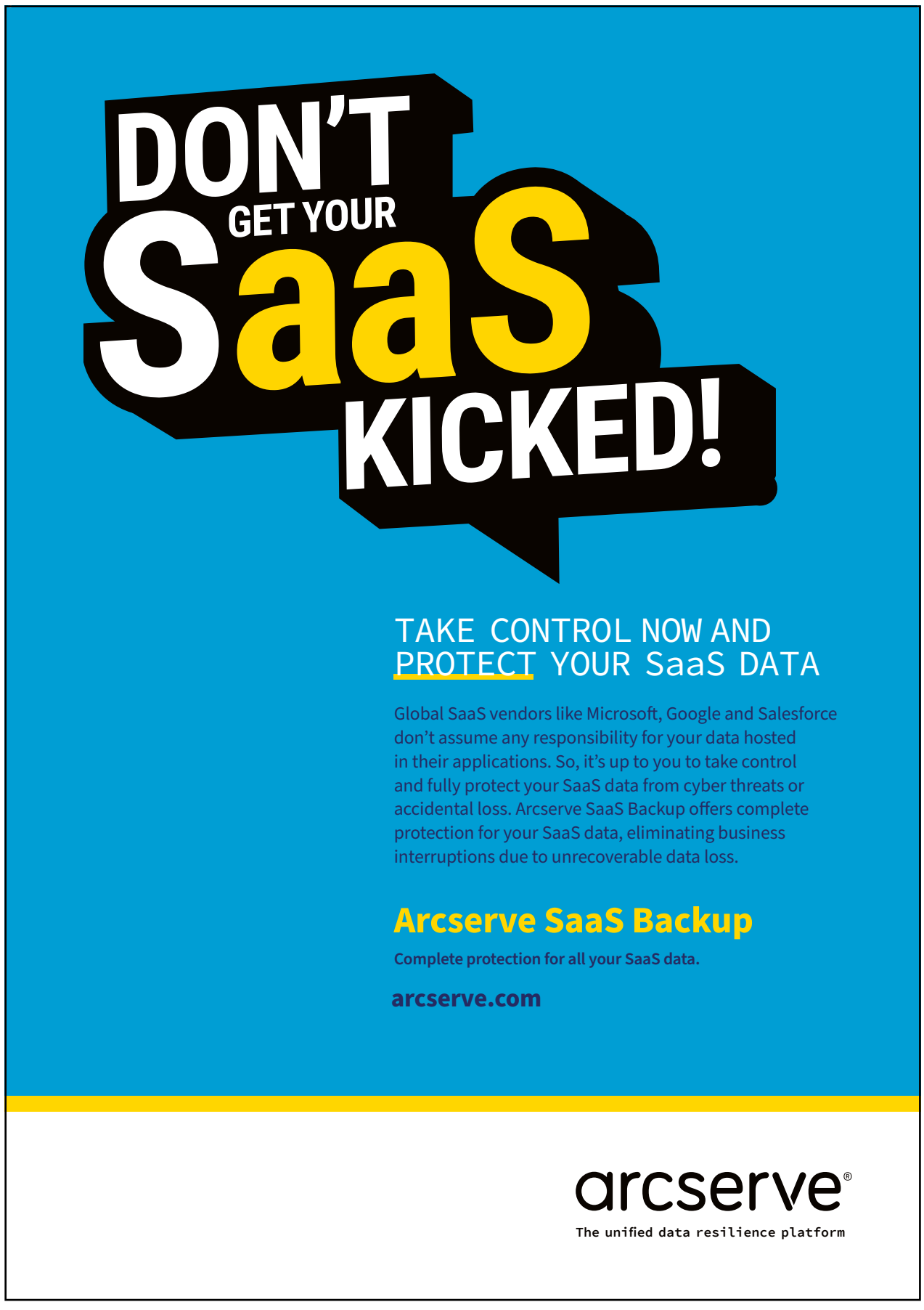
Nexus Business Solutions to gain more from its data

Zizo has partnered with Nexus Business Solutions to deliver an analysis platform for its automotive rental management data. Nexus Business Solutions provides consultancy and management services to vehicle manufacturers, their dealer networks, and major fleet management and rental companies. In turn, the business generates and collects masses of data.

Despite having large quantities of data available, Nexus Business Solutions lacked the data science skills and tools to make data-driven decisions. As a result, the business partnered with Zizo to provide an analysis platform to translate raw data into visual capabilities that provide actionable insights.

The automotive rental management platform collects masses of granular data from a wide variety of processes and sources but turning this into actionable information can be difficult. To overcome these hurdles, Zizo built a series of complex automated data transformation processes using the Zizo data engineering tool 'Pathway' to model Nexus' business, combining the data together. For example, metrics include the 'time into hire,' exploring how long it took the customer to get the vehicle, which can be broken down into categories such as private, commercial and specialist.

Consumer interactions and touchpoints are visible throughout the rental process, providing insight into a single consumer journey. For Nexus Business Solutions, the service-level agreements (SLAs) can be better defined – based on this end-to-end view – which is critical for the operations of their business. ■



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SEH Technology reflects on a successful year and gears up for a prosperous 2023

SEH Technology, the leader in professional network solutions, celebrates one of its most successful years to date, experiencing significant business growth and the launch of a number of new products, to support customers in their mission to build a hybrid workplace for the future.

As network specialists, SEH Technology offers customers a broad portfolio of innovative products and services with development and production from its headquarters in Germany, plus worldwide distribution via its US and UK subsidiaries and extensive network of partners, distributors and resellers.

In early 2022, the company announced it had adapted its SEH UTN Manager to the modern Apple operating system and current processor generations. The software tool now supports Apple processors of the M1 series, making it possible to remotely manage and access all USB devices and dongle servers from the SEH product portfolio.

Following this, the company also released version 3.4.3 of its management tool UTN Manager for the macOS environment. SEH Technology is the only manufacturer of USB device servers to offer compatibility with the current Apple operating system and its M1 architecture.

Furthermore, SEH Technology launched its new utnserver ProMAX in 2022, representing a fresh and new design within the company's USB device server range. In addition to the visual appearance, SEH Technology refined its latest device server with comprehensive technical innovations to optimise business workflows. The utnserver ProMAX is suitable for all operating systems and users simply include it in the network, connect USB devices and access all devices network-wide, whether they are based in the office or from home.

2022 also saw SEH Technology exhibit at a number of global conferences and exhibitions, including Inter BEE in Japan, IT-SA Expo and Public IT Security Conference in Germany. The company plans to participate in more events this year across the UK and Europe, showcasing its range of products and sharing the team's extensive expertise across a range of topical industry trends.

Speaking of the last year and looking forward to 2023, Joachim Sturmhoefel, Managing Director at SEH Technology said, "We are extremely proud of our significant advancements in professional network solutions, in line with the industry's move to hybrid working. As we look ahead, we will continue to strengthen our partnership with our customers, welcoming new clients and providing them with solutions needed to succeed in today's IT sector."

www.seh-technology.com

33% of remote workers have no cybersecurity awareness training

Hornetsecurity reports that 33% of companies are not providing any cybersecurity awareness training to users who work remotely. The new survey also revealed that 74% of remote staff have access to critical data, which is creating more risk for companies in the new hybrid working world.

Despite the current lack of training and employees feeling ill-equipped, 44% of respondents said their organisation plans to increase the percentage of employees that work remotely.

The independent survey highlighted the security management challenges and employee cybersecurity risk when working remotely. The research revealed two core problems causing risk: employees having access to critical data, and not enough training being provided on how to manage cybersecurity or how to reduce the risk of a cyber-attack or breach.

While companies have adapted to new ways of working, cybersecurity risks linked to remote working, remain un-tackled. 18% of IT professionals say workers are not secure when working remotely, but 74% have access to critical data. Perhaps unsurprisingly, 14% of respondents said their organization suffered a cybersecurity incident related to remote working.

The study also highlighted a lack of understanding, confidence, and knowledge around cybersecurity from employees when working remotely. Nearly half (43%) of IT professionals rate their confidence in their remote security measures as 'moderate' or worse, with the survey also finding that 'uncontrolled file sharing' was a common source of cybersecurity incidents at 16%.

Having strong systems in place to protect employees is essential. The study found that the main sources of cybersecurity incidents were compromised endpoints (28%) and compromised credentials (28%). In addition, 15% said that employees use their own devices with some endpoint configuration for remote work. ■

Quickline gains new CFO Craig Fairey

Quickline, which is building a mix of full fibre (FFTP) and fixed wireless access (FWA) based broadband networks across parts of Lincolnshire, Lancashire and Yorkshire in England, has appointed Craig Fairey as CFO to help grow the business alongside its new rollout plans.

Fairey brings significant experience and skills to the role, having qualified as a chartered accountant over 25 years ago and held senior financial positions across different industries, including the tech sector. He joins Quickline from Sigma, where he was group CFO for four years.

"I'm very excited to be joining Quickline and about the journey the company is on. The ambition and intent of the business is remarkable and the team that Sean has built around him is absolutely first class," said Fairey. "Quickline has already delivered great results in rolling out fast, reliable broadband to rural communities, but there are so many more opportunities ahead. In my first few weeks I've been struck by the passion and energy of the people in the business. Everyone is pulling in the same direction to leave an amazing legacy that will have such a positive impact on the lives of many thousands of rural households and businesses. Having grown up in North Yorkshire, and now living in East Yorkshire, it's fantastic for me to be playing my part in improving the lives of people in Yorkshire and across the North of England." ■

RADWIN partners with Cogent Distribution

RADWIN has announced a partnership with Cogent Distribution to extend the reach of RADWIN's products to the UK market while delivering on Cogent's promise to add continuous value. Cogent Distribution will offer an extensive selection of RADWIN's wireless broadband solutions, for Point-to-MultiPoint and Point-to-Point connectivity.

This partnership means RADWIN stock will be more readily available in the UK, which will shorten lead times for deployments and improve overall client satisfaction. Cogent's qualified engineers will be fully trained and well-versed in the RADWIN product range. As a result, technical support and design advice will come as standard alongside their exceptional distribution efforts.

"We have been involved with RADWIN for many years, and know from experience that it is a quality, high-performing & reliable product range made by a reputable company. That is why we are delighted to help distribute the solutions and to assist RADWIN as they grow in the UK market," said Jim Kernahan, managing director of Cogent Distribution. ■

Aliter Capital buys ITM Communications

Aliter Capital LLP, a specialist investor focused on small to mid-size UK support services businesses, has announced the completion of its investment in ITM Communications Ltd., a network connectivity and IT managed services provider. ITM works throughout the UK, servicing a customer base including blue-chip private companies and major public sector bodies.

This investment establishes a third platform business in Aliter's recently raised £134 million second fund, Aliter Capital II, completed in December 2022.

"We have been aware of Aliter for some time and having seen what they achieved historically with North, a business operating in sectors similar to ITM, we believe strongly the added support of the right investment partner with significant experience and resources will help us accelerate the next stage of ITM's development. It's an exciting prospect and we are enthused by the opportunities this will bring to our customers, suppliers, and staff," said ITM director Mark Barber.

This latest deal is consistent with Aliter's strategic focus on using its deep industrial expertise and broad networks to help drive both organic and acquisitive growth, to gain scale and a national footprint. Aliter will be actively looking to acquire complementary businesses as bolt-ons for this ITM led platform. ■

Phishing attacks transformed

Netskope has unveiled new research that shows how cloud applications are changing the way threat actors are using phishing attack delivery methods to steal data.

Although email is still a primary mechanism for delivering phishing links to fake login pages to capture usernames, passwords, MFA codes and more, users are more frequently clicking phishing links arriving through other channels, including personal websites and blogs, social media, and search engine results.

11% of the phishing alerts were referred from webmail services. Personal websites and blogs were the most common referrers to phishing content, claiming the top spot at 26%. The report identified two primary phishing referral methods: the use of malicious links through spam on legitimate websites and blogs, and the use of websites and blogs created specifically to promote phishing content. ■

Word on the web...

Three ways governments can better protect public data

Florian Malecki, executive vice president of marketing, Arcserve

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

Is power usage effectiveness the right way to measure data centre efficiency?

Liam Blackshaw, product manager for LV Drives, ABB

Data centre operators are continuously pushing for greater energy efficiency and lower emissions. Recently, rising energy costs have added even more pressure to make facilities as efficient as possible.

Operators traditionally measure energy efficiency using power usage effectiveness (PUE). A PUE of zero means that no useful work is being done and all the electricity is going to waste, while a PUE of one (unity) means that 100% of the electricity is going toward work.

PUE has become a central key performance indicator (KPI) for assessing a data centre's efficiency because it is straightforward and easy to track over time. Unfortunately, PUE doesn't tell the whole story. It only measures active power and fails to account for other sources of inefficiency, such as harmonic losses and reactive current losses on the cooling system.

Harmonic losses – electrical pollution on the network

PUE does not account for harmonics – disruptions to the electric supply's ideal waveform. These disruptions, sometimes described as electrical 'noise' or 'pollution,' can significantly reduce the system's energy efficiency. An ideal AC waveform is sinusoidal, but it can be distorted by power draw from equipment such as electric motors, battery chargers, uninterruptible power supplies (UPS), and more.

To deal with harmonics, operators often overprovision electrical equipment such as transformers. This increases the facility's capital expenditures (CAPEX). The lower efficiency that results from harmonics increases the facility's operating expenditures (OPEX). Harmonics can also damage equipment, increasing its failure rate and shortening its lifespan. In severe instances, electrical utilities may fine or even cut off facilities that introduce harmonics into the local grid.

Partial load – missing from the PUE calculation

The electric motors that power the cooling fans and pumps are among the most energy intensive pieces of equipment in a data centre. In fact, the cooling system typically ranks second only to IT load in terms of power consumption, using between 30-50% of the electricity supplied to the facility. While efficiency gains from upgrading IT equipment are often marginal, significant gains are possible when improving the cooling system.

Most cooling systems are designed for the worst-case scenario: maximum loading on the hottest day of the year. However, they rarely face these extreme conditions. For this reason, they almost always operate at partial load.

PUE struggles to account for partial load, especially since load and energy use are not in a linear relationship. The efficiency numbers from a piece of equipment's catalogue entry do not always translate accurately to partial load. Further, calculating the efficiency of components in isolation means that operators are overlooking potential interactions that could improve or worsen efficiency.

Improving efficiency while addressing harmonics and partial load

The first step that operators can take to improve cooling system efficiency is adopting efficient electric motors. Many facilities use IE3 efficiency class motors – and some even use older IE2 models. By upgrading to more modern models, such as IE4 and IE5 electric motors, facilities can cut electrical losses significantly, greatly improving efficiency.

Each increase in IE number, such as upgrading from IE3 to IE4, represents a 20% decrease in electrical losses. Modern motors are also far more efficient at partial loads than older models.

Facilities should also pair motors with variable speed drives (VSDs). Drives adjust an electric motor's speed to match the actual demands placed on it, rather than constantly running it at full speed. Installing a VSD can cut a motor's energy use by up to 60%.

However, while efficient in one way, VSDs can introduce inefficiency in another: harmonics. Fortunately, active front end (AFE), or 'ultra-low harmonic' (ULH), drives are available to counteract harmonics at the source. These drives greatly reduce the total harmonic distortion (THDi) on the network, as well as improving energy efficiency.

Saving power, saving money

Facilities that upgrade to modern motors and AFE drives will benefit from significantly lower energy use – the largest OPEX for data centres. Although more advanced solutions have a higher upfront cost, they have a significantly lower total cost of ownership (TCO). While energy prices reach new highs, the payback period for these upgrades is also lower than ever – often a matter of months.

Eliminating harmonics ensures that other equipment on the network can reach its full operating lifespan without the risk of damage. When designing or upgrading other electrical components in a data centre, operators can also specify appropriately sized equipment rather than oversizing to accommodate harmonics.

Operators that look beyond PUE to consider the bigger picture of efficiency will be able to cut electrical costs, protect sensitive equipment from damage, and reduce emissions associated with the facility. ■

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Cyber security best practices: how to mitigate the risks of a potential cyber attack

David Stubley, MD 7 Elements – the cyber security division, Redcentric

Malicious actors, such as those focused on ransomware or compromising business emails, will take any opportunity to cause a negative impact. To address this, it is paramount that organisations continue to maintain good cyber security hygiene while managing wider risks.

So, what should companies be doing to make sure they are both prepared and informed of the risks? The following guidance looks at several core cyber security controls that should be maintained to help organisations effectively mitigate cyber-attacks.

The first priority should be to continue to download and install software security updates upon release. A comprehensive patching policy that includes operating systems and third-party software must be a cornerstone of an organisation's security policy. By ensuring that potentially exploitable vulnerabilities within software are minimised and resolved as soon as possible, it can significantly reduce one of the primary attack vectors malicious actors seek to target.

On some occasions, security patches may introduce bugs into the operation of that software. As a result, it is recommended that where the business has capacity, it should install these patches in a test environment to verify the stability of the software once the patches are installed before issuing them.

Another priority should be ensuring that all sensitive and important business data is adequately backed up. Immutable, off network storage may need to be considered for the most critical data that cannot be reproduced from alternative sources. A robust backup mechanism that stores current data short-term in one location before appending to a longer-term, more comprehensive backup solution would ensure that multiple disaster recovery scenarios are prepared for. Especially in terms of dealing with ransomware attacks.

In the event of sudden data loss, the short-term backups can be rolled out, reducing the need for operational downtime. Equally, in the event of a breach, the data can be rolled back from the longer-term solution to before the breach occurred, removing the potential for loss of data integrity and providing a measure of non-repudiation.

Consideration should also be given to ensuring that any new technology deployed (such as cloud-based solutions) will enable the organisation to deal with changes to working patterns and is included within their backup requirements. A key question to ask would be: "do any changes we have implemented alter where our sensitive data is held?"

Over the past few years, the number of remote workers within organisations has skyrocketed. This places higher burdens on the existing remote access solutions such as VPNs to access internal resources, or forces organisations to deploy new solutions to allow access remotely. This can pose several risks, such as exposing services to the internet that may not have been appropriately configured.

Another issue may relate to the use of outdated software if this solution has been in place for some time. Any new or existing software should be deployed to adhere to recommended good practices, such as those provided by the National Cyber Security Centre's (NCSC) End User Device Security guide.

Another significant security control that must remain a focus is a robust password policy, with multi-factor authentication enforced where possible, especially where new services are being stood-up in short timescales. Current advice for password creation is to use three random words as a passphrase as these are easier to remember but difficult for an attacker to guess.

Multi-Factor Authentication (MFA) can then further reduce the likelihood of a successful account compromise. Other solutions may be to use enterprise Single Sign-On (SSO) solutions that are designed to reduce the number of passwords a user must remember, while allowing for access to multiple applications and services. This can allow for a stronger password to be set without the confusion of multiple passwords.

With the increase in remote working comes the decrease in a workforce regularly communicating face to face. As a result, the number of emails received is likely to rise. While email security is a broad topic, in spite of a number of security controls it is often the human factor that leads to issues. Phishing attacks have become more and more sophisticated, with methods to evade technical controls constantly being discovered. As a result, training plans that aid all users with identification of potentially malicious emails, as well as the process to report them, is often a crucial piece of the puzzle. This training will need to be ongoing to ensure that emerging threats and trends are recognised quickly.

While organisational IT operations are forced to change and evolve, the core security practices we have laid out should not be neglected and ignored. They are as crucial to an organisation's ongoing security now as they were a year ago.

Many businesses already have these practices implemented, while a number will need to adopt them. Whether they have just been rolled out or in use for several years, auditing and security testing is vital to verifying that the controls do as intended and identify any gaps in the control, therefore eliminating a potentially dangerous situation before it arises. ■

Why WiFi networking is so important to retail enterprises today

Ben Holland, enterprise team leader UK&I, Extreme Networks

Retailers never seem to have it easy. From COVID-19 restrictions to changing customer behaviours and squeezed profit margins, retailers are constantly fighting to keep pace in an incredibly competitive and dynamic marketplace.

In light of the pandemic, digital interactions have become even more important than they were pre-2020. Today's retailers are digitally interacting with customers across several different channels and touchpoints, and this trend is only going to grow in the future as more consumers favour the online shopping experience.

This is all putting an increasing focus on retailers' technology infrastructure – namely their networking and data capabilities. The ability to gain actionable intelligence from data analytics has quickly become paramount to future success. This is what empowers the most successful modern retailers, enabling them to deliver superior customer experiences and generate stronger business outcomes.

But this data doesn't just appear by itself. It requires the right network infrastructure that can act as the source of data insights, informing important business decisions to help improve operational efficiency, maintain customer safety, and increase sales. In particular, cloud-based wireless networking has emerged as a true value generator, allowing data to move more freely and providing the level of customer intelligence that separates the best retailers from the rest.

The goal of any major retailer is to deliver high quality shopping experiences. This requires data to be able to move smoothly across multiple systems and applications, which is exactly what cloud-based networking infrastructures allow. High-density environments offer retailers plenty of valuable insights. But, as the number of connected devices continues to grow, retailers must invest in modern WiFi capabilities to capture these insights and provide the exceptional experience that consumers now demand.

With wireless networking, retailers can enhance how they collect, analyse and store user data in order to gain actionable insights. Effectively, it lets retailers derive greater business and IT intelligence from the user data they collect, in turn enabling them to deliver better and more personalised customer experiences.

There's a wide range of intelligence on offer that can help retailers take this next step. From a business perspective, this could include insights on real-time and historical visitor trends across distributed locations, in-store shopper behaviours and preferences, or the impact of targeted mobile promotions. It can also enable staff tracking for enhanced resource optimisation.

On the IT side, valuable intelligence could include network performance benchmarking for coverage and capacity planning, store-to-store comparative analytics across distributed region, or a 360-degree view of device usage and quality of experience. To achieve these data-driven competencies, retailers need to be able to easily access their information from an intuitive, centralised platform with robust data durability – which is exactly what cloud-based wireless networking provides.

The Colruyt Group – one of Europe's largest retail companies – is a perfect example of a company that has driven efficiencies and experience improvements by deploying a wireless network to connect all its supermarket retail stores, warehouses, and corporate offices. As well as providing a more reliable and efficient mobile experience for its customers and employees, the implementation has enabled Colruyt to optimise its business operations through analytics. With insights into the usage of its wireless networks, Colruyt can evaluate how to improve operations and the customer experience, whether through technology deployed in its warehouse or within its stores.

Of course, it's not all about the experience. These wireless infrastructures also provide several other business benefits. For example, they empower retailers with the flexibility and scalability needed to seamlessly adapt to shifting demands. Retailers can scale their networks up or down when needed – such as during the festive period or around other holidays – leveraging cloud's elasticity to help accelerate growth.

They improve operational efficiency thanks to greatly simplified network operations and centralised cloud management across wired and wireless, LAN & WAN – while enhancing security and data protection. Having a properly configured wireless network has been proven to boost security and confidentiality of information, both of which are extremely important for ecommerce transactions.

Retailers have recognised that to compete with today's online vendors, they must invest in new technologies that will help them gain more in-depth insights and business benefits such as flexibility, scalability and security. This will allow them to build better relationships with customers and achieve operational excellence. WiFi networking solutions tick all the right boxes, giving retailers the tools they need to take their businesses to the next level. ■

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2023 – a year of digital transformation

2022 saw a great deal of advancement the world over in networking and ICT. So, what will the key trends be for network managers and engineers over the course of 2023? Amy Saunders discusses

The year ahead looks a tough one for businesses amid rampant inflation, rising energy costs and evolving geopolitical tensions. However, in the UK at least, the networking sector remains upbeat, with heavy investment and the move to new systems and processes expected.

Digital transformation ramps up

Digital transformation will continue to be a key priority in the UK in 2023, boosted further by the adoption of hybrid and remote working during the COVID-19 pandemic.

"Companies will reassess the technologies they 'hastily' implemented during the pandemic," said Jim Liddle, VP access anywhere product, Nasuni. Businesses will now look to ensure that they're able to support the new working landscape: "the winners will be those companies enabling business continuity for global remote workforces."

The software-as-a-service model for business-critical systems has become a huge priority. "With firms now truly adopting a cloud-first and mobile-first IT strategy – and especially for document management in a decentralised working environment – adopting a similar approach for knowledge management will be among the key initiatives for this function in 2023," said Javier Magaña García, CTO, Lexsoft Systems.

Indeed, secure and sustainable cloud practices will be key for longer-term growth and success.

"Most organizations have just started adopting cloud migration and cloud-native due to the COVID-19 pandemic, with the demand to work from anywhere catalysing the adoption and proving it works," said Avishai Sharlin, division president, Amdocs Technology. "We are also seeing edge computing and emerging solutions start taking shape, and distributed computing and edge computing are becoming real business opportunities at scale."

Piyush Mishra, director of solution consulting, Tecnotree Corporation, agrees that the trend towards the adoption of cloud and hybrid cloud infrastructure represents a strong movement towards moving apps to the cloud for access anytime, anywhere, and offering everything-as-a-service. "We predict that we will see an increase in microservices-based module selling in the cloud."

The volume of data being produced as we enter 2023 – 2.5 quintillion bytes daily at last count – is reaching an almost overwhelming size for enterprises the world over, with unstructured data posing a particular challenge for network managers. The global data sphere is expected to more than double in size from 2022-2026, and unstructured data now makes up 80-90% of new enterprise data.

"This significant growth is linked to

digital transformation, which accelerated vastly over the last two years as hybrid working drove a need to collaborate across locations, resulting in additional file-sharing needs," said Liddle.

This data grows daily, and with strict regulations in place governing data, enterprises will seek a manageable solution: "edge cloud computing will proliferate rapidly to help improve response times and drive more efficient use of bandwidth, and this will demand the real time correlation of network, services, and application resources," said Jürgen Hatheier, CTO EMEA and APAC, Ciena.

The convergence of WiFi and 5G

Developments in mobile networks have skyrocketed, with 5G rolling out across the globe.

"2023 will be the year when connectivity comes more sharply into focus," said Mike Hoy, technology director, Pulsant. "In the EY survey of UK businesses, 43% admit they struggle to understand how 5G connectivity relates to emerging technologies such as edge computing. Yet 5G will continue to grow in the UK."

Despite this lack of understanding, "2023 looks to be the 'year of true 5G' with faster 5G standalone (SA) adoption and deployments and many innovative monetisation use cases launching or in trials worldwide," said Mishra. "From enterprise 5G / industry 4.0 use cases to private 5G networks, AR and VR, network slicing and IoT, we predict that 2023 will be the year when 5G SA deployments take off."

The adoption of 5G SA is expected to face certain headwinds, however, as per Steve Douglas, head of 5G strategy, Spirent: "challenges include the complexity of multi-vendor and cloud-native 5G SA environments, ongoing performance issues, increased security risks and migration trade-offs to guarantee performance and align with spectrum portfolios."

Additionally, 5G/WiFi convergence is expected to begin in earnest this year, with many enterprises highlighting a desire to support enhanced flexibility and differentiation. "In 2023 we expect to see more momentum towards 5G WiFi convergence use cases driven by enterprise demand and commercial strategies," said Douglas.

Interestingly, the adoption of artificial intelligence (AI) tools for automation is thought to be key to network evolution: "the capability to manage the mobility, device location, and to adapt autonomously to environmental changes will be the main characteristics of new wireless solutions," Chris Dyke, sales director UK & Ireland, Allied Telesis. "To accommodate this increase in complexity, smart network management tools, incorporating elements of AI, will become more widely adopted."

Mishra agrees that adaptive AI will fuel better decision making by operators: "ideally, the lines between 'thinking' and 'doing' will also be blurred and AI will be available to the masses for every function."

Changing workplace environments

As we enter 2023, enterprises find themselves in a precarious position, facing challenges like skyrocketing inflation and interest rates, high energy prices, and low but climbing unemployment (3.7% as of December 2022). Driving efficiencies will be a top priority.

"In times of financial stress, businesses typically look to streamline productivity, processes, and tech. 'Consolidation' will become something of a buzzword," said Liddle.

"Many 'big tech' brands have made announcements about cutting their workforce in recent weeks," said Christian Brink Frederiksen, CEO and founder, Leapwork. "Those that are retained are often asked to take on more work to cover for those that have been let go. This means the remaining team spends time keeping things afloat and papering over cracks, rather than focusing on the innovation that can steer a business out of difficulty. Businesses should be investing in automation tools that handle the day-to-day and free up their talent to create."

Indeed, automation is expected to be key in lowering operational costs and streamlining operations: "there will be a need to evolve the skills of the IT team; IT engineers will need to be able to dovetail from network management to network security, but also to take control of all other services that run over the network," said Dyke. "A new family of tools are required that can automate large parts of the IT activity and to provide a complete vision of any aspect of the network in a simple way and recommend the actions the human operators should take."

Moreover, according to several respondents, including Nick Stapleton, managing director of ETB Technologies, despite overall improvements, a tech skills gap remains which must be addressed by organisations themselves: "looking outside of the box and engaging with young people in schools and colleges must happen. The recruitment marketplace is also likely to be boosted through entrants to the market coming from some of the big US-based tech businesses who are streamlining their teams."

Meanwhile, the COVID-19 pandemic evidenced the effectiveness of tools like Teams, Google Apps, Zoom, etc. for remote collaboration. "While some still feel challenged with not having as much face-to-face interaction, others question whether that in-person interaction mattered as much as they initially thought?" asked Craig Williams, CIO, Ciena. "In the coming year, we will start focusing more on work itself rather than the destination it is taking place. Companies will experiment with new immersive metaverse-type platforms and look for ways to reimagine the work experience."

The metaverse has been highlighted as a key area to watch for enterprises in 2023: "We believe businesses will continue to look for ways to reimagine the office experience with virtual workspaces and virtual tools. This will drive greater investment in the connectivity requirements to support new applications like VR, AR and the metaverse," said Jürgen Hatheier, CTO EMEA and APAC, Ciena.

A recent study found that 78% of survey respondents across the globe would participate in more immersive experiences such as the metaverse, over current tools like video conferencing, Google Meet or Zoom. However, "none of these immersive, virtual experiences will be successful without the proper network upgrades, and advances in technology that will support the ultra-low latency and high bandwidth applications," said Hatheier.

Deploying AR and mixed reality (MR) solutions will allow business leaders to create the basis for an industrial metaverse, according to Hendrik Witt, chief product officer, TeamViewer. "These technologies will also offer huge potential to improve the efficiency of industrial value chains across industries. Barriers to entry to the industrial metaverse are also set to be lowered via the increase in smart phones being used to bridge the gap."

An evolving cyber landscape

As we enter 2023, the cyber landscape is more daunting than ever.

"The question is not 'if' your organisation is going to be hit with a cyberattack; it's a question of 'when' and 'how often.' Your organisation will get attacked, and it could get attacked multiple times," said Eric Herzog, chief marketing officer, Infinidat. "Cyber resilience is among the most important and highly demanded requirements of enterprises today to combat cyberattacks across the entire storage estate and data infrastructure."

Cyber insurance premiums are on the rise and are expected to be an ongoing issue in 2023 and beyond. The combination of sophisticated cyber threats and the challenging economic climate means some SMEs may be priced out of insurance cover completely.

Moreover, it's likely that the way insurers quantify risk will change, according to Lawrence Perret-Hall, director, CYFOR Secure. "Instead of looking solely at the sensitive data a business holds, and the financial consequences of a breach, they will also start to take into consideration their level of protection – what they're doing to improve their security posture and how proactively they're identifying and mitigating threats."

Multi-factor authentication (MFA) fatigue techniques have proven effective against Microsoft, Cisco, and Uber in recent months, raising new questions about certain aspects of cybersecurity. "The widespread success of this tactic will soon force businesses to leave behind MFA strategies and search for verification alternatives. It's likely that many organizations will begin to look toward passwordless authentication as the preferred method of authentication," said Miles Hutchinson, Jumio CISO.

Indeed, the era of passwordless authentication is well underway as businesses across sectors continue to adopt biometric identity verification. "Even as facial recognition technology reaches upward of 99% accuracy, fraudsters have engineered workarounds through the likes of face morphs, deepfakes, digital image manipulation and the use of synthetic masks," said Stuart Wells, Jumio CTO. "These concerns will remain top of mind for enterprises heading into 2023, which paves the way for the rise of multimodal biometric adoption in conjunction with multimodal liveness."

As we look to the future, security needs to be included by design, rather than an add-on.

"Data security considerations have always been top of mind for our customers, but in 2023, IT leaders will evaluate every solution, including data storage, by its ability to protect data from the multiplicity of threat vectors," said Paul Speciale, chief marketing officer, Scality. In 2022 the data storage industry evolved to embrace advances in AI/ML, hybrid clouds and edge computing that enabled greater data sovereignty and flexibility. "In 2023, the pace will accelerate so IT teams will obtain long-promised features that deliver a significant uptick in efficiency."

Additionally, when it comes to cyberattack, where does liability begin and end? "For the first time, in the fallout of the Uber cyberattack, we saw a CISO served with a custodial sentence," said Rick Jones, CEO and co-founder, DigitalXRAID. "The question of personal liability and where responsibility and accountability start and end – as well as how businesses and individual stakeholders will protect themselves – will gain prominence in 2023."

Summing up

Those active in the UK's networking and IT industries remain positive about prospects for the year ahead despite facing an ocean of challenges and a rapidly evolving landscape.

Connectivity and networks are seeing fantastic leaps forward in technological capabilities, feeding back into enhanced working environments and driving higher demand for low latency, secure access. The continued development of the metaverse is expected to have a significant impact on UK enterprises, although many remain sceptical about its true value. Moreover, as new advancements come into play, new opportunities for bad actors arise, while cybersecurity experts battle to stay one step ahead of adversaries.

While the challenges of 2023 are many, so too are the opportunities. ■

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Considerations for critical broadband device procurement

Tim Clark, TCCA board member

Today's mission-critical user devices are still mostly built on narrowband technologies such as TETRA and provide mission-critical voice and short messaging services. These services are often available within nationwide network coverage, utilising dedicated frequency bands. The narrowband critical communications device ecosystem is well established, including infrastructure and terminal suppliers, system integrators, service providers and resellers. From a device procurement perspective, there are existing frame agreements in place. The solutions are well matured and offer long product lifecycles with specifications that are fit for purpose for mission-critical users. Finally, TCCA's TETRA interoperability (IOP) process allows for multi-vendor procurement.

Now, as the critical communications sector is looking to adopt broadband technologies with the adoption of 4G and 5G broadband communications, there are several challenges that need to be considered. In addition, from the procurement perspective, the transition to mission-critical broadband will require a series of well-planned steps. Bringing devices to market that support these new technologies, and meet various critical user requirements, will need investments by the vendors, as well as commitment from customers in terms of development support, minimum order quantities, user testing and acceptance, etc. Many current procurement models also allow device purchases from other sources. User organisations can run their own procurements, broadband devices can be leased from IT service companies, or even purchased by individual employees (BYOD - Bring Your Own Device).

Broadband device and OS/software lifecycles are short compared to narrowband radios, even though vendors are doing their best to extend them. The current procurement, testing, certification, and approval processes required for mission-critical usage therefore need to be adapted accordingly. At the same time, the vendors must be able to provide information on their existing capabilities and present a roadmap that shows how they plan to meet the evolving customer needs and requirements throughout the contract period.

An essential part of creating a mission-critical device procurement specification is to fully understand the user needs. The user community will consist of multiple groups, each with its specific requirements and operational processes. Once the distinct user groups have been identified, close engagement will be necessary to fully understand their use cases and device requirements. This may be achieved via interviews, questionnaires, workshops, etc. It is likely that the diverse needs can be grouped to simplify analysis. When describing their use cases and requirements it is important that the user groups look ahead to how the new broadband technology can transform and enhance their operations. Functionality delivered by existing narrowband systems is the reference, but users should not just focus on replicating the voice and messaging functionality and reliability of their existing system. The evolution from a voice-centric to a data-dominated working environment requires considerable investment in business process redesign.

With the development of mission-critical mobile broadband solutions for PPDR based on 3GPP standards, the international critical communications community has entered a new world of needs and possibilities for their user organisations. This new world has a lot of potential to support the work of critical users in order to make them more efficient, but also to provide more security for the users of mission-critical services. One of the key elements in the chain of information is the device that will be used to unlock the new possibilities.

The mobile broadband world is a complex one. To be able to use the functional possibilities in the most effective way, some key elements should be considered before device procurement can lead to a successful outcome. These include functional needs, technical conditions, end to end testing, user, and equipment management and of course security. Regardless of the procurement model these key elements should be well defined.

However, the more users are requesting individual and proprietary features and solutions, the more risk there is that the end-to-end mission-critical functionalities cannot be guaranteed by the operator of the mission-critical network. Therefore, it is recommended to set up a robust system with standard set of device requirements and settings, as well as an approved device catalogue process to ensure a guaranteed level of quality for the end user.

The world of mission-critical smart devices is still developing and not yet fully mature. The ecosystem compared to standard smartphones is still small. It is therefore very important that PPDR organisations, manufacturers, standardisation, and testing bodies cooperate to stimulate the growth and development of the mission-critical device market. It is expected that the mission-critical device ecosystem will reach a mature level in the coming years.

This article is taken from TCCA's white paper 'Mission-Critical Broadband Device Procurement'. The aim of the white paper is to provide a holistic overview of critical broadband device-related requirements, to list the main topics and issues to be considered, as well as provide recommendations for a successful procurement, and is therefore particularly relevant to public safety organisations who are planning new device procurements. The full white paper can be found here: https://tcca.info/about-tcca/tcca-resources/whitepapers/ ■

Connecting outpatients with hybrid DAS

The Christie is the largest single-site cancer centre in Europe, treating more than 60,000 patients a year and the first UK centre to be accredited as a comprehensive cancer centre. The Christie serves a population of 3.2 million people across Greater Manchester and Cheshire, while more than a quarter of patients are referred from across the UK.

"The solution has allowed patients, staff, and visitors to use their mobile devices on any mobile network, to make and receive phone calls, access data services, and receive text messages whilst in the hospital."

Ranked as the most technologically advanced cancer centre in the world outside North America, the Christie has been named by the National Institute for Health Research as one of the best hospitals providing opportunities for patients to take part in clinical research studies.

Problems at outpatients

Opened in 2019, the new outpatients department struggled with poor mobile signals from day one. Due to the sensitive nature of the work carried out in the hospital, mobile connectivity is absolutely vital for smooth operations.

This is a common problem in hospital buildings, due to the design and materials used during construction (concrete, steel, and Low-E glass). This can have a detrimental effect on both staff being able to carry out their daily duties as well as patients not being able to communicate with family, in what is often a highly stressful time.

In line with the 'NHS Long Term Plan' in making better use of digital technology, improving connectivity and mobile coverage for staff and patients was a priority for The Christie.

A hybrid DAS solution

Following a short consultation period and onsite survey the Boost Pro technical team designed a hybrid DAS to improve all four networks (O2, EE, Vodafone and Three) across the full department. Due to the sensitive nature of patient care, out of hours work was required.

The Active DAS Hybrid solution provides uniform, high-quality mobile signal throughout the building, and is scalable to the size needed. This delivers a mobile signal that is up to 1000x stronger, utilizing CAT 5e/6 cabling for RF and Power over Ethernet, with no signal attenuation, right to the perimeter of the building. With no operator licence required, installation was completed in just three days – this smart cellular solution delivers the industry's highest gain, at the lowest cost per square metre.

The installation was completed in three days earlier in 2022, and signal has been transformed from zero bars to full signal for 3G/4G LTE voice and data across all four networks – O2, EE, Vodafone, and Three.

The solution has allowed patients, staff, and visitors to use their mobile devices on any mobile network, to make and receive phone calls, access data services, and receive text messages whilst in the hospital. The team now benefits from health and safety, productivity, and operational advantages of being able to use mobile devices on the move within the hospital building.

Following the success of this project, Boost Pro is now looking to deploy this technology across the trust. ■

Boosting indoor signal during the pandemic

An NHS trust was in dire need of strong, reliable mobile network signal at two of their hospitals. Based across eleven London boroughs and Hertfordshire, this trust provides community health services to more than two million people. With one location being badly affected by the COVID-19 pandemic, the project had to be carried out fast, without severe disruption to either premises.

A mobile first strategy

Like most healthcare providers in the UK, the trust has started to move towards a 'mobile first' strategy, with everything from patient records to colleague communications relying increasingly on mobile connections. Mobile has become such an integral part of healthcare, especially during the COVID-19 pandemic, that the NHS has released official guidance on how staff and patients can use devices safely.

Digital services that need mobile data and calling to function include:

- Accessing digital patient records on tablets and mobile phones (particularly important for outpatients to specialist units such as diabetes management clinics and maternity services)
- Communication between staff (especially those on emergency call)
- Communication between patients and their next of kin (something that rapidly became a priority as coronavirus prohibited visitors to wards)
- Organisation and digital planning (a rising number of nurses now use mobile devices to plan rotas and patient visits)

While WiFi can offer a partial solution, it's often inconsistent across an entire hospital building, especially for hospitals that are arranged in blocks with walkways and outside spaces between wards and facilities. These 'drop zones' are not only inconvenient but can delay emergency communications.

Moreover, healthcare buildings are among the worst affected by poor mobile coverage, with 82% of workers reporting bad signal in a recent study, so relying on existing network coverage was not an option. While this poor coverage can be attributed to location, it is mostly the result of building layouts and materials such as brick, glass and metal obscuring signal.

Transforming user experience

As one of the hospitals was particularly badly hit by coronavirus, access to digital services for both staff and patients had suddenly become a significant priority. The solution needed to be fast, without causing disruption to busy wards.

By installing Cel-Fi QUATRA signal boosters, UCtel could quickly bring reliable coverage from multiple networks into the premises. Cel-Fi does not interfere with existing wireless products, making it safe to use alongside hospital equipment. Authorised by 200 mobile carriers, Cel-Fi automatically adjusts to changing network conditions, so that the hospitals can rely on network coverage regardless of environmental changes.

"The new solution has transformed a user experience where there was either no coverage or a patchy, weak signal, to a consistent coverage with a high data throughput."

Several surveys were carried out to determine the quantity and location of the Cel-Fi QUATRA units to provide the required coverage. UCtel's team of engineers installed new cabling throughout the hospital building to connect the system and tuned it to deliver the optimal signal.

The new solution has transformed a user experience where there was either no coverage or a patchy, weak signal, to a consistent coverage with a high data throughput. Both hospitals now have reliable network coverage, allowing healthcare professionals, administrators, and patients to access digital services and stay connected. ■

How edge is enabling growth in IoT

The IoT is expanding at an incredible rate across the globe, enabling new, business-changing applications across a wide range of industries. Simon Michie, CTO at Pulsant, explains how critical edge is to the IoT revolution

The Internet of Things (IoT) is growing fast. According to recent research from Fortune Business Insights, the market is projected to grow from US$478.36 billion in 2022 to US$2,465.26 billion by 2029, at a compound annual growth rate (CAGR) of 26.4% over that forecast period.

From a commercial perspective, this rapid expansion is being facilitated by a combination of high-speed, high bandwidth 5G connectivity and rapidly developing edge computing platforms. It is a combination that is today bringing advanced artificial intelligence (AI) driven applications and services into the orbit of almost every business across the UK.

Driving forward with 5G and the edge – how they fuel IoT growth

5G is a game changer for IoT because it enables faster, more stable, and more secure connectivity but strong IoT growth also depends on edge expansion because for growth to be sustained, it requires a platform with compute power, network connectivity and cloud access. That is critically important. These platforms, after all, need to be able to efficiently process the masses of data from the multiple sensors and devices that comprise the IoT.

This data is increasing in volume all the time. According to IDC, IoT big data statistics show that, with increased adoption, devices will globally generate exponentially more data in the following years. The numbers will reach 73.1Zb by 2025, which equals 422% of the 2019 output when 17.3Zb of data was produced. As companies integrate IoT devices into their network infrastructure, finding new ways to manage and process it all is becoming an ever-higher priority.

Processing all this data at the main public cloud providers' data centres is not a viable option because the latency is unsustainable. The IoT will require gateway hubs to aggregate the data, operate actuators and translate between sensor protocols used to connect to a network. These processes will be best suited to being carried out at the edge data centre where the gateway can filter out unnecessary data and pass on critical information to proprietary applications hosted in the public cloud.

We see industry edge adoption centered on early adopters using dedicated multi-access edge computing environments (MECs), providing IT services, compute and cloud access, which will soon give way to sliced, or shared, services at the metropolitan level. There are already live use cases in the transport and energy sectors among others, but large-scale adoption will follow once edge infrastructure platforms have fully developed their low latency connectivity, high-speed backhaul to the public cloud and local computing capabilities.

Indeed, the market for edge computing seems to be growing even faster than that in use for IoT. A recent study from Grandview Research found that the global edge computing market is expected to grow at a CAGR of 38.9% from 2022 to 2030 to reach US$155.90 billion by 2030.

Barriers in place

The core challenge still facing businesses in this area is how to make practical use of IoT in their enterprises. As they look to achieve this, enterprises are often confronted by three key barriers standing in the way of IoT adoption.

The first is the thorny issue of having to gain a full understanding of the benefits it can deliver in pure business terms. Second, there is the complex challenge of having to integrate a multitude of IoT devices and their workloads into existing business architecture. The growth of artificial intelligence-driven applications, for example, means that architectures will have to facilitate more data being transferred back to the edge for decision-making in intelligent IoT systems.

The third challenge is the more obstinate and enduring problem of acquiring staff with the requisite skills to manage and maintain IoT effectively. Organisations can only overcome this endemic difficulty by selecting partners with deep expertise in the developing relationship between edge platforms and IoT implementations. It is fair to ask, too, whether IoT should be agnostic about networks to fulfil its promise. The answer is that network reliance is not the real barrier, it is network exclusivity. For machine-to-machine connectivity, especially for mobile IT, agnosticism is required at the edge.

Delivering on the promise of growth

For IoT to accelerate, access to connectivity is essential. The primary markets for hardware devices are likely to be dwarfed by the market for applications based on sensor data. Applications focused on real-time and aggregated data analytics need connectivity that has either low jitter, loss and lag or has dedicated high bandwidth. The telcos have been the first movers in this market with 5G, but carrier fibre delivers more dependable waves.

As the IoT develops it will evolve across a wide range of business applications that require different kinds of connectivity. Conventional multi-protocol label switching (MPLS) which has been the backbone of the internet for around twenty years, cannot, however, match the newer iterations of SD-WAN for flexibility and cost-savings. But MPLS will likely continue to have a place in the infrastructure, even if it is not central.

Unlike traditional WAN architectures which lack the central visibility and control required for distributed IT environments, SD-WAN delivers a step change for businesses. It makes it easy to configure multiple devices, saving time and increasing efficiency. Organisations can enforce their own policy, based on user experience, with network priority given to the most business-critical applications to avoid jitter, lag, or brownouts. And through greater operational efficiency, SD-WAN generates significant operational cost savings. Rolling out new applications becomes quicker and less costly across multiple sites.

Although edge does not depend on SD-WAN, the increasing use of software to define and optimise network performance will inevitably accelerate the full operationalisation of edge computing platforms.

The growth of edge infrastructure, which now covers approximately 95% of UK businesses, gives organisations the architecture they need for IoT and AI-driven automation, efficiency, and innovation.

"5G is a game changer for IoT because it enables faster, more stable, and more secure connectivity but strong IoT growth also depends on edge expansion because for growth to be sustained, it requires a platform with compute power, network connectivity and cloud access."

The challenge still facing businesses is how to make practical use of IoT in their enterprises. Organisations need to understand the benefits that IoT can deliver in business terms, for example, including the ability to integrate IoT devices and their workloads into their current architectures and the availability of skilled staff. With IoT expanding the number of authenticating devices, security has moved beyond the device.

IoT growth ultimately depends on edge expansion. This needs a platform that comprises compute, network connectivity, and cloud to deliver seamless, high performance because most businesses will want to consume IoT applications in the way that cloud applications are consumed today. ■

Why leasing your UPS could be the answer you are looking for

by Callum White, Director, CPS

If you want your business to be prepared in the event of a power outage, a UPS is an essential component of your infrastructure. But the fact is, if you want to buy the very latest UPS system and secure the best protection for your data, it's going to cost you a lot of money, right? Not necessarily. You don't have to buy an expensive asset like a UPS outright. You can lease one instead.

Here's what you might not know about leasing and why leasing might be a far better alternative than purchasing a UPS.

Is leasing more expensive than buying?

Some people have a negative view of leasing. They believe they will end up paying more for the item than if they bought it outright, there will be a catch at the end, and they'll have to pay out a large sum of money if they want to hold onto the asset they've been leasing. However, if you lease from a dependable supplier who partners with a reliable financial leasing company and if you consider the contract before you sign it, you shouldn't be out of pocket.

No expensive outlay

Leasing is a way to ensure your business has complete power protection without you having to tap into cash reserves that you may need to use elsewhere. In effect, you are able to buy an asset that may be more than the cash you have available.

Predictable monthly payments

When you know exactly what your monthly payments will be, forecasting and budgeting are more straightforward. Especially when you lease over five to 10 years, payments are affordable and manageable. At the end of the lease period, you have the option to buy the equipment at a discounted price. Your rental can include the capex costs and opex costs for the entire period or just capex.

Super deduction Tax Break

From 1 April 2021 to 31 March 2023, hire purchase agreements qualify for the government's 130% super-deduction tax (SDT). Providing significant tax benefits for qualifying assets, the super-deduction will allow companies to cut their tax bill by up to 25p for every £1 they invest.

Various options at the end of the lease

Not every business owner is 100% sure where their company will be in five or 10 years. One of the best things about leasing a UPS is that you don't actually own it. That means you have options at the end of the lease period.

You don't have to dispose of old equipment.

When you've finished with a UPS, removing it for safe disposal and recycling can be a bit of a headache. Many business owners will feel relieved to know that someone will deal with this for them. If you lease a UPS, the lessor takes back the UPS at the end of the lease period and arranges for its safe, ethical, and legal disposal. That's one less thing for you to worry about.

Potential to upgrade

When it comes to protecting sensitive data, you don't want to risk taking any shortcuts. Sourcing the best battery power backup is imperative, and it's essential you're using the most current version of your chosen product. When you lease a UPS, you have the opportunity to upgrade as part of your agreement. You're never left behind using an outdated system when a newer version is available to do the job better.

Flexibility to expand

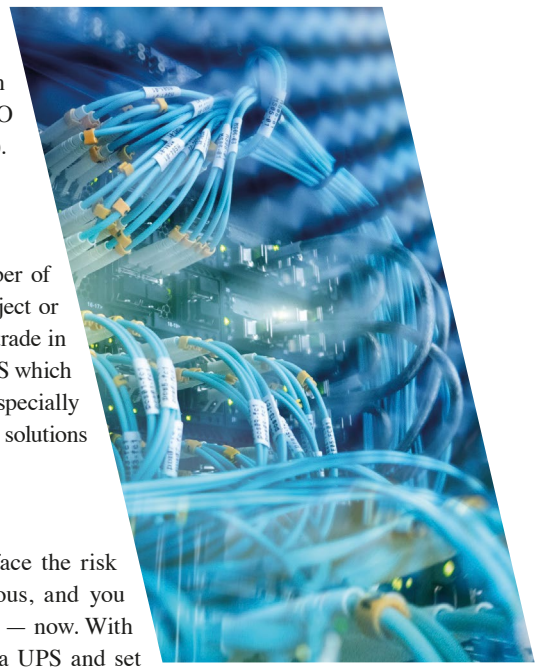
If business operations expand, so will your need for additional or upgraded power capacity. With a UPS lease, you can acquire additional systems quickly when you need them, without a large outlay.

Accessible service and maintenance plans

Purchasing a product means you pay your money, take the item, and go away and use it. You may have a warranty, but that probably won't cover you for regular service and maintenance, no matter how much you've paid for it. If you want to get the most from your UPS and keep it running, lease from a company that offers regular service and maintenance plans. Any potential issues can be nipped in the bud before they become major problems.

You benefit from better quality products

When you're paying out on an expensive item, you may be tempted by a cheaper option rather than going for the top of the range. Critical Power Supplies stocks UPS from industry-leading manufacturers, including APC, Eaton and Riello, so you are assured of outstanding performance. In addition, all of our suppliers meet our supply chain standards for quality (ISO 9001), health and safety (ISO 18001) and environmental management (ISO 14001).



Trade in your old UPS and receive a discount.

Depending on the age of your UPS and the number of batteries with the solution as part of a turnkey project or supply only with commissioning we can provide a trade in discount which rewards you for replacing legacy UPS which can be expensive to maintain, operate and cool especially when you consider the modern high efficiency solutions including lithium.

The UPS you need in place, fast

If you value your business, you can't afford to face the risk of downtime. A loss of power could be disastrous, and you need the right UPS for your requirements in place — now. With Critical Power Supplies, once you have selected a UPS and set up your leasing agreement, it can be on-site and installed in a matter of days.

Make your Power Predictable

At Critical Power Supplies our rule is to help make your power predictable and these days that includes making the financing of a solution simpler and straightforward. Our finance options enable our customers to move quickly and confidently whether that's for a small server farm, an entire estate or refresh program which helps to reduce your energy consumption.

Our turnkey packages include consultation, design, build and delivery of the project including UPS, Generators, switchgear, installation, recycling of legacy systems and in life management.

If you would like to talk to one of our specialists, please call 03308188709 or visit critpwr.co/leasing

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Power play: how to choose the best UPS for your business

Martin Ryder, channel sales director, Northern Europe, Vertiv

It's crucial for enterprises to have a reliable power supply to keep operations running smoothly. With downtime costing businesses greatly in both monetary and reputational terms, an uninterruptible power supply (UPS) is an essential component of any power management strategy, providing backup power in case of outages or other disruptions.

UPSs can provide anywhere from a few minutes of backup power – enough to safely shut down workstations and servers or allow backup generators to kick in – to lengthier periods of backup power provision. Understanding how to choose a UPS that's the best fit for your organisation requires having a firm handle on how much power your IT and other critical systems draw and your tolerance for downtime for each application.

But with so many options available, it can be overwhelming to choose the best UPS for your needs. How do you determine the right size, runtime, and features for your enterprise?

1. Determine your power needs: This is a critical first step. Start by determining the wattage of your equipment, the number of devices you need to power, and the amount of runtime you require.
2. Consider your budget: UPS systems can range in price from a few hundred pounds to several thousand pounds, depending on the size and features. Determine your budget upfront so you can choose a UPS that fits your financial constraints, but keep in mind that innovative models can provide savings on energy and maintenance costs in the long run.
3. Look for energy efficiency: UPS systems can be a significant source of energy consumption, especially for larger enterprises. Look for a UPS with a high efficiency rating to minimise your energy costs and reduce your carbon footprint.
4. Specify different types of battery chemistry: UPS systems use different types of battery chemistry, such as lead-acid or lithium-ion. Lithium-ion batteries are the most technologically advanced choice and offer a variety of benefits for UPS systems, but there are cost implications to be had too.
5. Evaluate the runtime options: UPS systems come with different runtime options, including short runtime, which is suitable for bridging short power outages, and long runtime, which is suitable for extended outages.
6. Consider the installation environment: UPS systems come in different form factors, including rack-mount, tower, and external battery packs. Ensure you assess the space available in your server room and choose a UPS that fits your needs.
7. Look for advanced features: In addition to a variety of form factors, UPS systems also offer advanced features such as remote monitoring, automatic shutdown software, and expandable battery packs to provide added protection and convenience for enterprises. Consider which features are important to your enterprise and select a UPS that offers them.
8. Consider the topology: When selecting a UPS, consider the different topologies available: online double conversion, line-interactive, and offline (also called standby and battery backup). An online double-conversion UPS will provide the greatest power protection, while a line-interactive UPS offers power conditioning and battery backup. An offline UPS provides protection against most spikes and can ride out many shortages, but it does not maintain perfect power during minor sags and surges.
9. Decide between single-phase and three-phase: Single-phase AC power is commonly used for household and light commercial applications, while three-phase power is typically used for larger data centres and other commercial and industrial facilities..
10. Choose a reliable vendor with a great track record: Before making a purchase, research the reputation of the vendor. Look to reviews and to colleagues and peers.

Selecting the best UPS for your enterprise requires careful consideration of your power needs, budget, energy efficiency, runtime options, topology, form factor, advanced features and more. By following these tips, you can find a UPS that helps ensure reliable power for your operations. ■

PRODUCTS

AEG Power Solutions' Protect Plus M600 is a modular UPS system that combines high AC/AC efficiency values of up to 98.5% in ECO mode with a compact footprint and a flexible and scalable architecture, able to reach up to 900kVA.

Thanks to its modular and scalable design as well as its hot-swappable functionality, Protect Plus M600 can start with a basic configuration of just 30kVA and then grow gradually as required, up to 900kVA. For the 180kVA and the 300kVA models, it is possible to connect in parallel up to three cabinets, ultimately providing up to 900kVA.

The Protectplus M600 models offer input PF >0.99 and input THDi <3%, even when a low percentage of load is applied. The flat efficiency curve from 35 % of load will ensure maximum energy savings at every percentage of load.

The 30kVA power module has independent hardware and controllability, that can operate and coordinate with other modules within the system. The control of power modules connected in parallel is decentralized in the single 30kVA device (no centralized control system). The omission of the master/slave architecture eliminates any possibility of a problem due to the failure of a single power module.

Eaton's Power Xpert 9395P UPS provide the benefits of high double conversion efficiency and greater power density, gained from the most recent technological developments in power management.

With 96.3% efficiency, the Power Xpert 9395P UPS range features a power rating of 250-1,200kVA, and is designed to maintain a steady, uninterrupted, and clean power supply, featuring several advanced technologies built in from source to enhance resiliency.

Eaton's Power Xpert 9395P UPS provides several options for scaling, and for tailoring the optimal fit for the application. UPS power scaling can be achieved by increasing UPS capacity, adding a new UPS in parallel to the existing installation or adding a new UPS system and transferring the load to it.

The Toshiba 4400 Series UPS is the company's next-generation three-phase UPS.

The double-conversion, all insulated-gate bipolar transistor (IGBT) 4400 Series UPS features a digitally controlled IGBT input rectifier, an intelligent low harmonic pulse-width modulation (PWM) output, state-of-the-art electronic battery isolation circuitry, and an easy to navigate local touchscreen interface.

The small footprint and total front access mechanical design requires zero rear clearance and includes features such as top, bottom, and/or side cable entry, standard sized air filter provisions, and lockable keyed doors.

Customization is available through several options, such as internal battery backup, internal transformers for specific voltage applications, and remote monitoring with the Toshiba RemotEye® 4 multi-protocol UPS monitoring solution.

The Toshiba 4400 Series UPS features 0.9 power factor, high efficiency, a small footprint for optimising real estate, and is easily installed.

Mitsubishi Electric's 9900B UPS is a three phase, online double-conversion system, featuring IGBT technology for enhanced UPS performance and reliability.

The 9900B UPS delivers all-around dependability, with 97% efficiency in double conversion, a small footprint, capacitors with a 15-year design life, distributed bypass design for multimodule operation, low heat rejection to save on cooling costs, industrial fans, and ease of maintenance via front access to pull-out trays.

Mitsubishi Electric's 9900B has a sustained load carrying capacity of 99.9995% of actual operational history.

The 9900B is one of the data centre industry's first UPS with three-level IGBT topology delivering optimum control and performance, utilizing a combination of high sampling rates and Direct Digital Control (DDC). The IGBT power device for the 9900B UPS achieves superior function under all load conditions.

The 9900B UPS is Lithium Ion, VRLA, VLA, and Pure Lead compatible for greater flexibility.

The **Schneider Electric Easy UPS 3L** is an easy-to-configure, easy-to-use, and easy-to-service 250-600 kVA (400 V) 3 phase UPS that delivers high availability and predictability to medium and large commercial buildings and light industrial applications.

Its fault-tolerant design streamlines installation and service, while its compact footprint saves valuable real estate. The Easy UPS 3L's up to 96% efficiency brings predictability to utility costs. The Easy UPS 3L features a robust design and versatile architecture with wide battery voltage window for easy compatibility with third-party battery solutions, and easily adapts to site requirements: parallel up to 5 UPSs for capacity or 5+1 UPSs for redundancy; and includes support for 4+4 redundant configurations.

The included fortifying features protect UPS in data centres, manufacturing, industrial, or commercial buildings. These include an embedded dust filter with IP20 protection, conformal coating, wide input voltage range, and rodent protection.

Kohler Uninterruptible Power's PowerWAVE MF1500 DPA is a modular UPS system combines proven DPA technology with the latest advances in components and software.

With innovative, vertical slide-in modules, the MF1500 DPA enables resilient, high power density protection by reducing UPS footprint by up to 45% over traditional approaches, without compromising access for installation and maintenance.

That protection is achieved with best-in-market 97.4% VFI energy efficiency, reducing environmental impact, optimising PUE measures, and delivering significant financial savings in energy and cooling costs.

The PowerWAVE MF1500 DPA features cable-free internal connections, extra-long life wear parts, and operates at 250-1,500kW, parallelable to 6,000kW.

Please meet...

Heath Thompson, president and GM of information and systems management (ISM), Quest

Who was your hero when you were growing up?

Bjorn Borg. I played tennis in high school and Borg was my hero because of his incredible talent, yes, but also because of how he remained calm in the toughest situations, was always focused, and had a very strong work ethic. I think this influenced me a lot not only in my competitive sports but also as a person and certainly in business.

What was your big career break?

In 1993, working for Kevin O'Connor, founder of internet advertising pioneer DoubleClick. Kevin was the CTO of a company called DCA (later acquired by Attachmate/MicroFocus). I was part of a product research group there, where we were tasked with coming up with one new product idea per quarter, doing market research, a high-level business plan, and forming a small team to prototype the solution. We would then pitch this to an executive committee and if approved, would have a chance to lead a team to go deliver the product to market. I enjoyed this so much, it became the founding thesis for a company I started called Thoughtmill. I grew it up to 200 people, and over 20 million in revenue, and later sold it to American Systems. Thoughtmill unquestionably gave me the experience of running a business that became essential to every job I've had since. But I wouldn't have founded Thoughtmill if it weren't for Kevin O'Connor and the job he hired me to do at DCA.

What did you want to be when you were growing up?

I always wanted to be a doctor growing up. My college degree was going to be pre-med/chemistry at Emory University in Atlanta. But when I was a freshman in college, I started working as a salesperson for a local computer company. The company closed the retail store eventually but kept me on as a software engineer in their support organisation. I liked software and technology so much, I decided to change my major at the start of my senior year (better late than never!), got my degree in computer science, and then went on to grad school to get my masters in computer science at Georgia Institute of Technology.

If you could dine with any famous person, past or present, who would you choose?

I think it would be incredible to meet Abraham Lincoln. Not only was he one of the greatest leaders in the US and world history, but he was also an Enneagram Type 9 personality (the mediator), as am I. I would love to learn from him how he dealt with some of the most difficult times and topics in the history of the US.

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

I think it would probably be: "be present" in whatever you do. I can remember a time in my life when I didn't have a healthy work-life balance, and while I was "present" for my job, I wasn't "present" in my personal life. I would always be distracted by work, and not give my 100% focus to my family. But I credit my wife, Angela, for helping me stay grounded in how to do that with my children's lives and my family as a whole. Honestly, by finding that balance, and learning that lesson, not only did it help me in my personal life and that of my family, but it helped me become a better employee and leader in business.

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

Wow, that's a tough call. I'm a would-be guitar player and musician, and truly love music, so that might be one choice. But I also think becoming a teacher. I really like sharing my experiences to help people, especially kids, and feel like being around that drive and hunger for learning would be a great way to stay energised – and stay "young" myself.

The Rolling Stones or the Beatles?

Well, I love them both, but would have to choose the Beatles. The song writing genius of those guys is unmatched in the history of rock music. But if I could choose a write-in vote, my answer would be Led Zeppelin.

What would you do with £1 million?

Buy a farm (see below).

Where would you live if money was no object?

On land, owning a farm (hobby farm for my family, not farming as an occupation). It could be anywhere, to be honest, but the English countryside has always appealed to me. So, a farm in the English countryside. I still love technology, so I'd definitely have a high-tech farm, but love the peace of it all, raising and building what you need to live on, and providing that kind of environment for my family, especially my 7-year old daughter. ■