

## Open optical networking

Increasing operational complexity

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# Ambulance cyberattack highlights network segmentation import



**On 18 June, two NHS ambulance services – South Western Ambulance Service Foundation Trust (SWASFT) and South Central Ambulance Service Trust (SCAS) – were left unable to access electronic patient records following a cyberattack on Ortivus' hosted data centre environment.**

The trusts, which combined serve 12 million people across Bristol, Cornwall, Devon, Dorset, Gloucestershire, Somerset, Wiltshire, the Isles of Scilly, Oxfordshire, Buckinghamshire, Berkshire and Hampshire, with non-emergency coverage in Sussex and Surrey, moved to Ortivus' hosted MobiMed platform in 2020 to modernise electronic patient record systems. However, with the attack, the platform – used across more than 1,700 ambulances and workstations – went offline, and staff were forced to turn to less efficient manual paper systems.

An NHS England spokesperson speaking on behalf of the affected trusts said: "we are aware of an incident affecting a small number of ambulance services. Our cybersecurity operations centre is working with affected organisations to investigate, alongside law enforcement colleagues, and supporting suppliers as they work to reconnect the system."

According to Ortivus, "no patients have been directly affected. No other systems have been attacked and no customers outside of those in the

hosted datacenter have been affected."

Exchanging digital information has become essential for enhancing patient outcomes, simplifying procedures, and promoting medical progress, however, with digitisation, cyberattacks have become more prevalent, with SonicWall reporting that encrypted threats on healthcare are up 94% year-on-year.

"Not only does this attack risk the potential for exposed patient data, but any significant IT issue that halts patient care poses an immediate threat to life," said Spencer Starkey, VP of EMEA at SonicWall. "The ramifications of an attack on the healthcare sector can be disastrous and it's important to place the utmost amount of time, money and efforts on securing them."

Simon Chassar, CRO at Claroty agrees that the healthcare industry is one of the few sectors where cyberattacks can fatally impact human life; thus, cyber criminals know hitting patient services is the most effective way to cause disruption and for victims to comply with their demands.

"If a healthcare institute is unable to access patient data, they might not be able to perform surgeries or administer certain types of medicine – the result of which can be fatal," said Chassar. "Healthcare organisations are adding more cyber-physical devices such as OT systems and IoTs, to their networks, and

exposing themselves to new cyber threats and vulnerabilities which can impact patient services, and ultimately human life. Therefore, it's important to implement network segmentation so unnecessary connectivity and the movement of malware can be restricted, as well as real-time monitoring and analysis to identify anomalies and potential intrusions quickly."

According to Atlas VPN team, 95% of patients are concerned about a potential data breach or leak of medical records, and most do not trust big tech companies like Amazon, Apple, Google, Facebook, and Microsoft to store their health data. Medical data breaches can cause identity theft, financial fraud, reputational damage, and even endanger a patient's physical well-being if sensitive medical conditions are disclosed.

"Healthcare providers must actively advocate for patient rights and data autonomy. Patients should be empowered with the knowledge of their data's value, ownership, and control," said Atlas VPN cybersecurity writer Vilijus Kardelis. "By offering stringent data protection measures, healthcare providers can create an environment where patients feel in command of their health information."

No details have yet been released about the attacking entity, and Ortivus claims that there is 'no indication that any data has been stolen or lost.' ■



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# Barings Law doubles caseload by consolidating apps

Barings Law has made a significant shift in its technology strategy by consolidating apps from an array of different providers to Zoho One, a comprehensive suite of 55+ business applications, enabling the firm to double its monthly case load.

The switch was driven by the firm's need for a user-friendly and cost-effective solution that could streamline its operations, automate many of its processes, provide a secure way for staff to work from home effectively, improve customer experience and offer scalability for growth.

As a primarily litigious law firm specialising in areas such as PCP claims, business energy claims, business interruption cases, undisclosed commission claims, and immigration cases, Barings Law focuses on making justice accessible to all.

"Technology is not quite where it should be for law firms, so thank goodness we found Zoho. Any business can hit the ground running from the moment they sign up with Zoho – it's easy to understand how to use by any user skillset and we can now provide our clients with the most seamless experience possible. Previously we used many disjointed applications with a lot of providers which was chaotic to stay on top of. We had problems with customisation which needed additional

costly input from outsourced specialists and we can now do that with ease ourselves," said Melanie Cope Machial, head of marketing and technology at Barings Law. "We have barely scratched the surface on Zoho One's applications and it's very reassuring to know that as we grow as a law firm, Zoho One's apps can scale with us. Staff have so much more freedom and autonomy using Zoho One. Our teams can now focus on the legal stuff which is really what matters."

Barings acted on a partner recommendation to evaluate Zoho One and after comparing with several other providers found it to be a 'no-brainer' to make the switch. The firm used Zoho One to build an integrated case management platform to handle everything from client onboarding to litigation and settlement. With around half a million clients, thousands and thousands of cases per month are now handled using the platform and after switching to Zoho, Barings Law was able to double its monthly case load.

"Zoho One can significantly transform a business, making it truly remarkable to witness the extent of the positive changes it can bring. It's fantastic to see the dramatic impact Barings Law has seen across its entire business and to understand just how much it has saved in costs alone. We work hard to continuously improve our product

suite and look forward to continuing to work with Barings to scale with them as they grow. Innovation is often difficult in some of the more traditional industries, but with Zoho One there are so many options for businesses to innovate within industry requirements and frameworks to improve processes and differentiate in increasingly competitive markets," said Sachin Agrawal, head of UK at Zoho Corporation.

Barings switched from Pipedrive to

Zoho CRM, which is now used as the central single source of truth for its approximately 500,000 clients. It was also using Proclaim for case management software, which is now also managed via Zoho CRM. It switched from DocuSign to Zoho Sign to manage the highly important secure signing of legal documentation; from Sprout Social to Zoho Social to manage its social media campaigns; and from Mailchimp to Zoho Campaigns to handle email campaigns. ■



## Wifinity targets military bases with Vital WiFi deal

Wifinity has accelerated its UK expansion with the acquisition of Vital WiFi, enabling it to reach into a new and particularly challenging area of critical remote internet connectivity.

Wifinity delivers connectivity where ordinary broadband often doesn't reach, including rural and remote locations such as military bases and holiday parks. The latest acquisition expands their services into new offshore sectors, including traditional and renewable energy platforms and commercial shipping.

"Joe Burnell and the team at Vital WiFi have built a great business that delivers secure, reliable and quality WiFi services in what are often challenging working environments," said Costas Demetriou, CEO of Wifinity. "We're thrilled that they've joined us. The acquisition provides a unique opportunity to expand into new, complimentary markets, while gaining a raft of new product features and industry expertise to help drive our continued growth in the UK and now offshore." ■

## Fontygary Leisure Park signs up for gigabit-capable broadband

Ogi, which is investing £200 million to roll-out a new fibre-to-the-premises (FTTP) network across 150,000 premises in South Wales by 2025, has signed a 10-year deal with Fontygary Leisure Park that will enable around 500 holiday homes to be connected to their full fibre lines.

The deal will bring gigabit-capable connectivity to long-term park residents and holidaymakers for the first time, with leisure

park staff also being upskilled to install and manage the new service in the process.

"We're really excited to be welcoming Fontygary to the Ogi network. This landmark deal is a real gamechanger for us and, I hope, residents and visitors to the park, who'll all benefit from our ultrafast and ultra-reliable Welsh broadband speeds," said Andrew Dow, Ogi's director of business sales. ■



## Remote businesses to gain from church-enabled OpenRAN

Vodafone, the Church of England, and Net CS are installing 4G installed subtly in 11 church bell towers to unobtrusively provide better services to businesses, visitors, and residents in rural communities.

The church towers are being kitted out with small, well-hidden boxes that give a 4G signal with a 500m coverage radius.

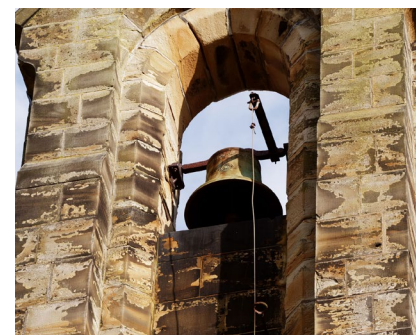
The Blessed Virgin Mary in Brompton Regis, Somerset, and St Michael's & All Angels in Ewyas Harold, Herefordshire are the first UK churches to go live, with a further nine, located across Dorset, Essex, Norfolk, and Wiltshire, going live in the coming months.

Mobile network operators can struggle to gain planning permission for cell tower masts in rural locations, but OpenRAN offers a new way of building a mobile site that can be smaller, lighter and more energy efficient, perfect for use in rural or remote communities.

"Churches are typically very tall, on high ground, and close to the community we're trying to connect," said Andrea Dona, network and development director, Vodafone UK. "This makes them the perfect place to install a mobile site, and now we've developed technology that's small enough not to spoil the appearance of the church. Our aim is to use this cutting-edge technology to improve mobile coverage in as many rural locations

as possible. This is an important step in ensuring rural communities can enjoy all the benefits of mobile connectivity."

"This project is an example of the many ways churches benefit their local communities. As well as delivering better mobile coverage, the improved connectivity achieved through these new church-based sites helps combat the social justice issue of poor connectivity which affects many residents in rural areas," said the Bishop of St Albans, Alan Smith. "The key consideration for us has always been the wishes of local communities, who have been widely supportive of these new sites. Net CS, our infrastructure facilitator, ensures that the new installations are unobtrusive, safe for our congregations and the wider community and will deliver benefits to church users and the whole community." ■



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## DC Byte: strategic diversification needed

DC Byte has released its London Market Spotlight report, which takes a closer look at London's booming data center scene.

As one of the most established data centre markets in Europe, London has played a pivotal role in driving digital transformation and innovation. The capital city has witnessed a doubling of supply from 1,000MW in 2018 to an impressive 2,000MW in 2022. Major cloud providers including Microsoft Azure, Google Cloud, and Amazon Web Services (AWS) have been instrumental in driving demand, with over 180MW of take-up recorded in 2022 alone.

The report found that live IT power accounted for 56% of total supply in 2021, but the pipeline for under construction and committed power has grown, reflecting anticipated future demand; Slough and West London has the largest IT capacity and number of data centers, driven by public cloud deployment; and demand for data centres is expanding to areas outside established clusters, such as the West of London, East London, and Manchester.

While London's data centre market continues to flourish, the London Market Spotlight report raises questions about its future capacity to support the growing demand. Concerns regarding the availability of power and suitable sites for expansion necessitate a strategic approach to ensure the market's ability to accommodate future growth and meet the evolving needs of cloud providers, enterprises, and digital businesses.

"This report offers invaluable insights into the city's very vibrant data center market," said William King, managing director for EMEA region at DC Byte. "London's growth as a data centre hub has been exceptional, and the Spotlight serves as a valuable resource for industry professionals navigating the evolving landscape. It also highlights the importance of strategic diversification to meet the increasing demand for the next generation of data centre services." ■



## Neos Networks to supply CCS NS3 framework

Neos Networks been named as a supplier on Crown Commercial Service's (CCS) Network Services 3 (NS3) framework.

The framework provides access to best-in-class connectivity and communications services, with a focus on emerging technologies such as IoT and smart cities to the UK's public and third sector organisations. This includes central government departments, local authorities, NHS and healthcare providers, emergency services, social housing providers and 168,000 registered charities. Neos Networks' full suite of connectivity services, including SD-WAN, dark fibre, business internet services, optical and ethernet will be made available to

these organisations via the framework.

NS3 is an update to Network Services 2 (NS2), which includes connectivity to cloud-based data and applications, radio and satellite networking and internet of things solutions, providing public sector organisations with access to the latest technologies and choice, from recognised and trusted providers.

Neos Networks has been selected as a supplier on Lot 1a, which provides access to inter-site connectivity services, a critical component of supporting future technologies and applications that will change the way we live, work, and play.

"Neos Networks is thrilled to have been named as a supplier on the new NS3 framework, which will ease public

sector access to modern connectivity solutions," said Joanne Green, head of public sector at Neos Networks. "Our heritage and customer portfolio in this sector means we know how best to serve our customers in this space. Earlier this year, we were awarded a place on the CCS G-Cloud 13 framework for cloud-based computing services for the public sector, and today we're providing further connectivity services for the many UK public and third sector organisations seeking to digitise their services. We're excited to support more customers and partners on their journey to embracing new technologies and see Neos's underlying infrastructure support critical connectivity for future-proofed applications." ■

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## After almost 40 years, two of the founders of SEH Computertechnik GmbH, Joachim and Christian Sturmhoefel step down

The company, founded in Steinhagen together with Rainer Ellerbrake and Peter Herden, grew from a pioneer in network printing to a world-leading manufacturer of network solutions. The use of USB devices via the network and the connection of remote workstations were at the forefront of SEH's development as a business. In 1989, Werner Schweer joined the company as a partner. In addition to founder Rainer Ellerbrake (63), a second Managing Director Christoph Augustin (33), is now primarily responsible for sales, marketing, production and purchasing.

**"This is a strong starting point for new developments and innovations, especially in today's often difficult economic times"**

"The intention to join a network pioneer like SEH was primarily due to the high level of knowledge in the company," explains Christoph Augustin. "The dedicated colleagues on site convinced me quite quickly with their very open and professional manner that the new position fits perfectly into my future career plans." Augustin also appreciates the fact that SEH Computertechnik is still committed to development and manufacturing in Germany, after nearly 40 years. "This is a strong starting point for new developments and innovations, especially in today's often difficult economic times," explains Augustin.

Rainer Ellerbrake founded SEH in 1986 together with Peter Herden and Joachim and Christian Sturmhoefel. Today, he is responsible for development and finance. "I was asked what the primary goals of the new management duo are," says Ellerbrake. "The main focus for us is to bring dynamism and new perspectives into the company. This goes hand in hand with strengthening sales and, at the same time, opening up new areas of business."

Christoph Augustin adds: "Our vision is above all to strengthen our positioning in the premium segment of network technology. We will achieve this primarily through appropriate products and the expansion of our already excellent levels of customer service."



## Small cells key to future of connected cars

The Small Cell Forum (SCF) has published research highlighting the key role small cells will play in the future technologies that will take connected cars into the mainstream.

The paper offers a high-level guide to C-V2X (Cellular Vehicle to Everything) technology and the role that small cell technologies can play in its evolution and deployment.

A critical component of C-V2X design is the safety features that can be implemented as part of the system. Much of this will rely on wireless connectivity, and the infrastructure that enables it. For C-V2X to provide the gains in road safety associated with it, wireless coverage needs to be accessible. This means that coverage, capacity, and timely interactions between the C-V2X infrastructure and the users are important to

provide a means of implementing the safety, traffic management, and additional features.

Over time, more vehicles and other road users will have C-V2X in their cars and on their devices, encouraging increased use of C-V2X technology. This wider use implies a role for small cells, which could be an ideal way of providing the connectivity vehicle-focused networks require, especially in areas where macro cells can't be built, are already overloaded, or where coverage is poor.

"Small cells can be deployed unobtrusively, in larger numbers than traditional macro cells. In some cases, roadside units (RSUs) could be combined or merged with mobile network small cells, providing more functionality, reduced deployment costs and increased infrastructure efficiency," said Lorraine

Fearn, SCF Work Item Lead and RAN Architect at Dense Air. "This could be central to enabling the mass introduction of C-V2X into the market in the future. We certainly see a strong role for small cells in this sector, and a role for SCF in supporting the roll out." ■



## Businesses being bombarded with cyber threats

NormCyber has revealed that UK businesses are being bombarded with millions of automated cyber threat events.

In March 2023, the average mid-sized business, employing fewer than 250 people, faced a staggering 159 million threats, while for larger companies, with more than 250 employees, the average was 1.13 billion.

NormCyber's data snapshot for March is based on the number of cybersecurity events processed by its smartbloc. CSaaS platform. While the platform triaged billions of events during the month, only

a small fraction required action. For the average mid-sized organisation, just 764 alerts required investigation and/or remediation by NormCyber's UK-based Security Operations Centre (SOC). Of these, only 16 incidents were considered serious enough to flag up to the customer. For larger companies, an average of 2,421 alerts required SOC investigation, with just 12 incidents warranting customer attention.

"With the magnitude of cyber threats now facing organisations, it's difficult to comprehend how smaller in-house IT

teams can work out which events require investigation and action. It's hardly surprising that they can't see the wood for the trees – and yet, it only takes one incident to slip through the net for there to be potentially devastating consequences," said Pete Bowers, COO of NormCyber. "Companies which lack an effective and automated method for processing and filtering these threats will very soon find themselves suffering from alert fatigue, which can further drain their resources and place them at risk." ■

## Critical communications costs too steep

Britain's emergency services have had to pay more than £170 million to run the Airwave system for critical communications because of delays to the replacement network, a parliamentary committee has found.

The Public Accounts Committee said the existing system, which although reliable, "is expensive, does not provide modern data services and will eventually become obsolete."

The Home Office started the programme to deliver the new Emergency Services Network in 2015 and expected to turn off Airwave by 2019. However, the programme has been hit by delays, including the departure Airwave's key supplier in 2021, leaving the department with no end date.

"ESN transitional costs for the ambulance service amount to £9.5 million, while the fire service said it had spent £6 million preparing for transition, and £2 million on early versions of ESN which now had to be replaced. Police forces estimate that Airwave devices cost £125 million since 2018, and expect to spend another £25 million by 2026. Forces had spent a further £5 million on transition teams," said the committee. "Further costs are inevitable, as current systems will be obsolete in 2028 and may need replacing again before ESN is ready."

The committee said that the owner of Airwave had been paid some £140 million without the taxpayer getting full value, and that only limited further progress could be made before the Home Office found a new supplier. ■

## Smart meters a roaring success for National Grid

New research shows that smart meters are saving more energy and carbon than initially predicted.

With approximately 3% energy savings per household and 16 million properties (more than half of UK homes) connected to the Data Communications Company (DCC) network – the cumulative impact on the grid is significant. When these energy savings are applied to the current energy price cap, small businesses and homes have the potential to save £770 million collectively.

Smart meters securely transmit energy readings every 30 minutes to the DCC's network. This data is automatically shared with energy suppliers and grid operators, providing them with a near real-time understanding of energy usage. By leveraging this information, grid operators can reduce

wasted energy capacity, optimise new renewable generation, and potentially eliminate the need to build a large gas power station via lower demand. Additionally, National Grid ESO and energy suppliers are utilizing this data to incentivize reducing energy usage during peak demand periods, as part of the smart meter-enabled Demand Flexibility System.

"We are delighted to have reached this milestone, which shows the power of collective action on climate change," said Penny Brown, DCC chief operating officer. "Small changes across the nation are adding up to power station sized savings. The DCC network is transferring the vital data needed to make the most of renewables on our energy grid. At the DCC our purpose is to make Britain more connected so we can all live smarter, greener lives." ■

### Word on the web...

## The future of AI and ML in data backup systems

**Manikandan Thangaraj, vice president, ManageEngine**

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## Overcoming open optical networking's #1 perceived barrier: increased operational complexity

*Christian Uremovic, director solution marketing, Infinera*

New technologies and innovations have constantly influenced our communications networks and architectures. Today, these networks support astronomical capacity demands, adding an incremental 1 billion Gb of data per day. For service provider networks to support the required bandwidth growth, they need new and improved operational procedures to enable them to scale more cost-efficiently and to benefit from the latest technological innovations faster. Open optical networking promises to deliver these standardized best practices to operators, enabling a more open ecosystem, freedom of choice, and faster onboarding of new technology innovations.

In optical transport networking, there are two major technology layers – the service layer, where the transport service, such as a 100Gb Ethernet service, is converted into an optical signal using a so-called transponder, and the optical layer, where multiple optical signals are then multiplexed onto a fibre, amplified for long-distance transport, and switched optically where needed. Key evolutionary steps in optical networking include increased use of network disaggregation and support for open programmable interfaces.

Disaggregation in optical networking means decoupling the transponder layer from the optical line system, enabling

operators to independently source and deploy coherent optical transponders and pluggable optical transceivers from multiple vendors that are then connected to an open optical line system. This often comes with a perception of additional operational complexity as it may imply the need for new management systems and new provisioning, operation, and management practices for these new systems. Open software enhancements to optical networking include conforming to the latest open networking standards using publicly sourced application programming interfaces (APIs) and standard data models such as OpenConfig YANG. The goal of open software enhancement is to simplify and standardize the operational aspects of managing and operating the open optical transport systems of any vendor to support open optical networking in a more unified way.

In optical networking, disaggregation and open software enhancements together create an open optical networking environment that offers significant benefits to service providers, including more choice, faster innovation, and improved economics.

While a growing list of operators have embraced open optical networking, some have not. A recent network operator survey conducted by Omdia showed that the top barrier to adoption of open optical networking

is perceived operational complexity. But what many may not appreciate is that open optical networking isn't new. The industry has been on a 22-year journey of innovation and evolution to reach the point we are at today, where truly open networks are possible. This journey started with the definition of the DWDM frequency grid for fibre spectrum and has evolved to define data modeling and interface specifications and to address network planning and management aspects.

Several initiatives such as the Telecom Infra Project (TIP), OIF, Open ROADM, and the IETF, as well as consortiums including the Open Networking Foundation (ONF), are helping accelerate the adoption of open networking and driving standardization of networking protocols, data models, architectures, and methodologies. Service providers are actively participating in these initiatives to enable easier and faster adoption, ensuring their specific use cases are addressed.

System vendors can now benefit from these standardized definitions and implement best practices into their solutions. This in turn enables network operators to take advantage of these innovations and technologies, enabling their networks to be more standardized, simplified, and faster, while also reducing operational complexity. These activities

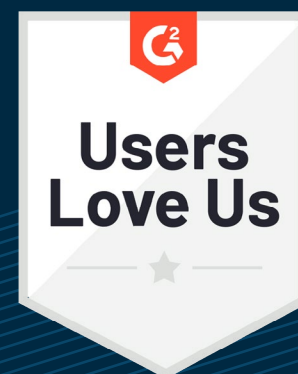
also include qualification processes to prove conformance. For example, within TIP, the OOPT Mandatory Use-cases for SDN Transport (MUST) program has just recently started its initial evaluation processes for product compliance to open and standard API requirements. These requirements focus on the interface between controller software and the network element, often referred to as the southbound interface (SBI). Along with others, Infinera's GX Series was awarded TIP's Requirements Compliant Bronze Badge. We expect more to follow.

Recently there has been significantly increased uptake of open optical networks. The available standardisation and the need for supplier diversity in the face of significant supply chain challenges have accelerated multi-vendor deployment requirements. Additionally, the benefits of more choice, improved economics, and faster innovation are too powerful to be ignored. Operators are upskilling their workforce with open optical networking standards and implementing best practices, and CTOs are increasing their focus on open networking. Arelion, one of the world's leading service providers, recently shared their journey to open optical networking and highlighted the benefits it has brought them. For Arelion, deploying transponders over third-party line systems is now business as usual. ■

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# The volume of ransomware attacks is dropping - but it's no time to get complacent



**Joseph Carson, chief security scientist and advisory CISO, Delinea**

**R**ansomware has developed a reputation as one of the most feared and high impact cyber threats in recent years, and opportunistic criminal gangs will seize on any available opportunities to extort vast sums from their victims.

Recent research conducted by Delinea, however, found that the number of ransomware attacks may be on the wane. Just 25% of respondents stated they had been the victim of ransomware in the last 12 months, a sharp decrease reported than the year before.

Although victims are still more likely to pay up, in the hopes of a speedy resolution, we found a sharp drop from 82% to 68% year-on-year. The IT/technology sector, as the industry that suffered the most incidents, was more likely to pay out than most but still saw a decline, dropping from 82% to 77%.

While it may seem like cause for celebration, don't break out the champagne just yet: ransomware still poses a genuine threat. Ransomware gangs have shifted their geography focus such as targeting victims with fewer defences or capabilities of fighting back such as those in central and south America.

## Are attitudes to ransomware risks shifting?

Threat groups are constantly looking for more advanced techniques to achieve their goals. We now frequently see encryption paired with exfiltration for double extortion attacks where attackers threaten to publicly leak stolen data to squeeze more money out of their victims.

As a result, ransomware attacks tend to hit harder and cost more. Research from Unit 42 found that payment amounts in the first five months of 2022 were roughly 71% higher than in the year before, to which remediation, downtime, and reputational harm costs should also be added.

Nevertheless, we found signs that indicate firms are becoming complacent about the threat. In 2021, 94% of organisations told us they had an incident response plan in place, but in 2022 that figure dropped to 71% and there was also a steep decline in businesses budgeting specifically for ransomware protection.

Only slightly more than half of respondents were regularly backing up data and updating systems despite the fact these should be security mainstays. A similar number implemented multi-factor authentication (MFA) as a ransomware precaution, while other identity-based measures saw a steady decrease.

## Why are more businesses standing firm against ransomware demands?

It appears that some companies have been opting to invest in cyber insurance as a means of transferring the risk of ransomware, rather than addressing it directly, a trend evident in our previous

research on cyber insurance. Although this is a tempting route, cyber insurance should not be seen as an alternative to appropriate security means, but only as an additional safety net against such a high impact threat.

Moreover, investing in cyber insurance, in lieu of meeting criminal demands, is a risky strategy. Cyber insurance coverage is in a state of flux as the industry attempts to get to grips with threats. There is a good chance that a premium won't cover all the losses from a ransomware attack, or perhaps won't pay at all, especially if insurers realise that firms are neglecting to invest in solid cybersecurity defences.

A sense of moral and legal obligation seems to be another contributing factor to the decrease in payments. The security industry has long advised against paying up, as each payment funds the criminal gangs, encouraging and facilitating further attacks. Government bodies like the NCSC have increasingly amplified this message in recent times. In contrast, we found a decline in support for making ransomware payments illegal.

## Taking the opportunity to get ahead of ransomware

The best reason to stand firm against an extortion attempt is that the firm has a robust security strategy to minimise the damages, including a strong recovery and remediation plan hinging on reliable data backups, and is confident it can deal with the incident itself, preventing it from becoming a disaster.

Unsurprisingly though, most firms increased their security spending after suffering an attack. When an incident can cost millions of pounds and cause severe reputational damage, this can very much be a case of closing the stable door after the horse has bolted.

Although the decline in the volume of attacks is a positive trend, it is important for organisations to be proactive and keep ahead of the ransomware threat. Ransomware gangs are using this time to improve their code and port it over to modern languages, so the next wave of ransomware variants is likely to be more damaging.

Firms should aim to reduce the chances of an attacker infiltrating their systems by improving their identity security, particularly when it comes to privileged access.

Most attacks rely on hijacking privileged accounts to infiltrate the network and finding the most valuable assets to steal and encrypt. Identifying and securing these accounts with privileged access management that follows both a zero trust strategy and a least privilege approach will go a long way to harden defences, reducing the threat posed by a compromised account. Taking the opportunity to strengthen identity security and prepare a reliable recovery plan now will ensure a business can act swiftly and confidently when an attack does come their way. ■



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# Hyperconnected mobility – myth or reality?

Matthew Napleton, chief commercial officer, Zizo

**B**usinesses have been harnessing the power of technology to connect individuals for decades. But the speed with which hyperconnectivity is now being imagined, delivered, and monetised raises both inspiring possibilities and very significant challenges – cultural, political, and technical.

Retailers are actively considering the power of hyperconnected humans to deliver direct to an individual based on their location data. With the rise in drones and robots, the goal is no longer to optimise the last mile of delivery, but the last metre.

Adding location data to AI will transform the way people interact not only with suppliers but machines. Rather than enjoying the benefit of using an app to remotely turn on the heating while travelling home, hyperconnectivity will ensure the system anticipates your needs based on behavioural patterns and turn on the heating automatically as you approach your destination. The hyperconnected vision is that every human and machine interaction and touch point will be captured, collected, and monetised.

## Data misuse

The speed with which wearable health tech has been adopted – and the way that personal health data is now routinely monetised – highlights both the power of preventative care and the very different attitudes globally to data usage and privacy. It is one thing to use a fitness tracker to capture work-out zones and calorie usage; quite another to use FDA approved watches that can detect falls, arrhythmias, and record electrocardiograms.

The latter information, if linked to a healthcare provider, can empower a rapid shift towards proactive care that can improve patient outcomes. It is also predicated, however, on the sale of highly sensitive patient information to third parties.

But how many individuals recognise the difference between the Fitbit that is helping their 'couch to 5k' efforts and a medical device that is capturing the most personal of health data? How many understand that this information is being continuously uploaded to a central location, moving across thousands of miles of connected infrastructure?

## Infrastructure shortfall

Businesses cannot ignore the fundamental lack of infrastructure and its inability to support the planned scale of hyperconnected activity. The current infrastructure may support 1,000 different apps and the associated data, but it certainly can't support a ten, hundred or thousand-fold increase.

Hyperconnectivity has the power to provide citizens with vital access to services. But with the current centralised 'catch all, store all' model, a pizza delivery order will have the same priority as a request for emergency services – and if the system is overwhelmed, both will fail to reach their destination. It is simply not possible to continue with this attitude that every business can collect every single piece of information, including location, about its customers / equipment/ delivery vehicles and use the resultant knowledge to provide the best service.

If hyperconnected solutions are to realise anything close to their potential, there are

essential changes that must occur. The centralised communication model is not sustainable and must be replaced by a distributed approach. Data can and should be held locally, for example. It is also essential to break the domination of the major telcos: hyperconnectivity cannot be delivered while these behemoths control every aspect of the communications infrastructure.

## Local data for local services

The distributed approach which is scalable, practical and deliverable, reinforces the value of local data for local services.

It works for health data, for example, because many health outcomes are treated within the local health service. There is no need for every piece of data to be collected and transmitted to a central location. But today, where is the local ecosystem of information that allows the end user to have that data wherever they are, whenever they need it, with their own personal choice?

A focus on local services should also reinforce the need to consider priorities. The hyperconnected world unleashes an extraordinary array of opportunities – but just because you can, doesn't mean you should. Yes, it is amazing that in a

hyperconnected world a drone could deliver a sandwich to someone on the golf course who can't wait until they get back to the club house. But when capacity is limited – should that really be an option?

The world is moving blindly towards hyperconnectivity, as businesses trial ideas and tap into new revenue streams. But success will bring the entire connected world down: it is simply not possible that all these services can be made available to every individual, all the time. If thinking doesn't change fast, the hyperconnected model could fail badly. ■



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# Connecting the NHS from within

**Maintaining connectivity within hospitals has always been a challenge – here's why**

**A**nyone who has spent much time in hospitals will have noticed the huge range in quality of connectivity from building to building and room to room.

Factors including budget constraints, legacy systems, regulatory and security considerations, and interference all contribute to what can be a shoddy experience. The buildings themselves are another common cause of connectivity challenges.

"The biggest factor is building design – as with many modern buildings, they must be built with sustainability in mind," says Jamie Duncan, group marketing director, The Clarus Networks Group. "Materials such as concrete, steel, and Low-E glass, although excellent for energy efficiency, actually block cellular signals from penetrating the buildings."

"And with an estate often being made up of several different buildings spread across a campus, this adds another complicating factor to mobile connectivity," adds Simon Frumkin, CEO, Freshwave.

Hospitals also house MRI machines,

X-ray machines, and other electronic devices that generate electromagnetic interference that disrupt mobile signals, says Duncan.

"And because hospitals tend to be high-footfall places, the WiFi is often overburdened, making it unsuitable for critical communications, especially when people are on the move around the building or campus," adds Frumkin.

Chris Quinn, solution architect, TNP, says that, with the explosion of mobile and wireless devices in use by both NHS staff and patients, WiFi deployments are no longer fit for purpose.

"The latest WiFi platforms utilising cloud-based AI/ML to monitor service levels delivered to clients can streamline support activity by identifying issues and offering automated resolutions, reducing the workload of NHS IT teams," asserts Quinn. "But WiFi alone won't solve the problems – WiFi needs to be underpinned by a high-performance wired network that provides the level of segmentation and security to protect sensitive data."

Frumkin agrees that WiFi will never be good enough for critical communications; "even WiFi 6, because it uses unregulated spectrum. That means that there are lots of people using the spectrum in an unregulated way. People next door could even be using it! WiFi also lacks the mobility function of mobile, which means that the signal can drop in and out as someone moves around a building."

"Patients, healthcare professionals, partners and visitors have become accustomed to fast and reliable connectivity outside of healthcare settings, but as the NHS accelerates its own digital transformations, access to high speed and secure connectivity will unlock value from any digital transformation," adds Richard Malizia, business sales director, Glide.

## Putting patients at risk

Unreliable connectivity can have a shocking effect for everyone in the building.

"It can put patients at risk if staff can't be located," explains Frumkin. "It reduces

staff productivity, as they spend time trying to get on the network to complete a task as simple as updating electronic patient records. It holds back productivity gains."

Moreover, patients miss out on being able to connect with friends and family. "For patients, no mobile coverage means they cannot contact loved ones, or access mobile data for entertainment during long stays in hospital. For staff and patients, this can have a detrimental effect on their wellbeing," says Duncan.

There are several initiatives targeting the digitisation of the NHS, including the 2020 announced NHS Long Term Plan, which outlines a mobile-first digital transformation strategy. With the phasing out of DECT phones and pagers, mobile devices are key to many aspects of service delivery, including A&E support.

"However, poor mobile coverage means that staff cannot access vital voice and data connectivity, in many cases having to leave the building to make a call – this can lead to delays in critical information exchange, resulting in potential patient



care errors and compromised patient safety,” says Duncan.

For NHS leaders working on digital transformation, assured connectivity is essential, agrees Frumkin: “mobile connectivity is the platform on which an infinite number of services can be built.”

The NHS Digital Cloud First approach, meanwhile, dictates that digital services should move to the public cloud unless there is a clear reason not to do so, to enable emissions reductions and reduce infrastructure deployment times.

However, “NHS Digital’s Cloud First approach and the increasing centralisation of services across NHS Trusts will place increasing demands on wide area connectivity, requiring high-bandwidth, low-latency connectivity between sites and data centres and high-speed internet connectivity,” says Quinn. “Legacy connectivity contracts with a single infrastructure supplier often do not deliver the full range of the latest technology solutions in a cost-effective way.”

Malizia believes that all IT and network managers should centre their efforts on four key outcomes for their organisation: “they should start with ensuring agility and high-performance managed network services reach the edge of their organisation network. They should also make sure they can handle unexpected events, reduce risk, and drive sustainability with high-availability connectivity. The ability to gain near real-time, data-driven management insights into their organisation’s network operations is also crucial. And finally, creating agility while maintaining their security posture across the full networking environment.”

### Digitising the NHS

According to Malizia, some healthcare settings are beginning to adopt their own version of ‘Digital First’ - adding new technologies around video clinics and emerging AI diagnostics.

“However, failing to lay the network foundations will only cause them to fall further behind,” says Malizia, indicating that a ground-up approach is an absolute must.

“With the recently published Wireless Infrastructure Strategy including ‘our new hospitals will be 5G or equivalent wireless enabled, enabling us to take advantage of cutting-edge healthcare innovations,’ IT leaders in NHS Trusts will no doubt be considering their indoor mobile connectivity options,” opines Frumkin.

As such, according to Duncan, there are several aspects IT managers should consider when addressing poor connectivity:

**Regulatory compliance** - The market has been flooded with domestic-focused mobile repeater products that are not Ofcom approved, making their use illegal.

**Compatibility** - IT managers must consider compatibility with required frequency bands and technologies used by mobile network operators (MNOs) in the area.

**Future proofing** - The scalability of the connectivity solution, ensuring that it can accommodate increasing network demands and the potential for future expansions or upgrades, should be considered.

“The importance of connectivity is only going to increase in years to come, so IT managers must ensure they can deliver assured connectivity that meets their needs today and can also be built on for at least ten years into the future,” agrees Frumkin.

NHS IT Teams are under pressure delivering business as usual services, so engaging with the right partner offering a

holistic range of network services across LAN, WAN and cloud will be critical to help the NHS deliver the cloud and Wi-Fi services staff and patients now expect, says Quinn. “With the right planning and investment, high performance connectivity can be delivered across any new or existing NHS facilities. Connectivity can become the enabler of shared infrastructure, applications, and services across trusts at pace.”

### Connectivity by design

Connectivity by design must play a bigger role going forward.

However, scarcity of capital to fund transformation initiatives is the overarching challenge, says Malizia. “NHS trusts that can find partners to solve this CapEx challenge will be the

trusts that dramatically accelerate network transformation and will achieve it quicker than the industry benchmark.”

By incorporating robust networking infrastructure, efficient cabling systems, and wireless access points strategically placed throughout the building, planners can create an environment that supports seamless connectivity.

“It’s important for us to work with architects and construction managers to ensure that buildings are being designed to accommodate these technologies. This will ensure optimal performance of a distributed antenna solution (DAS), at the lowest cost per square metre,” says Duncan.

But it’s also possible to improve connectivity in older buildings by deploying mobile solutions.

“A working hospital is a complex environment, but it’s by no means

impossible,” says Frumkin. “We’ve deployed connectivity on brownfield hospital sites and while it takes more time than doing so in a new build, it’s perfectly possible and indeed necessary to ensure that older parts of the NHS estate aren’t left behind.”

Duncan agrees: “thanks to our passive and hybrid DAS options, which have already been rolled out to over 50 NHS Trusts in the UK, there is no need for this to be an ongoing problem for pre-existing buildings. These solutions are flexible and can be retrofitted to any type building.”

With several initiatives in place, it’s clear that decision makers are all too aware of the import of in-building connectivity for staff and patients. However, due to the scale and complexity of NHS infrastructure, resolution of every ‘notspot’ and inconsistent signal will take time. ■



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Dan Lawyer



Chris Royles



Rob Pocock

# Roundtable: achieving responsible digital transformation

The phrase on everyone's lips, digital transformation is bringing about huge change for enterprise network operations – but what does it really mean?

**Responsible digital transformation means different things to different people – what does it look like to you?**

**Dan Lawyer, CPO, Lucid Software:** The hallmarks of responsible digital transformation are both cost efficient and environmentally conscious. Organisations can fall short of achieving efficiencies by adding redundant cloud applications to their tech stack, wasting money and energy.

Since each individual application requires some level of computing, racking up multiple has a direct environmental impact. Accenture Labs predicts that software will account for 14% of the world's carbon footprint by 2040, so responsible digital transformation should be where the scope of the process is limited to only what provides those critical efficiency improvements.

**Chris Royles, field CTO EMEA, Cloudera:** There's a temptation to deploy new technologies just because they're available. But to truly digitalise responsibly, it's important that organisations make informed decisions about where transformation can benefit them the most.

Over the last few years, we've seen many organisations go all-in on cloud, only to realise that it's driven-up complexity, costs and introduced data governance. As a result, many have reconsidered and scaled back cloud usage or repatriated data back to on-premise data centres, so that they can regain control over data. This is where workload analytics plays a key role. Some workloads might be suited to the cloud as they have a more reliable, consistent level of cloud consumption, whereas others may be more unstable and fluctuate a lot more, meaning that costs vary.

**Rob Pocock, technical director, Red Helix:** Digital transformation is the integration of digital technology into all areas of a business, changing how an organisation operates and delivers value to customers. A responsible approach involves engaging and considering the perspectives of all

stakeholders. It includes actively seeking feedback, involving stakeholders in decision-making processes, and addressing concerns and needs. It is a holistic and inclusive approach which considers the ethical, social, environmental, and economic aspects of technology adoption.

Over the past couple of years, the surge in digital transformation has made cloud the centrepiece of digital experiences. It is vital to define objectives and determine what you aim to achieve when migrating to the cloud. While updating and modernising technology undoubtedly brings numerous benefits, it also introduces new risks; with the growing digitalisation of industries, the exposure to cyber threats increases significantly.

**How can an enterprise achieve responsible digital transformation?**

**Rob Pocock:** It is essential to ensure that the entire organisation, including c-suite executives, fully embrace and comprehend the motivations, as well as the associated business benefits and return on investment (ROI).

When data is stored on-site, you are responsible for its physical security, including establishing policies for physical access control. However, when migrating to the cloud, it is important to recognise that this transition will result in a loss of visibility and control over who has access to the physical location that houses your data. It is essential to be aware of the risk of these new realities when weighing up the pros and cons of such a move.

**Dan Lawyer:** Both IT and business teams must be aligned on what the digital transformation process should achieve. This starts with evaluating the tech stack. Frequent collaboration between teams reduces the possibility of cost leakages by ensuring what is implemented is needed and used.

Non-technical employees should be aware of any updates or changes of their tech stack and adjust accordingly. This may mean utilising new integrations with existing

cloud applications to better streamline work or identifying the ones no longer benefitting the company or daily workflow. As organisations move to implement cloud technologies, this management of the architecture is key.

**Can digital transformation be achieved responsibly without updating governance and reporting mechanisms?**

**Rob Pocock:** The short answer is no. When considering the decision to move to the cloud, especially if you have a specific requirement to store CRM data exclusively within the UK, it is crucial to know where your data will be stored. And don't forget, data being hosted in the UK doesn't automatically mean mirroring and backups don't leave UK waters. It is crucial to ask about data mirroring and backups and know exactly which regions are used by the provider.

**Dan Lawyer:** Digital transformation can sometimes entail new risks that must be accounted for in an organisation's governance and reporting mechanisms. New applications mean new data that can introduce previously unencountered risks. Maximising visibility of new applications and cloud environments to as many employees as possible can help mitigate these risks.

**Chris Royles:** Digital transformation always requires strong governance and reporting mechanisms – particularly now regulations like GDPR and Schrems II have changed data governance, sovereignty, and privacy requirements. With this increasingly complex mosaic of data regulations, data leaders must ensure governance is 'always-on and everywhere.'

But this doesn't mean that governance and reporting mechanisms need to be updated every time an organisation moves data to the cloud. They should have a set of globally defined data policies in place so that they can easily replicate standards across all their environments.

**What pitfalls should be avoided to achieve truly responsible digital transformation?**

**Dan Lawyer:** There is often the assumption that a successful and responsible digital transformation solely relies on the technology, without a team truly understanding its technical capabilities. This leaves managers and IT teams at risk of trying to provide solutions to problems they do not know well enough. Aligning teams through consistent communication and a collaborative process is mission-critical, however this is only the first step. Stakeholders within teams need to be empowered at every level.

**Rob Pocock:** It is important for organisations to avoid neglecting their data privacy and security, which can occur when transitioning from an office-based data centre to the cloud. The issue of physical security should not be overlooked. When undergoing a digital transformation, it is necessary to have a compelling reason for the transition. However, it is equally important to be mindful of the potential impacts on data security and access control. Not knowing who has access to the location where the data is stored can be a concern. During outages or disruptions, you won't have much visibility of how these issues are being addressed and resolved.

In addition to this, consideration should be given to the end user's digital experience. It's wise to understand things like log in, application and page loading times in advance so that accurate benchmarking can take place post migration, and any shortfalls in digital experience be understood and resolved before staff productivity is affected.

C-suite decision makers must have a full understanding of their business plan and scope of work to understand how to best digitise processes. Prioritising short-term gains without a long-term strategy can lead to disjointed efforts, wasted resources, and unsustainable outcomes. It is crucial for decision makers to align digital transformation initiatives with the organisation's mission, values, and long-term goals, ensuring that they positively contribute to achievable and sustainable growth – rather than inhibiting them. ■



# Colocation as the driving force behind IoT innovation

*Colocation can enable real-time processing of enormous volumes of data to empower IoT applications and help address the IT skills shortage. The right provider can also foster IoT innovation, such as the development of smart cities and bridge the gap between the digital and physical worlds. Bo Ribbing, senior director & head of IoT for KDDI Europe, a division of Telehouse's parent company, explains how colocation is critical to the success of IoT innovation for organisations.*

**T**echnology innovations have transformed industries. Cloud computing has made the instantaneous access of data possible, and automation has led to newfound efficiencies. These developments have opened several new opportunities for businesses, and the pace of change is unlikely to slow as superfast 5G begins to reveal its true potential. Enter the age of the Internet of Things (IoT), which has allowed organisations to connect a range of devices across diverse local and global networks.

This technology helps connect the digital sphere to the real world we live in, providing the opportunity for more personalised customer experiences, enhanced operational efficiencies and faster processes. These abilities will only become more accessible as the number of connected IoT devices worldwide grows to over 29 billion by 2030.

Businesses need to consider several factors to truly harness these capabilities, however. To start with, the appropriate infrastructure foundations must be established. To make this happen, systems need to be moved to the cloud and legacy IT infrastructures need to be modernised. Organisations can then make the best use of connected devices and IoT applications.

## The potential of data

A key benefit of an IoT-driven business is the ability to access low cost and low latency application performance, but this can be difficult to bring to fruition. To gain the most from incredibly powerful IoT applications, a solid infrastructural foundation must enable enormous volumes of data to be ingested and processed in real-time. The other consideration is bandwidth, which must be sufficient to bring big data into the fold for analysis and help drive efficient decision-making. As IoT data processing increasingly

moves to the edge, this ability will become even more important.

IoT implementation as an undertaking is both complex and unique and is usually hindered by two key obstacles. Legacy systems, which are held back by scalability and flexibility, typically prove to be a consistent barrier for businesses. For example, products brought into the organisation over ten years ago will likely lack the agility required to process, store, and analyse the huge volumes of unstructured data that require attention. Simultaneously, skills shortages are leaving wider gaps that prevent the business from fully engaging with IoT technology and reaping the benefits.

In this context, the gaps in the IoT landscape are likely to feel more like chasms. To bridge them, today's data centre colocation providers are ideally placed to deliver a broad spectrum of IoT solutions that business needs. For example, they can enable strategies to manage, store and organise big data and low-cost connectivity, as well as provide a helping hand to steer businesses through the implementation as needed.

## The evolution of colocation

Colocation data centres are a pivotal cog in the IoT machine. They help organisations realise the unique and far-reaching benefits that IoT technologies can provide. In a practical sense, colocation can offer and maintain the connections needed to support IoT. It can also enable businesses to raise the drawbridge to protect against increasingly common and sophisticated cyber threats such as malware and ransomware.

The value of colocation is evolving. Beyond benefits such as the secure storage of critical data and the ability to access strategic connections, it's also transforming

the IoT world. Organisations can access efficient and flexible means to both manage and analyse the huge amounts of IoT sensor data required to work with supply chains, power grids, factories, distributed products, and cities.

Smart cities are no longer a vision of the future, and utilities, services, security, and transportation are all being brought together by IoT technologies. The UK has taken significant steps towards smart city development by investing £5 billion in 2020 to make gigabit-capable broadband available nationally, with a further £50 million in 2021-22 to demonstrate the benefits of 5G.

For the businesses that have taken steps to bring IoT into their wider models, network connectivity will need to grow to match requirements. For example, an interconnected mesh of both international and regional access hubs will be needed to enhance hybrid cloud strategies via colocation networking. The ultimate objective will be the transferring of data across the shortest path via the most cost-effective means.

## Choosing the right data centre provider

A carefully chosen colocation data centre provider will benefit organisations in several ways.

Firstly, they will help empower teams to push resources out to the edge and bring the capabilities of the data centre to customers thanks to cloud and IoT innovations. This will prove to be pivotal to business success in the years to come as organisations require instant access to critical data.

With most IoT platforms and applications today consisting of 'as-a-service' and 'cloud first' innovations, any business looking to benefit from scalability will need to move



its data into the cloud. This is due to the rapidly growing number of IoT platforms and application providers in operation today, with this level due to expand in the future.

Senior leaders and their organisations can draw on the capability of trusted colocation providers to both capitalise on storage and compute capabilities in the cloud, but also on the 'anytime, anywhere' interconnectivity to as-a-service providers as needed. Businesses are then ideally suited to achieving the necessary scale to bridge the gap between the digital and physical worlds and foster business value for the future with IoT. ■

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# Preventative maintenance for Scotland's waste water plants

The UK's waste water industry has been under scrutiny because of the impact of sewer overflows and unconsented discharge – and the resulting pollution – on communities, wildlife, and the environment. Waste water treatment is essential to a healthy environment, but for utilities, the challenge is how to maintain and improve treatment standards at a lower cost.

## Preserving Scotland's water resources

Scottish Water is responsible for preserving and sustainably managing the country's water resources, and ensuring an affordable water supply and reliable waste water disposal.

Scottish Water sought to move from a scheduled maintenance approach to

preventive maintenance, with a solution that would improve maintenance efficiency and reduce the risk of downtime in its treatment plants, which in the worst case could cause the overspill of sewage into natural water bodies.

Siemens' condition monitoring solution, designed and implemented in cooperation with several partners, serves as a lighthouse project for preventive maintenance. The main objective was to prevent unplanned asset and plant downtime in Scottish Water's waste water treatment plants. By monitoring the condition of assets with advanced algorithms and using real-time data, plant operators can know in advance when an asset is likely to fail due to wear or damage, providing the opportunity to proactively fix the issue before an unexpected breakdown occurs.

Preventive maintenance is an essential

tool to increase plant availability and asset reliability – but it is also a lever to reduce operational costs. The ability to schedule maintenance allows plant operators to reduce expenses for overtime work to repair a critical asset and for the expedited delivery of spare parts. In waste water treatment, there are some assets that are critical to plant operation, so when these assets fail, waste water must be transferred to another plant or transported in and out while the plant is unable to process it. Preventive maintenance will significantly reduce or eliminate all these costs associated with unplanned downtime.

Moreover, monitoring asset health brings additional benefits such as greater transparency into energy consumption and energy efficiency, helping plant operators cut their costs even more.

## Facilitating digital transformation

Today, most assets in waste water plants are run to failure. One reason for this is that utilities are often concerned about the risks associated with introducing digital technologies into their operations – in some cases due to a lack of in-house resources for digitalisation and IT/OT integration.

To enable the digital transformation of its operations, Scottish Water needed technology that was scalable, secure, and easy to install, providing cost-effective monitoring on critical national infrastructure. Accordingly, Siemens delivered the Siemens Xcelerator business platform, which supports its partners and users with a curated portfolio of hardware, software and services, a partner ecosystem, and a marketplace that speeds up value creation through digitalisation in industry, buildings, grids, and mobility.

Together with Capgemini and

Processplus, Siemens designed a solution that can be easily transferred and scaled up for other plants and systems. What should drive the design of any predictive maintenance solution is an assessment of how critical an asset is to the process, followed by identification of the ways in which the asset could potentially fail. The monitoring solution should then ensure coverage of those failure modes. Siemens has codified this insight into a series of templates that reduce the deployment effort at future sites in Scotland or for any other waste water operator. The solution helps Scottish Water embrace predictive and preventive maintenance to avoid asset failures and enables advanced process optimisation.

"The system has been up and running now for just a few months, and we are already starting to realise some of the benefits, having months of early warning on our critical equipment, our pumps, and our aerators," said Ross Brand, program manager at Scottish Water.

As a result, Scottish Water is confident that the investment will enable it to meet its targets of a 5-15% increase in asset life and a 10% reduction in the cost of responsive asset repairs. The project has not only provided Scottish Water with an open, easy-to-implement condition monitoring system, but the solution can also be scaled up to include more plants and assets. To date, more than 350 assets at 17 sites have been connected to the condition monitoring solution, and more will follow shortly.

"This type of collaboration and being able to work with the technical expertise of Siemens helped us to deliver a scalable solution that we can now take across multiple assets, in both water and waste water," said Nathan Wiold, waste water operations manager at Scottish Water. ■

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# NB-IoT – solving water leaks from the very first drop

**L**eaksafe provides water leak detection and prevention systems for all types of commercial and residential buildings. They work with property owners, developers, facilities managers, and construction companies to detect water leaks or burst pipes and immediately shut the water off. They not only help customers prevent property damage but also minimise water waste to enhance sustainability.

### It all starts with a drop of water

Leaks can take place anywhere water is running in pipework or appliances – kitchens, bathrooms and cylinder cupboards are all potential hazard sources. While a burst pipe is immediately evident, other types of leaks can remain invisible and go undetected for months. If property managers become aware of the problem only when water has already

got into the fabric of the building, they usually have to deal with extensive damage. And it's not a unique scenario: at any one time, 1 in 300 homes in the UK are at the risk of suffering a significant water leak.

Last year, the insurance industry paid out almost a billion pounds for water leak damage. Now, many insurers are insisting that property owners should take the necessary steps to mitigate the risks. If a leak isn't detected in time, it may lead to increasing insurance premiums or excesses. If this problem escalates, the owner may not be entitled to be insured against water leaks.

### Winning the race against water and time

Burst pipes are easy to notice but most insurance claims come from low-level leaks which slowly seek into the fabric of

buildings. Many leak detection products can detect if there's a leak in the property, but the owner must call a specialist to trace it.

That's why NB-IoT is a game changer – Leaksafe can determine the moment a leak starts and its exact location. NB-IoT allows them to give property managers that precise information so that they can isolate and repair the pipes before the incident leads to significant damage. As NB-IoT doesn't rely on WiFi, they can have peace of mind that no leaks remain undetected due to connectivity issues.

Owners and property managers need to be prepared to deal with leaks. NB-IoT ensures that they can always keep an eye on their properties no matter where they are. If a Leaksafe NB-IoT device like WaterComm is installed under the kitchen sink and gets wet, it immediately sends a message to Leaksafe's data platform using Vodafone Business NB-

IoT. The owner or property manager gets an alert via SMS, email or an app and can investigate the issue in real time using the client dashboard. NB-IoT not only helps customers protect valuable assets against leaks but also reduce insurance premiums as insurers reward their policyholders for proactively managing escape of water risks.

"Vodafone is a great brand – it's reliable, robust and has great capability. That's simply why we chose them," affirms Andy Welch, senior business development manager at Leaksafe.

Leaksafe is planning to continue its NB-IoT journey with Vodafone Business to incorporate IoT into all their products and provide their clients with the most efficient leak detection solutions possible. They'll also use NB-IoT to help their customers become more sustainable by monitoring and reducing their water usage. ■

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# Saving lives with AI

*Duncan Swan, chief operating officer, British APCO*

**T**he use of artificial intelligence (AI) by public safety agencies is growing rapidly. After all, AI is the science of making things smart – and if by being smarter we can save lives, speed up decision making processes, and achieve the best possible outcome in emergency situations then why wouldn't AI become all pervading.

In all walks of life, the use of AI presents regulatory and ethical challenges. Public Safety is no different. Working within robust ethical frameworks the benefits will be huge. But even where AI is a valuable tool in the world of Public Safety, there will always be a human in the loop making the final decision. Fundamentally, AI shall augment, not replace human decision making.

Europe and the United States have their own emergency number associations, EENA and NENA respectively – and at each of their recent annual conferences AI was a key topic in both conference papers and out on the exhibition floor. AI is having a transformational impact on public safety – not forgetting that early forms of AI have been used for over 20 years in honing predictive algorithms to deliver faster emergency response.

The world over, voice communication remains the primary means for citizens asking the emergency services for help. And AI can play an important role here – improving voice recognition for those with impaired speech or detecting a foreign language. Natural language processing allows machines to understand words the way that humans can using rule-based systems and machine learning techniques – all core elements with AI.

Project Euphonia is a Google Research initiative focused on helping people with non-standard speech be better understood – for example, those with speech impairments caused by neurologic conditions such as stroke, multiple sclerosis, traumatic brain injuries and Parkinson's disease. The approach is centred on analysing speech recordings to better train speech recognition models – with the key focus on accessibility. And we are seeing control room suppliers starting to integrate live audio translation into their control room platforms. Anything that can help the emergency call taker better understand the call for help will be an asset – and help get a responder to an incident faster and ultimately save lives.

The emergency services control room sits at the operational core, interacting with citizens and responders alike. Voice communication is captured and recorded; data entered automatically or manually; interactions noted. The ability to capture conversational data in real-time provides a powerful resource. The emergency call taker or dispatcher can search on key words to quickly get to the right point in a conversation; post-call analysis will help understand demand drivers and trends.

Dealing with an emergency incident increases the physiological and environmental pressure, which only builds with the desire to achieve the right outcome as emotions come into play. AI has a role in these situations in helping to reduce data overload – allowing control room staff to focus on the information they need, in context. Enhanced decision making can trigger specific questions for the call taker to ask – based on agency policies set around predictive data where keywords or voice analytics identify a call as highly likely to be, for instance, mental health related. Or AI can help to fill operational blind spots in complex, unfolding emergencies, providing ongoing assessment to provide actionable insights that may otherwise not be identified.

Machines process huge amounts of data faster than humans can and are able to learn to constantly improve – being able to analyse data efficiently and establish patterns (including voice and video analysis), will lead to faster resolution and achieving the right outcome sooner. Serious incidents – such as multi-vehicle road traffic collisions – have a major impact on emergency control rooms with often hundreds of well-meaning callers overwhelming call takers. At the same time, citizens experiencing unrelated emergencies struggle to get through as call queues grow and response times increase – and in the UK

as is the case in many other countries, callers who hang up in frustration must be called back to confirm that they are ok and not in need of emergency help. In the United States, we are seeing suppliers helping to solve these issues with the help of AI to provide call triaging. When call volume spikes are detected, the call handling system automatically begins to triage calls, advising callers that the emergency agency is aware of the incident. It also sharply reduces the problem of abandoned calls – reducing the need for additional follow-up calls.

And we are starting to see AI incident detection and verification where emergencies

are proactively identified, agencies made aware, and first responders notified before the first emergency calls are received – but this level of video analysis starts to raise key questions around ethical intelligence.

It is probably fair to conclude that in an emergency, citizens would not easily accept directions from a 'non-human,' but they would almost certainly accept AI assisting emergency agencies in making better informed and quicker decisions. And if data analysis can provide meaningful insights that reduces pressure in the control room and optimises the first response then so much the better. ■

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# Data centre cooling for the modern enterprise

Martin Bradburn, CEO, PeaSoup

The famous New York skyline looked like a hellscape for the first weeks of June due to the raging wildfires spewing smoke and ash across 28,000sqkm of Canada into the United States, a large percentage of Manhattanites were literally drowning in smoke, and it was partly caused by the uptick in global temperatures attributed to manmade climate change.

Data centres underpin many critical industries including healthcare, government departments, and financial services. The exponential growth in the digital world has seen many solutions touted. Geographical location (like with ping and latency) can play just as much a part as the age of a data centres infrastructure.

Energy costs associated with data centre cooling are huge, in fact, it is estimated that the industry consumes 1.5% of globally produced electricity (IEA), based upon kWh - that's more than Ethiopia, Haiti, Rwanda, and Tanzania combined.

This is predicted to rise in the coming decades as cloud services, edge computing, IoT, and artificial intelligence (AI) are integrated into everyday life, very much like the internet before them. This rise in usage will need to be counterbalanced by improved cooling methods as there are inefficiencies baked into almost all data centres.

Older data centres are typically environmental outliers due to the scattergun nature of the technology in them and the real estate they

occupy. Compared to larger, modern facilities, they are inefficient, air-cooled and, generally, like a lot of technology, out-of-date.

Air-cooling technologies, from calibrated vector cooling (CVC) to free cooling, maintain the inherent inefficiencies associated with the first generation of cooling technology – they require a lot of energy and introduce contaminants (like dust) into the data centre, and waste heat into the environment.

Mismanagement of cooling systems in a data centre results in significant detriment to the hardware, including servers and data storage devices. These are often homes to critical digital infrastructure, like banks, and any downtime or failing in the components can result in large fines from regulators or deeply dissatisfied consumers, as we see with internet banking outages and, even more seriously, data leaks, hacks and breaches.

Innovators in the space are impacting on the efficiency of data centres through liquid immersion cooling technology. Immersion systems involve submerging the hardware in a non-conductive dielectric fluid within a leak proof case. The dielectric fluid absorbs heat more efficiently, the vapour produced further aids in cooling as it is recycled back into the system. This technology runs every server with 20% less power for the same performance that it does in air. Using 20% less power also means

they're producing 20% less emissions too. There's no air contamination and oxidation of components is equally negated.

The further benefits of liquid immersion technology include no noise pollution – important for employee wellbeing. Increasing rack density enables a smaller physical footprint for the data centre. This also increases computing

and hot spots, something which air cooling cannot replicate. Additionally, heat waste reuse is possible where outgoing heated fluid can be diverted into an external heating system for reuse. This creates a circular economy (of use) which benefits everyone.

To tackle the serious business of data centre cooling and what technologies are going to have

**“Energy costs associated with data centre cooling are huge, in fact, it is estimated that the industry consumes 1.5% of globally produced electricity (IEA), based upon kWh - that's more than Ethiopia, Haiti, Rwanda, and Tanzania combined.”**

power per rack – limits can be pushed towards 100kW per rack. These are very impressive results considering traditional cooling methods only reach 25kW.

Energy requirements are lower when compared to air cooling which needs a significant amount of power. This leads to lower costs and a cleaner environment if renewable energy sources are used. Liquid immersion cooling offers comparatively higher performance too due to the elimination of thermal shutdown

a true impact on the current business model, big (and small) players in the cloud computing space will have to continue to move away from air-cooling when they plan and build the hyperscale data centres of today, let alone tomorrow.

Climate change, population migration from the countryside to cities, new emerging technologies and other factors which drive changes in human behaviour will see the waste heat produced from data centres put to practical use, or eliminated, in the UK. ■

## PRODUCTS

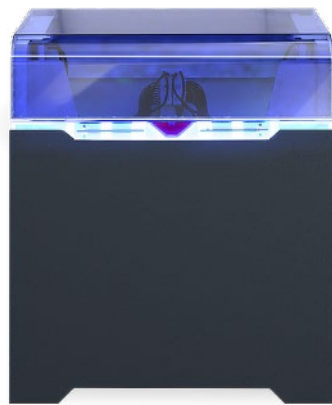
**I Asperitas'** Immersed Computing offers benefits for all types of data centres and directly decreases costs. Both AIC24 modules can be fully equipped with 24 server cassettes allowing for high performance and density compute. The natural driven fluid circulation allows for warm water cooling and therefore climate independency. At the same time heat reuse can be enabled in the most optimal way, with 100% of IT energy ready for reuse on high temperatures.

Asperitas has two AIC24 solutions, for 15" and 21" sized servers. Both offer a 50% energy footprint reduction, up to 40% more CPU performance, and an 80% physical footprint reduction. The solutions use natural convection driven circulation; heat reuse potential is optimised; climate independent with warm water cooling; and integrated monitoring and control.

The AIC24-15" ready has an IT capacity of 24\*1U, 15" servers, 22/44kW fully redundant electrical capacity, 60kW (technical), 32kW (typical) cooling

capacity, and ASHRAE W3 solution footprint of 23kW/m<sup>2</sup> at 32°C.

The AIC24-21" ready, meanwhile, has an IT capacity of 24\*1U, 21" or 22\*10U, 21" servers, 44kW fully redundant electrical capacity, 60kW (technical), 32kW (typical) cooling capacity, and ASHRAE W3 solution footprint of 18kW/m<sup>2</sup> at 32°C.



**I Iceotope's** new KUL RAN, an ultra-resilient and highly-energy efficient precision liquid cooled server solution, was recently launched to address extreme edge deployment challenges.

KUL RAN is a new 19-inch short-depth rack form factor with HPE ProLiant DL110 servers and 4th Gen Intel Xeon Scalable processors optimised for high-density, low-latency edge, virtualised RAN, and 5G services. The solution fits to existing deployed infrastructure.

KUL RAN is specifically designed for telco and harsh edge deployments to meet the need for reliable data processing installations close to the point of use in the face of a range of challenges from power constraints to service accessibility, as well as local environment and ambient weather conditions.

KUL RAN delivers up to a 40% power saving compared to other edge servers in its class. Precision liquid cooling removes nearly 100% of the heat generated by the electronic components of a server, reducing energy consumption and eliminating water consumption.

KUL RAN has been created as a 'fit and forget' solution, for reliable operations with significantly fewer service visits, greatly reducing the OpEx burden on operators. It can be installed, removed, and replaced thanks to its sealed chassis. Its IP67-rated enclosure provides 100% protection from thermal shock, dust, and other airborne contaminants, keeping the housed solution factory clean throughout its operational life.

The solution also enhances server uptime in extreme conditions should supporting systems fail, either at rack or shed level. In some instances, the deployment of KUL RAN, which is designed to far exceed NEBS compliance standards, means supporting environmental control systems do not need to deliver resiliency, saving the operator both CapEx and OpEx costs.



**I Te-Tech Process Solutions** has made its reverse osmosis (RO) SAM50 RO system newly available to data centres.

Data centres have seen a steady shift away from air cooling to more efficient liquid immersion technology. However, rejecting the heat from the coolant into a recirculatory cooling system with an evaporative cooling tower consumes a lot of water, typically about 1.8L/kWh. In hyperscale data centres this could be as much as 2000m<sup>3</sup>/day. Now signatories to the EU's Climate Neutral Data Centre Pact will prioritise water conservation with an aim of a maximum usage of 0.4L/kWh by 2030.

One way of minimising water consumption in recirculatory cooling systems is by increasing the concentration factor, which is limited by water chemistry. Treating the cooling tower make-up water by RO allows concentration factors to be increased by up to 10 times, reducing blowdown and helping to minimise scale, corrosion, and microbiological problems.

But RO is traditionally energy hungry and, increasingly, expensive to operate.

SAM50 was developed by University of Birmingham spin out Salinity Solutions. It is a batch RO system with a unique energy recovery pressure exchanger and in comparison to conventional RO systems; it can reduce energy consumption by up to 50% and wastewater by up to 80%. The small footprint, modular units use standard 8" RO membranes and feature 'plug and play' installation.



**I Green Revolution Cooling's** (GRC) ICeraQ liquid immersion cooling systems from GRC can help attain unprecedented cost, performance, and space efficiencies, while achieving organisational sustainability objectives at the same time.

The minimal site requirements and modular design of ICeraQ server cooling systems significantly reduce the expense of building, running, and expanding data centres. With options ranging from our all-in-one, compact ICeraQ Micro to the space-efficient ICeraQ Series 10, and the agile ICeraQ FLEX – the ICeraQ line can support densities from 15-368kW.

With ICeraQ, the enterprise can reduce its

carbon footprint with up to 90% cooling energy savings and 10-20% lower server power draw; attain a pPUE of less than 1.03; cut upfront costs up to 50%; and scale as it grows.

ICeraQ liquid immersion cooling systems include rack(s) filled with eco-friendly, high-performance, synthetic ElectroSafe liquid immersion coolants; coolant distribution unit (CDU); cloud-based and local monitoring and reporting capabilities, with configurable email alerts; 2N redundant pumps and control systems; integrated containment with Series 102; integrated cable management; and rack-mounted service rails for easy server maintenance.







# Please meet...

**Robert Allen, director marketing & technical services, Kingston Technology**

## Which law would you most like to change?

The problem with all law is that it's open to interpretation. People get embroiled in complex legal issues, regardless of the subject matter. Because their situation is so often not black and white, it requires the involvement of lawyers and that's expensive. What I would change is not one law but the way the law is administered. I'm sure a computer could help with that.

## What was your big career break?

At the start of my career, I was in the armed forces, in the Royal Army Ordnance Corps, based in Germany. I got some experience working with servers, secure email in my role as procurement and with confidential information. When I left after six years without any kind of strategic plan but a rudimentary knowledge of technology, I decided that I would put this to good use and taught myself more. I became a Certified Novell Networks Engineer and later a Microsoft Certified Systems Engineer. This took me to Deutsche Bank in a short-lived role, then on to a video conferencing company which led me to joining Kingston Technology. I think the army inadvertently gave me my career break, but it was a journey rather than one pivotal moment.

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

I didn't have a specific plan, but I spent my education in a boarding school, my family were involved in the forces, and I think joining the army was a logical progression for me. I loved it. Everything about the army environment was so familiar to a boarding schoolboy and it helped me to grow up.

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

Three pieces of advice stand out. The first - don't judge a book by its cover - always be open-minded. The second is to be prepared. If you do your due diligence you won't have to wing it and that's a benefit. And finally, don't underestimate the task in hand.

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

Cooking. My mum doesn't want to cook anymore, she's had a lifetime of it, but I think she passed on her love of food to me. I like nothing more than bringing a group of people together and feeding them with something I've specially prepared with them in mind. It's relaxing, enjoyable and requires skills I don't use in my day-to-day job. If I was working with food I wouldn't mind where and what type of cuisine because I have worldly tastes, but I would give more credit to traditional, straightforward British dishes or colonial dishes that no longer have the limelight. My mother taught me a simple dish called Chicken a la King which is all about timing and respecting the ingredients - just chicken, onions, peppers, mushrooms, a little stock, cream, salt, white pepper, and parsley to finish. If you know what you're doing and cook it in stages, it can taste glorious.

## The Rolling Stones or the Beatles?

Woah! They're both great, but way before my time. I'm a fan of Prince and

Grace Jones. I love their music, but also appreciate them as artists. I still laugh about Grace Jones scrapping with Russell Harty on his chat show.

## Where would you live if money was no object?

It's a good question, but isn't money always an object? I've no desire to move abroad, although I love travelling, but it would be good to have somewhere with more room. I live in Hampton, the London suburb well known for Hampton Court Palace. Like many areas of London, it has a mixture of

expensive and less expensive properties and some houses that back onto the river. If money was no object, I would probably stay in Hampton but look for a bigger property in a slightly better area. But money is an object so it's fortunate that I'm actually very happy where I am!

## What's the greatest technological advancement in your lifetime?

It's all those technologies that fall under the umbrella of digital transformation. I believe that communication is the cornerstone

to success in business and tools such as email and smartphones have revolutionised how we communicate with each other. Look back twenty years and think about what we were using to support business functions - fax machines, landline phones, fixed car phones if we were lucky. Consider how long it took to do everything. Today's digital tools have transformed our lives and we've become accustomed to doing everything from online shopping to contactless payments in real-time. It's seamless and quick and it will just carry on improving with the advent of 5G and all the innovations it will bring with it. ■

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