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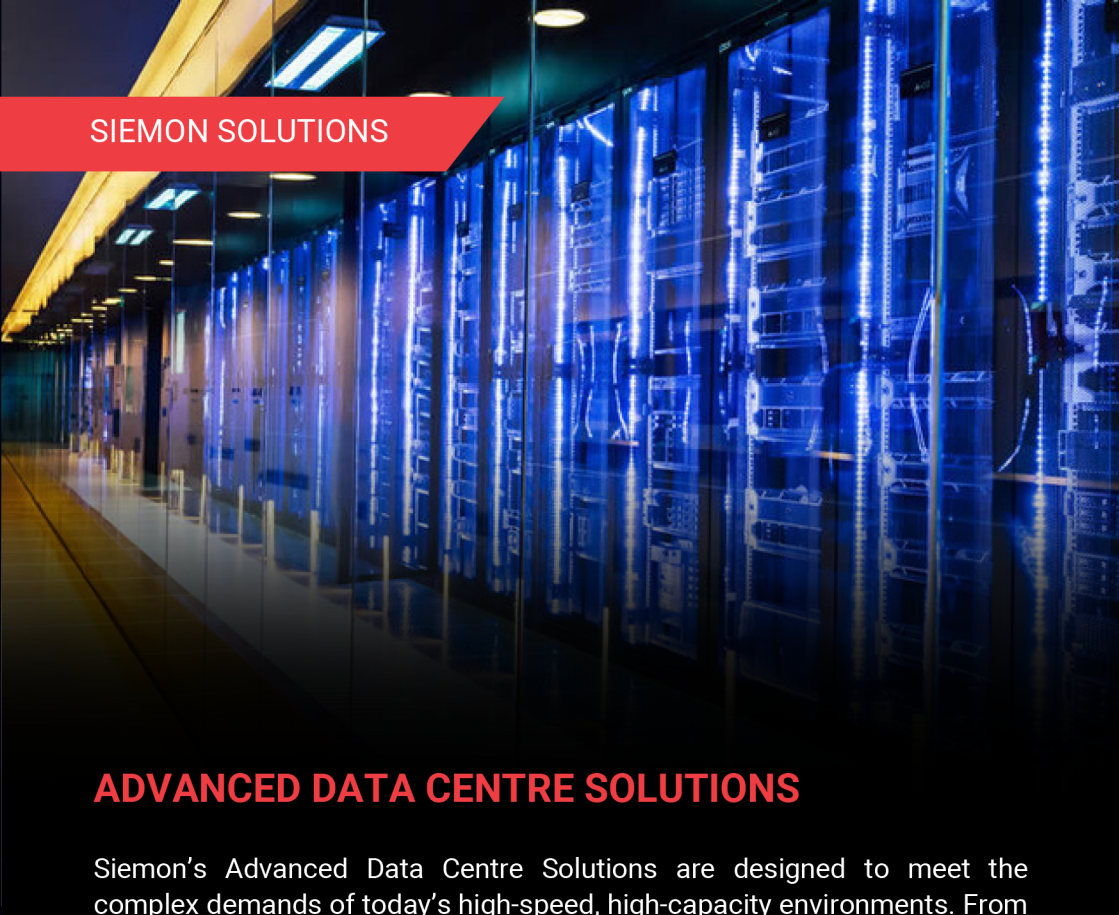

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# Don't believe the hype?

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Society's excitement about artificial intelligence (AI) and the role it is only just beginning to play in all our lives is impossible to avoid, even though it is far from achieving human-level intelligence or replacing human creativity and decision making. Over the last couple of years, however, it has had a tremendous impact on the data centre sector and conversations about the challenges it presents, especially around reliable power and the use of energy, are a preoccupation for many industry professionals.

Expectations are high for AI – but perhaps some of its capabilities are being overhyped. Could it be that AI is just another example of Amara's Law, where its short-term impact is overestimated, and its long-term effects are underestimated? In this issue's Question Time we've asked a specially selected panel of industry representatives to discuss that conundrum and suggest what the future holds for AI and data centres.

This issue also contains a special feature dedicated to the subject of pre-terminated cabling solutions. Nick Taylor of Networks Centre explains the various reasons to consider using pre-terminated cabling and when it might not be the most suitable solution, while Panduit's Michael Akinla looks at how utilising pre-terminated optical fibre cabling is a strategic step for organisations aiming to stay competitive in today's rapidly evolving digital landscape.

These are also exciting times in the area of UPS and power management technology and we have a couple of excellent articles that look at the latest developments. First up, Elliott Turek of Schneider Electric examines how, in this age of home working, gaming and reliance on our connected devices, the resilience and protection provided by a UPS should be a key component of our digital village. I then go on to interview Centiel's Louis McGarry about the challenges AI will bring with regards to energy use and management in data centres.

I hope you enjoy this issue of Inside_Networks and if you'd like to comment on any of these subjects, or anything else, I'd be delighted to hear from you.

**Rob Shepherd**
Editor

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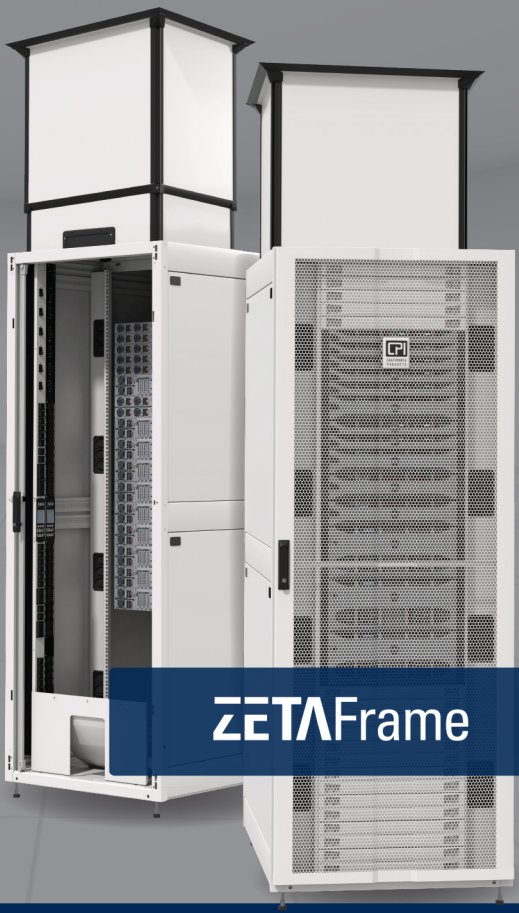


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# IBM opens its first Quantum Data Center in Europe


Ana Paula Assis

IBM has unveiled the first IBM Quantum Data Center located outside of the US. It is the company's second quantum data centre in the world and marks a significant expansion of its fleet of advanced, utility-scale quantum systems available to global users via the cloud.

Now online in Ehningen, Germany, Europe's first IBM Quantum Data Center includes two new utility-scale, IBM Quantum Eagle-based systems, and will soon feature a new IBM Quantum Heron-based system. These systems can perform computations beyond the brute-force simulation capabilities of classical computers.

Ana Paula Assis, general manager and chairman at IBM EMEA, said, 'This marks a pivotal moment for the region's technological development, demonstrates our commitment to Europe, and underscores the key role of collaboration with industry, academia and policymakers for a pan-European quantum ecosystem. This state-of-the-art facility will foster innovation around quantum computing, creating new opportunities for talent attraction and ensuring that Europe remains at the forefront of global technological advancements,'



# Quantum register reaches 1,200 neutral atoms in continuous operation

A Munich Quantum Valley research team, led by the Max Planck Institute of Quantum Optics in collaboration with planqc, has succeeded in running a register of 1,200 atoms continuously for over an hour – a breakthrough on the way to scalable quantum computers.


Johannes Zeiher

Until now, arrangements of this size have been difficult to maintain due to unavoidable atomic losses. The physicists were able to solve this problem by using a technique that allows them to successively reload new atoms into the qubit register and, in principle, to operate it for an indefinite amount of time. It is difficult to calculate quantum systems with classical computers, as they become more complex as they grow. Even a precise calculation of the behaviour of a hundred quantum particles is beyond the capabilities of most modern supercomputers.

Johannes Zeiher and his team have succeeded in integrating a kind of reloading zone into their experimental set-up and every 3.5 seconds around 130 atoms are added to the register. 'This technique of replacing lost atoms in real time is an important step towards the practical use of quantum technologies, because only through uninterrupted and longer-lasting operation of the systems large-scale quantum calculations, simulations and measurements become possible,' said Zeiher.

## Unlock Scottish power to meet data centre demand or risk UK economic growth

Building data centres in Scotland could save consumers £5bn, protect valuable data and create new jobs, according to Giles Hanglin, CEO of Apatura. Hanglin believes the UK is poised for an explosion in demand for fast, reliable and secure data.


Giles Hanglin

He said, 'In 2022, data centres accounted for just 2.5 per cent of the UK's electricity consumption. By 2035, however, National Grid chief executive, John Pettigrew, anticipates this share will increase sixfold, driven by demand for energy intensive computing infrastructure needed for machine learning, artificial intelligence (AI), quantum computing and data-rich streaming services.'

He continued, 'Building new data centres on sites in Scotland is crucial to unleash untapped opportunities for the whole of the UK. Expanding data centre infrastructure in regions like Scotland mirrors successful models seen in the Nordics, creating wealth and opportunities while aligning with the UK's push for net-zero.'



## UK ranks last in 5G internet connectivity league

The UK has ranked bottom of 15 developing and advanced international markets on both 5G availability and download speeds, according to the Social Market Foundation (SMF). It found that UK users receive 5G coverage just 10 per cent of the time, lagging behind other major economies.

The SMF has developed a 5G 'composite connectivity' league table – a measure of both the availability of 5G and achievable download speeds on the network – which shows the UK ranked last among 15 countries. SMF found that UK trails several advanced and developing markets in terms of 5G availability, measured by the proportion of time users spent with an active 5G connection. These include India (43 per cent) and South Korea (38 per cent), which are global leaders. The UK is also behind a number of its European peers such as France (20.6 per cent) and Italy (17.9 per cent).


Richard Hyde

Senior researcher at the SMF, Richard Hyde, said, 'It is concerning that the UK is at the rock bottom among several emerging and developed economies on 5G connectivity. Until it changes, this will continue to be a significant hinderance to the government's growth agenda, by denying us major productivity increases, which widespread 5G can help deliver.'

# Energy efficient data centres could save up to €25bn by 2030


Sammy Zoghlami

Research by Nutanix claims that next generation data centre architectures, including hybrid cloud and hyperconverged infrastructure (HCI), can significantly reduce energy consumption, lower carbon emissions and drive cost savings across the EMEA region. In just six years, the research found that modernising data centres with HCI-based solutions could save up to 19 million tCO2e in the EMEA region, equivalent to the emissions of almost 4.1 million cars. It could also save €25bn by 2030 from improved energy and operational efficiencies.

'Data centres are critical to the global digital economy but also rank among the largest consumers of energy,' said Sammy Zoghlami, senior vice president EMEA at Nutanix. 'In EMEA alone, data centres demand over 98TWh of energy annually, equivalent to the consumption of an entire country like Belgium. Our findings show that by leveraging HCI-based solutions, companies can make a powerful contribution to climate action, while significantly cutting operational costs.'



# Efforts get underway to deliver more energy efficient optical fibre networks

Service providers have been given a boost in their pursuit of more energy-efficient optical fibre networks that can unlock significant power savings, thanks to a new project launched by Broadband Forum. Initially driven by BT Group, Orange, Calix, Futurewei, Huawei and Nokia, the project will seek to lower energy consumption when accessing the internet.

The project titled Energy Power Saving Requirements, Test Plan, and Data Model from the Broadband Forum's Fiber Access Network (FAN) Work Area will see several Broadband Forum standards and specifications incorporate these new energy saving requirements for the industry to adhere to. 'Energy efficiency in fixed broadband equipment is essential for reducing power costs and CO2 emissions for operators and their customers,' said Hugues Le Bras, network engineer in fixed access networks at Orange and editor of the project.

He added, "As the demand for high-speed connectivity continues to rise, it becomes crucial that FTTH networks operate sustainably, ensuring connectivity empowers the end user as well as nurturing the planet. To achieve this, the new project outlines power saving requirements, power measurement monitoring and testing methods that are needed to unlock greater energy efficiency.'

# Post Office scandal journalist and trailblazer technologist honoured with prestigious IT award

Karl Flinders, the journalist at Computer Weekly renowned for exposing the Post Office scandal, and Anne-Marie Imafidon, computer scientist and founder of Stemettes, have been named as recipients of the BCS Society Medal, awarded by BCS, The Chartered Institute for IT. The BCS Society Medal is awarded annually to individuals who make outstanding contributions to using technology for societal good.


Rashik Parmar

Flinders' investigation challenged the Post Office's wrongful prosecution of sub-postmasters due to faults in the Horizon computer system.

Imafidon has dedicated her career to promoting diversity in STEM. As founder and CEO of Stemettes, she has worked with over 65,000 young people across Europe, advocating for gender balance in tech.

Rashik Parmar, chief executive of BCS, The Chartered Institute for IT, said, 'Karl's work was pivotal in uncovering one of the UK's greatest injustices. His determination to expose the truth has directly helped innocent people regain their freedom and dignity.'



## NEWS IN BRIEF

Jamie Clews of Newark-based Derry Building Services has been recognised as one of the country's leading electrotechnical and engineering services apprentices after winning the 2024 ECA Edmundson Apprentice of the Year Award. After overcoming fierce competition from two other finalists, Clews won prizes including £3,000 and an overseas study tour sponsored by Thorn Lighting.

49.7 per cent of construction global projects and 57.8 per cent of European projects had issues, claims and disputes due to gaps in skill sets and/or experience according to research by HKA. It lists an ageing workforce, a lack of investment in human capital and the failure to attract younger talent to the workforce as contributing factors.

Tech Industry Forum (TIF), a newly formed, not for profit, membership driven tech trade body, has acquired the Cloud Industry Forum (CIF) from the Federation Against Software Theft (FAST).

The critical importance of FTTH networks in the ongoing digitalisation of South-Eastern Europe was one of the key topics discussed at the FTTH Congress Balkans in Dubrovnik, Croatia. With approximately 3.827 million homes still awaiting optical fibre connectivity in south-eastern Europe, the FTTH Council examined the critical drivers of deployment and adoption within the region and how to make the most of a promising market.

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# Are we nearing the

**Hi Rob**

As we marvel at the wonders of ever-faster internet speeds and seamless global communication, few pause to consider the physical limitations of the optical fibres that form the backbone of our digital world. Can these seemingly magical threads of glass, capable of carrying vast amounts of data encoded in pulses of light, continue to shrink indefinitely, or have we reached the end of the line for this revolutionary technology? This potential obstacle could significantly impede the growth of our increasingly data dependent society, threatening the very foundation upon which we have built our modern world.

For decades, we have relied on our ability to further reduce the core size of optical fibres to quench our insatiable thirst for bandwidth. But as we push the boundaries, squeezing light into cores barely wider than the wavelength they carry, we are butting up against the unyielding laws of physics.

Current singlemode fibres, with core diameters hovering around 8-10 micrometres, are already operating perilously close to the edge. Any further reduction risks a cascade of problems – catastrophic signal loss, unacceptable distortion and a breakdown of the very principles of waveguide optics that enable light to travel efficiently within the fibre.

While ingenious engineers have devised clever workarounds, such as photonic crystal fibres and multicore designs, even these innovative approaches have their limits. As we venture deeper into the nanoscale realm, the strange and often counterintuitive world of quantum mechanics comes into play, introducing a whole new set of challenges that our current technological toolbox is ill-equipped to handle.

This predicament raises uncomfortable questions. How will we support the exponential growth of data-intensive technologies if the further reducing of fibre core sizes is no longer possible? The answers may lie in radical departures from conventional thinking.

Perhaps we need to move beyond glass altogether, exploring exotic materials with unique optical properties that could revolutionise data transmission as we know it. Or maybe the future lies in abandoning the concept of 'fibre' altogether – embracing chip-scale photonics or even

# end of the line?

free space optical communication, where data travels not through physical cables but on beams of light through the air, unencumbered by the constraints of physical media.

On the fringes of possibility, quantum communication promises instantaneous, theoretically unlimited data transfer and unbreakable security. However, this technology remains in its infancy, facing enormous hurdles before practical implementation can become a reality. It is a tantalising glimpse of a future that may yet be decades away.

In the meantime, we must maximise the performance of our existing fibre infrastructure. This means not just pushing the limits of miniaturisation but also exploring advanced modulation techniques that squeeze more data into each pulse of light, novel amplification methods to boost signals over longer distances, and smarter network architectures that optimise information flow.

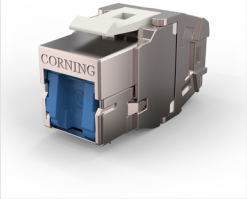
The telecommunications industry stands at a crossroads. We can either cling to incremental improvements until we reach the limits imposed by physics, or we can embrace the challenge head-on, investing heavily in blue sky research that could redefine the very nature of data transmission.

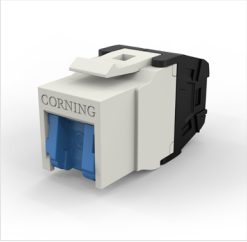
The stakes are high. Our digital economy and the future of human progress depend on our ability to move ever-increasing amounts of data quickly and efficiently. Will we rise to meet this challenge, or will we allow ourselves to be constrained by the limitations of our current technology? The answer to this question may well determine the course of human advancement for generations to come.

**Manja Thessin**
**AFL**

**Editor's comment**

This is a fascinating question. We certainly seem to be reaching a point where the physical and practical constraints posed by ever smaller optical fibres are beginning to challenge even the most advanced research and development departments. Manja makes some interesting suggestions about possible alternatives but it seems that options such as quantum communications, photonic computing and new modulation techniques should be investigated.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# Reality check

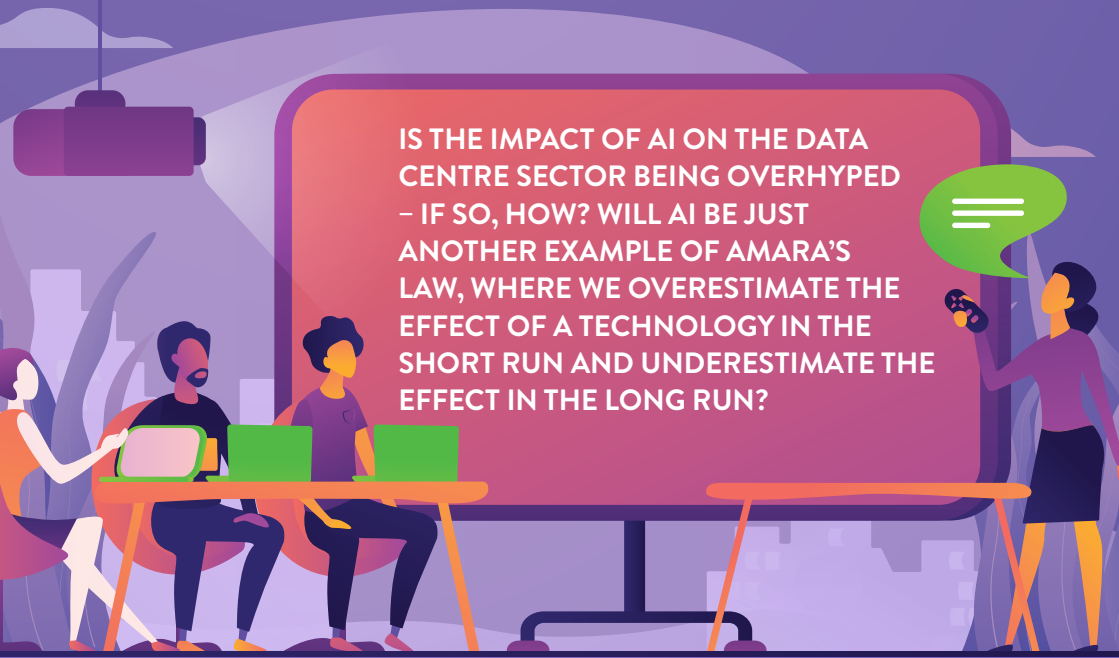
The rapid growth of artificial intelligence (AI) is affecting all aspects of the data centre sector. Inside_Networks has assembled a panel of industry experts to examine if AI's impact is being overhyped and whether Amara's Law applies to what is currently happening

AI is undoubtedly transforming the data centre sector and has introduced some significant challenges, especially around reliable power and the use of energy. This all comes at a time when new environmental reporting mandates are elevating the requirement for owners, operators and users of these facilities to act more sustainably.

But is the sensational media coverage and bold predictions about its capabilities overhyping the impact of AI? Amara's Law originates from Roy Amara, an American futurist and researcher who co-founded the Institute for the Future (IFTF) in the 1960s. He formulated the idea based on his observations of how society reacts to emerging technologies. Amara noticed a pattern – new technologies are often met with overinflated expectations in the short-term, followed by disappointment when they don't meet immediate promises. However, as the technology matures, its long-term impact is often far greater than initially predicted.

The cycle of hype and disappointment underscores the need for a balanced perspective on AI's impact on the data sector. So, to assess the current situation, Inside_Networks has assembled a panel of industry experts to discuss the issue and whether Amara's Law applies.





# MARK ACTON

## HEAD OF TECHNICAL DUE DILIGENCE AT FUTURE-TECH

I am tempted to say that the current views on the impact of AI are so far reaching that this may be a case where Amara's Law does not apply. However, thinking about it further, despite our current predictions on the huge impact of AI, we are only just beginning to consider the tumultuous impact of artificial general intelligence (AGI) or even artificial super intelligence (ASI) when (not if!) it arrives.

Our current generative AI (GenAI) systems are really rather dumb, designed for a single focused task and simply use existing data and statistical analysis to represent what humans might produce. This data scraping can increasingly result in GenAI models ingesting AI created content, resulting in recursive AI 'inbreeding', potentially even leading to model collapse, with all useful and accurate data effectively lost. Not so intelligent after all!

The advent of AGI and, ultimately, ASI are the real game changers. I don't think we can even begin to predict the economic and societal impacts they will have. In that respect Amara's Law will hold true.

AGI will be able to learn and develop solutions to entirely new problems in unfamiliar situations, without being programmed to do so and without necessarily having past experience or knowledge. ASI is yet another step forward and describes intelligence above and beyond human. In this case, the word artificial may even have to be dropped as it would simply be intelligence at an incomparable level.

Finally, I would like to attempt to answer the question asked with another two of my own. The first is, are the technologies we are creating today the precursors of the machines that will one day take human knowledge and experience to places we cannot go ourselves due to our biological limitations? The second is, will the arrival of AGI, or particularly ASI, be the potential next step of human evolution that will allow us to go beyond our biological constraints and travel beyond our own solar system? If so, then Amara's Law will be proved correct beyond any measure!

'THE ADVENT OF AGI AND, ULTIMATELY, ASI ARE THE REAL GAME CHANGERS. I DON'T THINK WE CAN EVEN BEGIN TO PREDICT THE ECONOMIC AND SOCIETAL IMPACTS THEY WILL HAVE. IN THAT RESPECT AMARA'S LAW WILL HOLD TRUE.'

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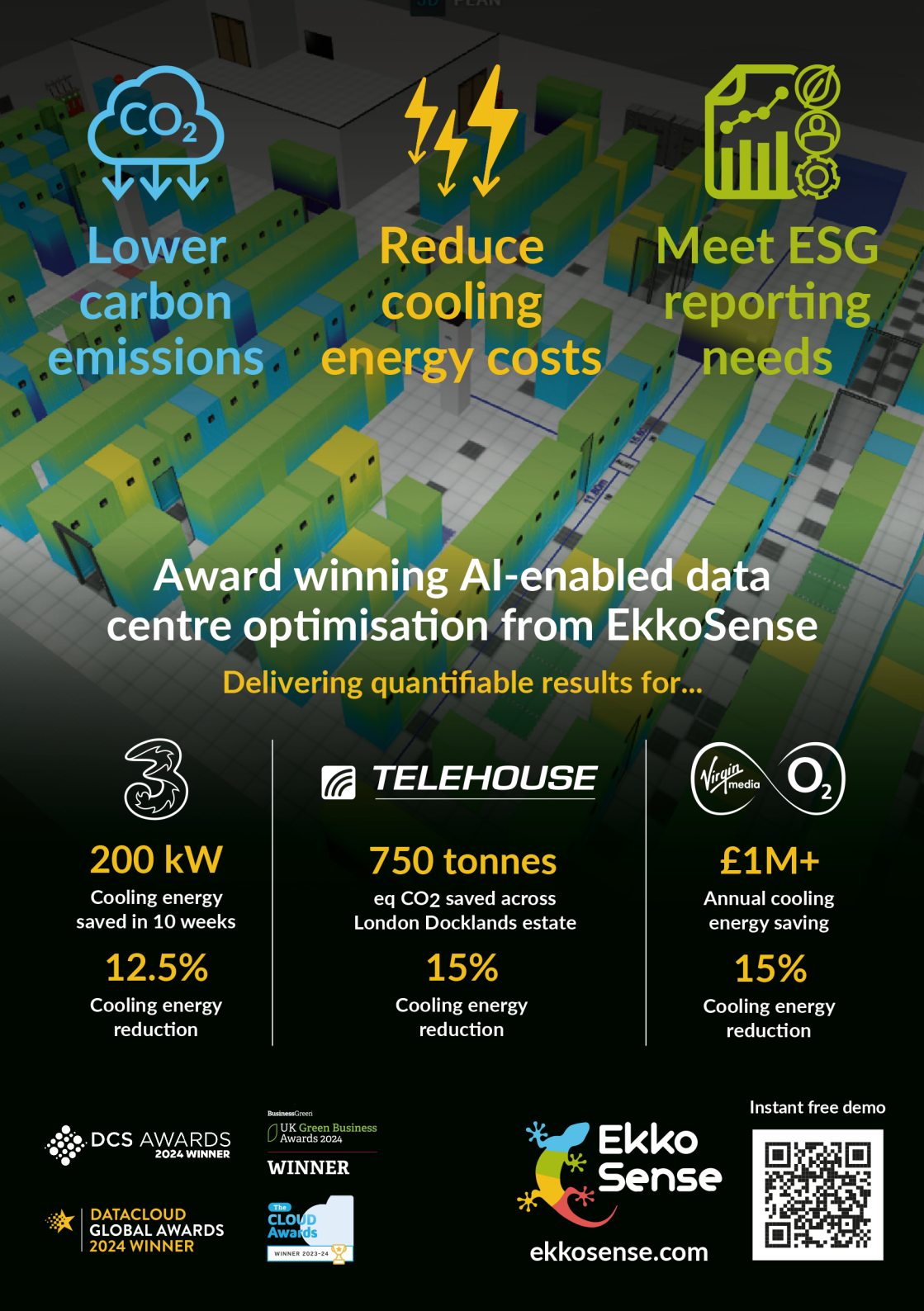

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# CARRIE GOETZ

## PRINCIPAL AND CHIEF TECHNOLOGY OFFICER AT STRATEGITCOM

I have been working with some energy producers and looking into the AI boom, and the power density requirements were surprising to me. The studies show that AI only accounts for about 20 per cent of the projected power growth regarding data centre demand. That said, AI is a very different beast and may just be the technology that breaks the cloud and reopens a lot of retired or semi-retired data centres.

People don't realise that there's a lot of AI in use around us every day. As we plan for AI in the future, we need to realise that you don't just 'drop AI in' without consequence. AI as a small application carries vastly different requirements than a large-scale GenAI project. Depending on the type of AI and stages of training models, the loads will fluctuate but will increase. But not all entities are buying into the hype – just yet. Some are sitting back waiting to see what unfolds, how it can be incorporated and what business case will drive implementation.

The problem in many facilities is that we have consolidated data centres. Singularly, the additional capacity may be absorbable. But across multiple tenants, the combined increases amongst tenants are going to require some finesse. Some roofs won't accommodate new chillers, floors are full, back-up power is insufficient, or power is spoken for by other computing equipment. Rack densities are higher. But will it all happen today?

There is certainly a lot of hype and fearmongering right now. Given the legalities, intricacies and liabilities, cumulate power demands and increased densities, the answer is to be methodical. AI in some form is here to stay and should be factored into long-term plans.

I believe that AI will be a catalyst to re-energise retired facilities to offset unanswered multi-tenant power demands. A purpose built mini-AI facility may make more sense for abandoned space, allowing AI to run without all the other data centre equipment competing for power. Do I believe that AI will be implemented in record speeds? I do not. There is a lot to be sorted out first and critical thinking is a good start.

'THERE IS CERTAINLY A LOT OF HYPE AND FEARMONGERING RIGHT NOW. GIVEN THE LEGALITIES, INTRICACIES AND LIABILITIES, CUMULATE POWER DEMANDS AND INCREASED DENSITIES, THE ANSWER IS TO BE METHODICAL. AI IN SOME FORM IS HERE TO STAY AND SHOULD BE FACTORED INTO LONG-TERM PLANS.'

# JON LABAN
FREELANCE CREATIVE SYSTEMS THINKER

The impact of AI on the data centre sector is a topic of significant debate. While AI promises transformative benefits, there are arguments that its impact might be overhyped in the short-term.

AI is often marketed with high expectations, promising immediate and revolutionary changes. This can lead to inflated perceptions of its capabilities and timelines. Integrating AI into data centres also involves substantial investment in infrastructure, training and development. These challenges can delay the realisation of expected benefits. AI solutions can be complex and may not scale easily across different data centre environments, leading to slower adoption and less immediate impact than anticipated.

Despite potential short-term overhype, AI's long-term impact on data centres aligns with Amara's Law, which states that we tend to overestimate the effect of a technology in the short run and underestimate it in the long run. Here's why:

- Efficiency improvements. Over time, AI can significantly enhance data centre efficiency through predictive maintenance, optimised energy usage and automated management, leading to cost savings and reduced downtime.
- Scalability. As AI technologies mature, they will become more scalable and easier to integrate, allowing for broader adoption and more significant impact.
- Innovation and adaptation. Continuous advancements in AI will drive innovation in data centre operations, enabling new capabilities and services that were previously unimaginable.

While the short-term impact of AI on data centres may be overhyped due to high expectations and implementation challenges, its long-term potential is substantial. AI is likely to follow Amara's Law, with its true transformative effects becoming evident over a longer period, as the technology matures and integrates more seamlessly into data centre operations.

'AI IS LIKELY TO FOLLOW AMARA'S LAW, WITH ITS TRUE TRANSFORMATIVE EFFECTS BECOMING EVIDENT OVER A LONGER PERIOD, AS THE TECHNOLOGY MATURES AND INTEGRATES MORE SEAMLESSLY INTO DATA CENTRE OPERATIONS.'


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# ADIL ATTLASSY

## CHIEF TECHNOLOGY OFFICER AT COMPASS DATACENTERS

History can teach us so much about the impact of major innovations like AI. Prior examples of Amara's Law can also help us anticipate and successfully navigate the changes AI will bring.

A perfect example of Amara's Law is the explosive growth of the internet that happened following the introduction of the first internet browser in 1994. It sparked a tsunami of creativity and funding, fuelling the dot.com bubble. It also created high expectations about the immediate impact of the technology. When the bubble burst, many people were left asking if the internet revolution was a bust.

The problem wasn't the technology. What was missing was the right infrastructure, the right workforce, the right business models and customers that were ready for change. By the early 2000s, all those ingredients were in place and a global wave of digital transformation began, eclipsing all expectations people could have envisioned during the initial bubble.

A key lesson from the dot.com bubble is that the potential of new technology cannot come to fruition until three key factors are in equilibrium. There needs to be enough capital, the right infrastructure, and labour to build it all out and run it. In the case of the internet, funding was way ahead of infrastructure, labour and customers. It wasn't until they caught up that the internet revolution could really start.

The same pattern is playing out now with AI. The excitement about AI over the past two years couldn't be higher, and there is an enormous amount of money pouring into the market. But the infrastructure to house AI servers, and the labour to build more data centres, is lagging. In the case of AI, the right infrastructure requires significant land and power, which is a well-publicised struggle. The right response isn't adding more servers to existing data centres. The data density solution doesn't work until advancements in chip technology can overcome the limitations of silicon.

Simply put, there is an imbalance right now that will slow things down until technology and labour catch up. This is likely to lead some to declare the AI revolution was exaggerated. Sound familiar?

The true impact of AI will come into focus once those underlying needs are in equilibrium, which makes workforce development and innovations in data centres and chip technology so important. By addressing those needs, we are creating the foundation for the transformative impact AI will have on the way we work and live.

'THE EXCITEMENT ABOUT AI OVER THE PAST TWO YEARS COULDN'T BE HIGHER, AND THERE IS AN ENORMOUS AMOUNT OF MONEY POURING INTO THE MARKET. BUT THE INFRASTRUCTURE TO HOUSE AI SERVERS, AND THE LABOUR TO BUILD MORE DATA CENTRES, IS LAGGING.'

# STEVEN CARLINI

## VICE PRESIDENT OF INNOVATION AND DATA CENTER AT SCHNEIDER ELECTRIC

The impact of AI on the data centre sector is not overhyped. In previous technology waves, like the rise of the internet, infrastructure was often built on speculation, anticipating the need for digital applications that had not yet fully materialised. This speculative approach led to overestimation of the short-term impact, with data centre expansions outpacing market demand.

However, AI is taking a different path. AI data centres are being developed on a 'built-to-suit' model, where large IT companies are not only placing orders but also providing forecasts and significant capital investments to expand manufacturing capabilities. This indicates a clear, intentional demand for AI-driven data centres.

Unlike retrofitting existing structures, these data centres require entirely new designs to meet rapidly evolving technological needs, particularly in server and graphics processing unit (GPU) architectures. These projects are long-term, typically spanning about three years, reflecting the complexity of the undertaking. Companies like Nvidia are pushing data centre power densities from 70kW per IT rack to 120kW, presenting new physical and technological challenges, such as voltage constraints and the need for advanced liquid cooling systems.

Manufacturers are also tasked with solving supply chain issues and designing data centres that can handle the high-density GPU power computing needed for AI applications. The rapid evolution in these designs highlights the depth of commitment and investment from tech giants. Overall, the combination of long-term financial investment, cutting-edge technology and increasing power demands demonstrates that AI's impact on data centres is substantial and well-grounded – far from being overhyped.

AI may indeed follow Amara's Law, where its short-term impact is overestimated, and its long-term effects are underestimated. Currently, AI is in its 'training mode', where models are being developed, but large-scale deployment has not yet begun.

While there are some existing applications like predictive analytics and medical diagnostics, the broader implementation of AI will likely take longer than many anticipate. The potential for AI to revolutionise processes and systems is substantial. However, the rollout will be a marathon, which will have to be trained as AI technology, much like the human brain's evolution will take time to mature and reach its full transformative potential.

'THE COMBINATION OF LONG-TERM FINANCIAL INVESTMENT, CUTTING-EDGE TECHNOLOGY AND INCREASING POWER DEMANDS DEMONSTRATES THAT AI'S IMPACT ON DATA CENTRES IS SUBSTANTIAL AND WELL-GROUNDED – FAR FROM BEING OVERHYPED.'


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# CHRIS COWARD

DIRECTOR OF PROJECT MANAGEMENT AT BCS

If it is used properly AI will likely make us more efficient. And, let's face it, in the data centre sector, where we are facing an ongoing increasing demand for capacity alongside a well-documented shortage of skilled people, this is vital if we are to to support the continuing digital transformation the world is demanding.

At BCS our short-term strategy is to look to utilise AI to automate project administration and streamline our operations, which, in turn, can release as much as 50 per cent of the time for our senior people to focus towards the development and training of the next generation of digital infrastructure professionals. The objective is to help mitigate the skills gap and this will run in parallel with our successful apprenticeship and graduate programme, as well as our upskilling and reskilling programmes.

We are also working closely with our clients, sharing updates and insights. It is clear that we are all heading in the same direction, but no-one really knows what the end point is.

There is, however, universal agreement that long-term AI has a role to play in enterprise transformation. It can be leveraged to enhance the efficiency of data centres, optimising energy use by predicting cooling needs, managing workloads more efficiently and reducing idle times for servers. Predictive maintenance powered by AI can also prevent equipment failures, thereby reducing the need for excessive cooling. This is good news, as the sector will benefit from greater efficiencies and cost savings, driving improvements in services.

Will it create a better service for our clients? Will it foster a better working environment for our people? Will it help to alleviate the skills shortage and enable us to deliver the digital infrastructure the world needs as it continues to develop? The answer is yes, I believe it will, and that shouldn't be underestimated.

'THERE IS UNIVERSAL AGREEMENT THAT LONG-TERM AI HAS A ROLE TO PLAY IN ENTERPRISE TRANSFORMATION. IT CAN BE LEVERAGED TO ENHANCE THE EFFICIENCY OF DATA CENTRES, OPTIMISING ENERGY USE BY PREDICTING COOLING NEEDS, MANAGING WORKLOADS MORE EFFICIENTLY AND REDUCING IDLE TIMES FOR SERVERS.'

# To maintain or not to maintain

**Centiel's Andrew Skelton explains why, when it comes to uninterruptible power supplies (UPS) that protect critical loads, to maintain or not to maintain should not be the question!**

Organisations are often unwilling to allow full switching of a UPS during a preventative maintenance visit. However, this is a little like servicing your car but not letting the mechanic look under the bonnet for fear of needing to drive off at any moment. The risk of not completing full maintenance on a UPS far outweighs the minor risk of a planned switch putting the load on to raw mains for a short period of time in order to fully inspect the equipment and batteries.


If the UPS is not manually bypassed, albeit briefly, only a visual check can be performed. However, without removing the covers and putting the system through its paces, any issues inside the unit will not become apparent until there is a real mains failure and the UPS doesn't work. This is a significant risk as, over time, any electrical components and batteries wear out and need to be checked – just like parts in a car.

To mitigate the very minor risk of putting the load temporarily on to raw mains to check and maintain the UPS, Centiel works with clients to undertake planned preventative maintenance visits. We book mutually agreed times, which can be out of hours or at weekends. Some facilities have a planned maintenance or shutdown period and we can work around this too. For data centres with more built-in redundancy, we can maintain one system at a time and return at a later date to maintain the alternate power streams, if required.

Preventative maintenance is not a tick-box exercise. Centiel's trained and experienced engineers need to look under the covers and follow strict protocols to ensure critical power remains protected over the long-term. So, the question should not be to maintain or not to maintain but rather, when can we arrange our next planned maintenance visit to ensure our UPS will continue to protect our critical load properly?

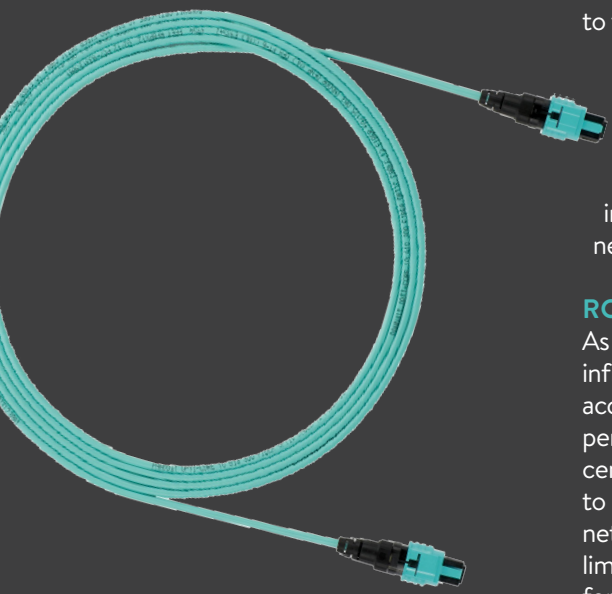
For information about Centiel's award-winning UPS solutions and our comprehensive preventative maintenance plans, **CLICK HERE.**
**www.centiel.co.uk**

# Keeping one step ahead

Michael Akinla of Panduit looks at how utilising pre-terminated optical fibre cable solutions is a strategic step for organisations aiming to stay competitive in today's rapidly evolving digital landscape

Demand for reliable, scalable and high-speed data networks is paramount. Data centres, enterprises and office environments have become reliant on robust network infrastructure to handle the growing complexity of information-based services. This has led to a shift towards pre-terminated fibre cable solutions in computing cabinets and across networks. Pre-terminated fibre cables, known for their plug-and-play simplicity, are designed to facilitate quick, efficient and high-density fibre network deployments. The advantages of pre-terminated fibre cables, their relevance in modern data centres and the importance of reliable fibre connections is becoming increasingly important as today's networks become critical to all businesses.

'Pre-terminated fibre cables come pre-assembled with connectors that are factory tested, eliminating the need for on-site splicing. This plug-and-play approach significantly reduces the time and effort required for installation.'



## ROBUST INFRASTRUCTURE

As digital transformation accelerates, the infrastructure supporting it must evolve to accommodate greater density, enhanced performance and future scalability. Data centres, enterprises and telcos need to maximise the utilisation of compute, network and storage resources within limited physical footprints, driving the need for high-density infrastructure solutions.

This challenge is further compounded by the requirement for faster deployment, lower costs and minimal downtime.

One critical component in achieving these objectives is fibre cabling, which forms the backbone of network infrastructure. With a surge in data-intensive applications and services, fibre networks must be meticulously managed to ensure continuous high-speed data transport and end-to-end delivery of services. Any failure in fibre connections can result in significant downtime and revenue loss. Good installation practices ensure the best results when delivering any fibre network – this is not limited to the terminations of the fibre but also the cleaning and inspection processes that are employed.

## FEATURES AND BENEFITS

Pre-terminated fibre cables come pre-assembled with connectors that are factory tested, eliminating the need for on-site splicing. This plug-and-play approach significantly reduces the time and effort required for installation. Unlike traditional methods, where fibres are manually spliced and connectors attached on-site, pre-terminated solutions offer a streamlined deployment process that minimises errors and ensures consistent performance. Key features of pre-terminated fibre cable solutions include:

- Factory testing and assurance. Each cable is pre-tested for performance standards, reducing the likelihood of failure due to poor connections or faulty splicing.
- Reduced installation time. The absence of on-site splicing translates to a significant reduction in installation time. For example, installing 12-core fibre cables with traditional splicing can take up to 24 minutes, whereas a pre-terminated plug-and-play solution can achieve the same in under a minute.
- Cost efficiency. Although the upfront costs of pre-terminated solutions may be comparable to traditional methods, the savings in labour, equipment and maintenance over time result in a lower total cost of ownership (TCO).
- Flexibility and future proofing. These cables are designed for easy reuse and scalability, supporting future migrations to higher bandwidths like 400Gb/s and beyond.
- Environmental benefits. The reusable nature of pre-terminated cables reduces waste and promotes sustainability within data centre environments.

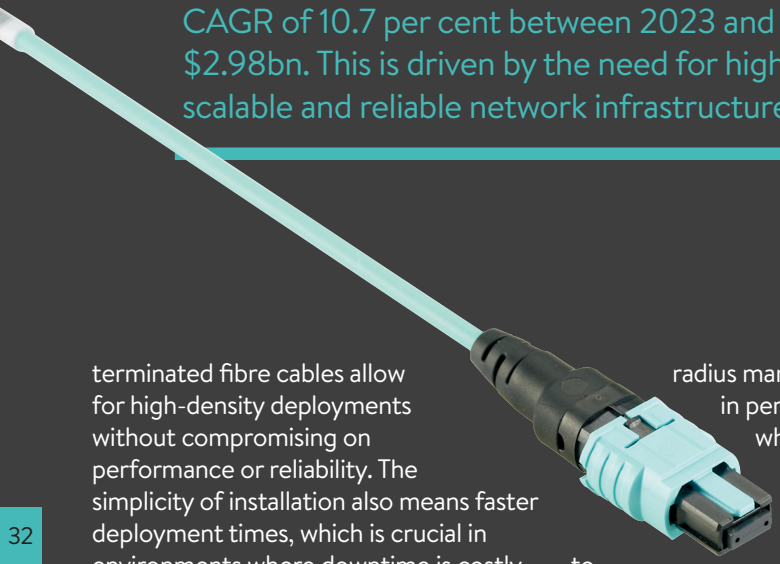


## SITE SPECIFIC

Data centres, enterprises and offices all stand to benefit from the deployment of pre-terminated fibre cabling systems, particularly in the following areas:

- Data centres. As data centres face the challenge of increasing density, pre-

‘Demand for pre-terminated fibre cable solutions is expected to grow, with research analysts predicting a CAGR of 10.7 per cent between 2023 and 2024 up to $2.98bn. This is driven by the need for high-density, scalable and reliable network infrastructure.’





terminated fibre cables allow for high-density deployments without compromising on performance or reliability. The simplicity of installation also means faster deployment times, which is crucial in environments where downtime is costly.

- Enterprise networks. In enterprises, where network demands are rapidly evolving, pre-terminated solutions offer flexibility and speed. Enterprises can scale their networks without extensive re-cabling, thus reducing operational disruption.
- Office environments. For smaller-scale office environments, where IT teams may not have specialised skills in fibre splicing, pre-terminated cables provide a simple, yet effective, solution to ensure reliable network connectivity.

## REDUCING RISK

Fibre networks offer numerous advantages, although failures can occur. Often the cause of these failures is poor installation and maintenance practices. That is why it is key to work with an experienced installation partner.

Poor installation of fibre cables into patchways that do not have the right bend radius management is a key issue in performance degradation, while not ensuring all ends are inspected before every connection allows dirt and debris to cause lasting damage to the fibre ends. These factors can lead to increased insertion loss or complete link failure, affecting the overall performance of the network.

Pre-terminated solutions greatly reduce these risks by ensuring that each cable is precisely terminated and tested in a controlled factory environment, where conditions are optimised for quality assurance. Moreover, these end-to-end solutions provide features that prevent common issues with fibre installations, such as connector contamination or mechanical damage.

## LOOKING AHEAD

Demand for pre-terminated fibre cable solutions is expected to grow, with research analysts predicting a CAGR of 10.7 per cent between 2023 and 2024 up to $2.98bn. This is driven by the need for high-density, scalable and reliable network infrastructure.

Innovations in pre-terminated systems, such as higher fibre counts, smaller form factors and enhanced performance specifications, will continue to impact data centre and enterprise networking. Manufacturers continue to develop solutions that anticipate future needs – for example, systems that can transition from 100Gb/s to 400Gb/s or even 800Gb/s without extensive re-cabling are gaining traction. Additionally, the integration of smart network management tools, such as automated documentation and validation systems, further enhances the appeal of pre-terminated solutions.

Labelling pre-terminated fibre cabling during the production phase certainly benefits the tracking and mapping of installed cable networks, which greatly assists technicians and engineers in tracing specific cables and troubleshooting during an outage. Utilising pre-barcoded patch cables can reduce the time taken on patch cable documentation and validation by up to 50 per cent, while removing human error from the process.

## SUITS YOU

Pre-terminated fibre cable solutions represent a significant advancement in network infrastructure, offering simplicity, reliability and future proofing that is well-suited to the needs of data centres, enterprises and office environments. By reducing installation time, lowering costs and minimising human error, these solutions improve organisations' ability to maximise their return on investment and ensure robust, high-performance network connectivity. Embracing pre-terminated fibre cable solutions is a strategic move for organisations looking to stay ahead in a rapidly changing digital landscape. ■

**MICHAEL AKINLA**

Michael Akinla is business manager central Europe north at Panduit. He brings over 20 years' experience in the deployment of Panduit's most complex solutions and has extensive experience in working with several large global accounts to bring about significant improvements in terms of higher bandwidth deployments, reduced Power Usage Effectiveness (PUE) ratings and lower TCO.

# Mayflex

Mayflex has made configuring and ordering pre-terminated Excel Networking Solutions optical fibre cable quick and easy with the launch of its latest online Fibre Configurator. It takes the user through three simple steps:


- Step 1. Choose the cable including cable construction, fibre type and the number of fibres
- Step 2. Choose the breakouts
- Step 3. Choose the connectors required at each end

To give a better feel for exactly how the cable will look, as the configurator builds the cable it presents a detailed 3D image that the user can zoom in and out of, and rotate to view from any angle. It is also possible to scan a QR code on screen to view the cable on a smartphone, if required.

Once the required cable configuration is chosen, the user can download a detailed spec sheet, which includes the image. Each order is then built by Mayflex's highly skilled Specialist Support Services team at its Birmingham headquarters, fully tested and shipped out in plastic free packaging.

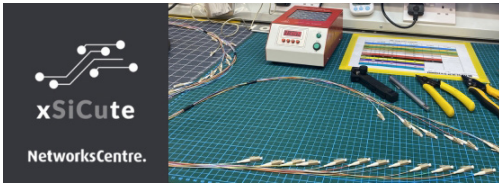
The Fibre Configurator is accessible via the Mayflex webshop. **CLICK HERE** to find out more.

**www.mayflex.com**



# xSiCute

MPO connectivity is the most widely used pre-terminated cabling system employed in data centres, providing the most flexible approach to support serial/duplex and parallel circuits. Some customers don't need support for parallel circuits but do want a pre-terminated system to reduce time on-site. Options include:




- Cables terminated with connectors at one or both ends, either protected by pulling socks (250um/900um) or 2mm ruggerised tails (switch harnesses)
- Panels or cassettes to blunt/unterminated end (connectorised at both ends for testing purposes and then cut to length).

Providing a level of quality control not available when built on-site, xSiCute ensures all assemblies are labelled with serial numbers with barcodes to check test results online. xSiCute can remove any cardboard and provide suitable protection without single use plastics.

xSiCute has successfully delivered high quality pre-terminated assemblies to UK data centres for over 20 years. **CLICK HERE** to find out more, call XSiCute's sales team on 01908 972765 or **CLICK HERE** to send us an email for free non-obligation advice.

**www.xsicute.com**

# HellermannTyton

HellermannTyton has developed a full data centre connectivity solution designed to offer high density optical fibre capacity, excellent cable management and panel housing.


Released in 2024, RapidNet Ultra is a cassette based pre-terminated system that delivers a wide variety of options and flexibility when designing the data centre network. RapidNet Ultra takes the existing data centre fibre solution beyond today's requirement, offering an even greater fibre density, while accommodating very small form factor connectivity and supporting tomorrow's requirements for high bandwidth, advanced network architectures and Ultra Ethernet.

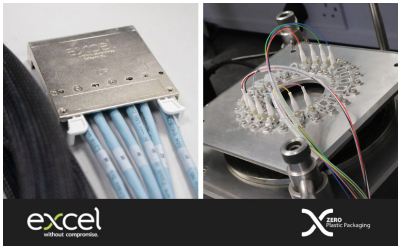
To support the RapidNet Ultra solution, HellermannTyton has produced the Data Centre Cabling Guide, which is designed to help specifiers and data managers choose the best RapidNet system to achieve their network design. It covers everything from optical transceivers to polarity and data centre architecture and topology, assessing the key benefits and considerations at the design phase.

To complete the data centre solution, HellermannTyton can now offer its Fibre Duct Raceway with the addition of a rack solution. This is due to be released later in 2024.

For more information **CLICK HERE.**
**www.htdata.co.uk**

# Excel Networking Solutions

Excel Networking Solutions' Specialist Support Services are carried out by a team of trained experts based at its Birmingham headquarters. Specialist Support Services are tailored to reduce installation time and enhance reliability.




Excel's pre-terminated copper and optical fibre solutions are ideal for rapid deployment. Cables arrive on-site fully tested, pre-labelled and ready for immediate use in 100 per cent plastic free packaging, covered by Excel's comprehensive 25-year warranty when installed by an Excel Partner.

Excel's copper assemblies come in screened or unscreened constructions as single or loomed solutions, and fitted with modules, jacks or plugs at either or both ends. Its fibre services include singlemode and multimode terminations with bespoke breakout lengths that are terminated into cassettes or patch panels as required, and expertly polished for performance.

By handling these pre-termination tasks, Excel helps installers streamline projects, cut costs and ensure a high-quality, reliable network infrastructure.

**CLICK HERE** for more information about Excel's Specialist Support Services or call the sales team on 0121 326 7557.
**www.excel-networking.com**

# Scratching the surface

Nick Taylor of Networks Centre explains the various reasons to consider using pre-terminated cabling and when it might not be the most suitable solution

Pre-terminated cabling is often favoured due to its ability to significantly reduce on-site installation time. When customers can provide accurate cable lengths and there's ample lead time, pre-terminated solutions offer a substantial time-saving advantage. This is particularly beneficial for projects with tight deadlines, where pre-terminated cabling might be the only viable option. Beyond installation time, consider the other potential savings such as plant hire and project management.



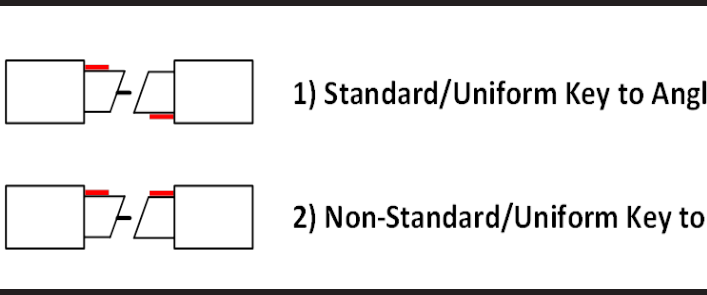
## HORSES FOR COURSES

It's important to weigh these benefits against the potential drawbacks. In situations where cable pathway locations are uncertain or lead times short, field terminated cabling might be more suitable. This is especially common in office environments, where layout changes may occur.

For smaller deployments like optical fibre backbones for an office environment, ordering slightly longer pre-terminated assemblies can accommodate pathway adjustments without significant issues, as there would be minimal slack management required. However, in larger projects, too much slack can be a big issue, so lengths must be accurate. A hybrid approach might be considered, where assemblies are made double length, tested, cut to size on-site and the blunt end terminated.

## TOP SPEED

Multi-fibre connectors like multi-fibre push-on (MPO) and their very small form factor (VSFF) equivalents such as SN-MT and MMC fall into this category and these are the connectors required to support the highest speeds. High speeds can be achieved through a combination of factors. More fibres can transmit more data simultaneously, efficient encoding schemes optimise data transmission and multiplexing combines multiple data streams on to a single channel.




Some AI deployments require >5,000 fibres per rack, so using VSFF connectors becomes essential. Meanwhile, some VSFF

array connectors can take as little as a third of the rack space compared to an MPO.

## GREATER ASSURANCE

Manufacturing defects that reach the supply chain are very rare from manufacturers of high-quality systems, as they invest significant money into equipment to test at every step along the process. However, it's still possible to find defects that would not be discovered during factory tests and would only show-up after all components are connected and a certification test is performed. This is especially true when it comes to lower cost systems.

By buying a pre-terminated system from a manufacturer of high-quality components, this risk is virtually eliminated. Certification testing to the required lengths has already been undertaken, although it's recommended to retest once the cabling has been installed in its final position.

## FLIP OUT

Most customers want a 'flip' in the channel so they can use standard patch cords (as per BS EN 50174-1), whilst others prefer to have a 'straight' channel and use one non-standard patch cord. When channels become more complex with the addition of switch harnesses and extensions, maintaining the desired polarity becomes more difficult. Additionally, different colour codes and polarity control methods, such as symmetrical versus reverse-pair, are used in different countries to create a 'pair-flip'.

Whilst it's possible to provide details on the polarity control method to be used by the installer for a field terminated system, this is not always a simple thing to verify, so some clients prefer to specify a pre-terminated array-based system, such as MPO cables and MPO-LC transition cassettes, and to specify a polarity method.

Annex C of EN 50174-1 currently calls for all cables and adaptors to be key-up/key-up (Method B) which, when compared to Method A and C, provides the simplest and most consistent method to provide a pair-flip for both serial/duplex and parallel circuits. The issue with Method B is that the key-up/key-up adaptors do not support angled polished connectors unless the angle on the Type B trunk cables is rotated 180° relative to the key, as shown on 2 below.

Whilst the MPO connector standard allows for 2, it's not a widely used approach, which limits compatibility and narrows the choice of manufacturer, so is best avoided. Perhaps the better solution is to swap the 2xType B key-up/key-up adaptors for 2xType A key-up/key-down adaptors (previously only used for Method A and C systems), as these can accommodate flat and angled polished connectors.



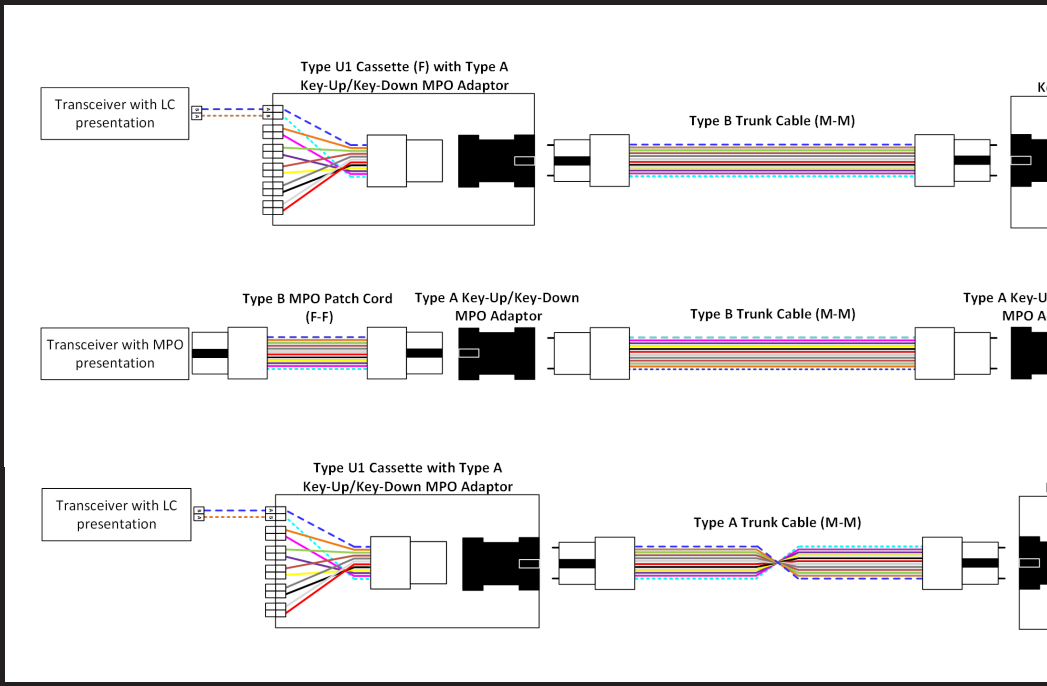
ed Ferrule requiring a Key-Up/Key-Up MPO Adaptor *(shown in Black)*

Angled Ferrule requiring a Key-Up/Key-Down MPO Adaptor *(shown in Charcoal Grey)*

‘Pre-terminated systems provide better control over polarity, minimising the risk of field errors, while pre-cut lengths simplify stock management, reduce waste and eliminate the need for adjustments on-site.’

A single flip of any component (trunk cable, patch cord or adaptor) changes the polarity (from straight to flipped or vice versa) but two flips cancel each other out.

You will note above that the transition cassettes used are Type U1. Although the most widely use of Type U cassettes is with Type B MPO trunk cables to achieve a pair-flip, these same cassettes could be used with Type A trunk cables to achieve a ‘straight’ link where a non-standard A-A patch cord would need to be used at one end. However, EN50174-1 has not yet been updated to reflect the U1 and U2 wiring configurations shown in ANSI/TIA-568.3-E



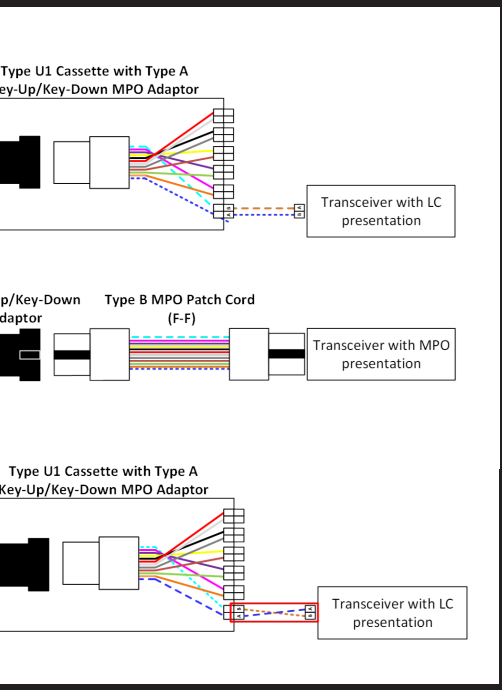

It should be noted that come manufacturers use MPOs where the polarity and gender can be changed in the field. Using such products allows for the manufacturer to comply with BS EN 50174-1 by keeping the pins hidden and protected inside the transition cassettes.

Regarding stock management, using a standard system for all countries, other than the fire rating of the cable used, makes it easier for manufacturers and

distributors to hold the required stock. They can also, if necessary, ship goods between warehouses to support projects.

## TAKING THE ADVANTAGE

Choosing pre-terminated cabling offers advantages beyond just on-site time savings. Multi-fibre connectors require pre-termination due to their complexity,




making this method essential for certain installations. It also ensures uniformity across different locations, maintaining consistent product quality and installation standards. Similarly, pre-terminated systems provide better control over polarity, minimising the risk of field errors, while pre-cut lengths simplify stock management, reduce waste and eliminate the need for adjustments on-site.■


**NICK TAYLOR**

Nick Taylor started in this industry in 1997, holding various roles and spending most of his career working for installers, as well as six years at a leading manufacturer. Since January 2023, he has been the technical sales director at Networks Centre. He's a BICSI Registered Communications Distribution Designer (RCDD), an active member of various industry standards bodies and many customers see him as a trusted advisor to help solve their issues.

# Colt Technology Services partners with The Arctic Arts Project to promote action around climate change

Colt Technology Services has announced a new three-year partnership with The Arctic Arts Project as a Polar Partner. Founded by environmental photographer and campaigner, Kerry Koepping, The Arctic Arts Project comprises committed scientists, photographers and filmmakers, with the collective goal of capturing and sharing the impact of climate change and the actions needed.


Keri Gilder

The collaboration comes as the ICT industry is under pressure to reduce emissions, while providing vast amounts of compute. One study suggests ICT's proportion of greenhouse gas emissions at between 2.1 per cent and 3.9 per cent is almost double the proportion generated by the aviation industry (two per cent), while research from Goldman Sachs suggests AI could drive a 160 per cent increase in data centre power demand by 2030.

Keri Gilder, CEO at Colt Technology Services, said, 'The World Economic Forum has stated that within the next 10 years, four of the top five risks facing the world will be climate related. The Arctic Arts Project tracks this change with stunning, hard-hitting and incredibly powerful visual storytelling. There has never been a greater need for the industry to come together to drive positive change.'



# Vantage Data Centers welcomes Jeremy Deutsch as president of APAC

Jeremy Deutsch has joined Vantage Data Centers as president of APAC. In his new role, Deutsch will drive Vantage's regional growth including strategy, market development, sales, construction and operations. He will report to Jeff Tench, executive vice president North America and APAC.


Jeremy Deutsch

Deutsch brings more than 20 years of experience to Vantage's executive team. He joins the company from Equinix, where he served in a variety of roles, most recently as president of APAC since 2019. In this role, Deutsch spearheaded the company's business and growth strategies, aligning with broader global initiatives and driving expansion across APAC, scaling into five new countries over five years, while delivering strong core business growth.

'I am thrilled to join Vantage to lead the company's fast-growing APAC division,' said Deutsch. 'The Vantage APAC platform is poised for explosive growth, and I am excited to have the opportunity to help the team further scale and support customers who need best-in-class sustainable digital infrastructure.'

# Nokia and Lenovo join forces to drive advancements in data centre solutions for the AI era

Nokia has announced a strategic partnership with Lenovo to create comprehensive data centre networking and automation solutions that support the highly precise compute, storage and transit needs for artificial intelligence (AI), machine learning and other compute-intensive workloads. These solutions will be jointly marketed to enterprises, telcos, and digital infrastructure and cloud providers.

The partners will leverage the Lenovo ThinkSystem AI-ready portfolio of high-performance servers and storage with the Nokia Data Center network solution.


Charles Ferland

The combined solutions will help meet the demanding processing and network performance requirements of modern workloads.

Charles Ferland, vice president edge and communications service providers at Lenovo, said, 'Lenovo has a longstanding commitment to deliver the most reliable and sustainable AI infrastructure. Our partnership with Nokia to bundle AI solutions is a natural alignment. Together, we provide a robust platform that meets the needs of telecommunications and enterprise sectors, enabling them to deploy AI clouds and manage their data efficiently.'

# Mayflex opens new London office and M-Tech demonstration room

Mayflex has opened a new London office and demonstration room. Located in the heart of the City of London, it provides the perfect location to host meetings and showcase an extensive range of products.

The office totals around 300m² of space and provides hot desks and meeting room facilities for Mayflex's London based associates. The M-Tech is a 67m² space and is a fully working demonstration suite that includes the latest Environ DCR racks along with all other Environ racks. Customers can view the full features and benefits of each rack including the latest Excel Networking Solutions copper and optical fibre products.


Ross McLetchie

Ross McLetchie, Mayflex's sales director, commented, 'We've had a presence in London for many years, however, we have now moved to a new state-of-the-art-office to showcase our latest products. The location is perfect and with so many bars and restaurants in the area it provides us with the chance to network further with our customers once the business has been done.'



# Centiel appoints John Kreyling as UK managing director

Centiel has appointed John Kreyling as its UK managing director. Kreyling, who joined Centiel in January 2024 and has more than 20 years of experience in the power distribution industry, will take over from David Bond, who will now resume duties as chairman.


John Kreyling

Kreyling said, 'Centiel is at the forefront of technology innovation, so I am now incredibly proud to lead its expansion in the UK. My management style is hands-on, so I will enjoy continuing to work closely with our valued customers and developing relationships with new clients as we grow.'

David Bond added, 'John's extensive industry experience makes him perfectly placed to lead Centiel's continued growth. We are excited about this new chapter and I know the whole team will support his development goals as we help our customers further improve the power availability and efficiency of their facilities, while simultaneously reducing the total cost of ownership.'

## CHANNEL UPDATE IN BRIEF

Schneider Electric's EcoStruxure IT Network Management Card 3 (NMC3) platform has obtained a new and higher level of cybersecurity certification, making it the first data centre infrastructure management (DCIM) network card to achieve IEC 62443-4-2 Security Level 2 (SL2) designation from the International Electrotechnical Commission (IEC).

Evolve has appointed Martyn Yih as its new head of IT services and Caroline Oxley as head of people and talent.

iomart Group has announced the successful acquisition of Atech Cloud. This move significantly strengthens iomart's position as one of the UK's principal providers of secure cloud services across public, private and hybrid environments.

Vertiv has announced a major expansion of its North American manufacturing operations with a new facility in Pelzer, South Carolina. The Vertiv Pelzer facility adds 20,000m of manufacturing space and is projected to create up to 300 additional skilled job opportunities.

Datwyler IT Infra continues to advance its business and expansion plans on a European and international level with a new subsidiary in Spain.

# Delivering the goods

Jim Hart has helped to redefine the traditional data centre delivery model by putting the mechanical and electrical (M&E) element to the fore. Rob Shepherd recently caught up with him to find out more about his life and career, and the lessons he's learnt along the way

**RS: Tell us a bit about yourself – who are you and what do you do?**

JH: I am co-founder of BCS, the specialist business dedicated to optimising digital infrastructure across the globe. BCS is a digital built asset consultancy specialising in programme, project and cost management services within the data centre sector, with offices in the UK, Germany, Italy, Iberia, the Nordics and Poland. We started in 2016 with just two people. Now we have a turnover more than £15m per annum and our headcount exceeds 120.

My role is to create and provide an environment to enable our people to reach their full potential, thereby giving our clients the best possible outcomes. I'm a firm believer that if you look after your people they will look after your clients.

**RS: How and why did you build a career in the data centre sector?**

JH: In 2003 I was leading the M&E service offering at EC Harris. We noticed that, at that time, data centres were still being delivered through a traditional roadmap, with the architect leading delivery. This made no sense to us, as most projects were 70-80 per cent M&E, where most of the risk of the project was carried. We devised a M&E led delivery model, took it to market and it is now the accepted way to deliver data centres.

**RS: How important are data centre consultants and how has the role changed over the last 10 years?**

JH: Data centre consultants have become increasingly crucial as organisations rely more on data driven operations and cloud computing. Data centre consultants provide expert guidance in the planning, design, construction and

operation of data centres, which are the backbone of modern IT infrastructure.

This has become increasingly more complex in the last decade – as an example, a decade ago energy efficiency was important but not always a top priority and the focus was more on ensuring uptime and reliability. Now, sustainability has become a critical concern, with data centre consultants playing a key role in deploying facilities that minimise environmental impact.

Another example is that then the focus was on traditional IT infrastructure with limited use of automation or advanced analytics. Now data centre consultants are increasingly involved in integrating emerging technologies such as artificial intelligence (AI), machine learning, the internet of things (IoT), and advanced analytics into data centre deployment and operations.

**RS: What is the most common question you're asked by your clients?**

JH: Where's the available and renewable power?

The need to source sufficient sustainable, available and affordable power to ensure clean and renewable energy use across data centre estates is paramount – and driving down the carbon footprint of the industry is a key challenge. We are currently advising clients on several solutions to reduce their reliance on the national grid including creating more efficiency and/or scaling back on size. In some cases, there is the option to consider generating their own power to supplement any shortfall utilising renewable power such as wind, hydro, solar and waste to energy.

'While the industry is making strides, the rapid growth in data demand, the environmental impact of materials and waste, and the challenges of achieving net-zero emissions mean that the journey towards truly sustainable data centres is far from over.'

**RS: Is the battle for the energy efficient data centre being won and can they ever truly be sustainable?**

JH: The battle for energy efficient data centres has seen significant victories, with innovations in cooling, renewable energy adoption and hardware efficiency. Amongst our customers we are seeing clear evidence that the commitment to a move to source energy from renewable forms is strong. According to our latest Summer Report, over the course of the next decade 86 per cent of our respondents expect to see at least 90 per cent of their data centre energy usage to be sourced from renewable generation.

However, true sustainability is a more elusive goal. While the industry is making strides, the rapid growth in data demand, the environmental impact of materials and waste, and the challenges of achieving net-zero emissions mean that the journey towards truly sustainable data centres is far from over.

The path forward will require continued

‘Interplay between AI data centres and resource usage necessitates innovative approaches to mitigate environmental impacts. Advances in cooling technology, such as liquid immersion cooling and the use of recycled water, offer potential solutions.’

innovation, investment and a holistic approach to sustainability that goes beyond energy efficiency to address all aspects of environmental impact. That said, I believe that the data centre sector is leading the way for energy intensive industries on the path towards true sustainability.

**RS: How is the growth in AI affecting the data centre sector and what opportunities, and difficulties, does it present?**

JH: The proliferation of AI is enabling advanced data processing and decision-making capabilities. Central to this technological leap are AI data centres – specialised facilities that house the hardware and software necessary for AI computations. While these centres are crucial for AI advancements, they also significantly impact power and water usage, presenting both challenges and opportunities for sustainability and resource management.

On the one hand, AI drives demand for more data centres, particularly those capable of supporting high-performance computing and real-time data processing at the edge. It also offers opportunities for optimising operations, enhancing security and improving resource management. On the other hand, AI introduces difficulties related to increased energy consumption, the need for specialised and expensive infrastructure, data management complexities, environmental sustainability concerns and higher operational costs.

Interplay between AI data centres and resource usage necessitates innovative approaches to mitigate environmental impacts. Advances in cooling technology, such as liquid immersion cooling and the use of recycled water, offer potential solutions. Furthermore, utilising recycled or non-potable water for cooling can alleviate the pressure on freshwater resources.

For the data centre industry, success in the AI era will depend on the ability to innovate continuously, adopt new technologies and implement strategies that balance performance, cost and sustainability. As AI continues to evolve, the data centre sector must adapt to meet the growing demands while mitigating the associated challenges.

**RS: What will be the next big data centre ‘game changer’?**

JH: The next big game changer is likely to come from the integration of one or more of these technologies – quantum computing, AI-driven autonomy, modular and edge data centres, energy innovations, quantum cryptography and 5G integration. They all have the potential to reshape the industry fundamentally.

As quantum computing matures, there will be discussions about the implications and integration of quantum networking, which promises ultra-secure

communication. We will also see the continued growth of edge computing with it continuing to be a focal point, especially with the growth of augmented reality, virtual reality and other immersive technologies. I think we will also see the shift towards consuming network infrastructure as a service, similar to cloud services, gain traction, while AI will play an even more significant role in predictive maintenance, anomaly detection and network optimisation.

The data centre sector's future will be defined by its ability to adapt to these emerging trends and leverage them to meet the growing demands of a digital, data-driven world. In addition, 'off-grid' data centres will emerge, opening up a whole host of further opportunities.

**RS: If you could change one thing about the industry that you work in, what would it be?**

JH: Diversity – we need different voices and challenges. As a sector we need to throw off the cloak of mystery and show ourselves to the outside world, letting people know what a brilliant place the sector is to grow and develop in, and that the opportunities are boundless.

BCS is committed to nurturing the next generation of industry professionals through our apprenticeship scheme, now in its fifth successful year, in partnership with London South Bank University. Our recruitment policy also targets the right people and industries where the skills are transferable, such as project management, and promotes diversity and inclusion.

We look to bring in resource from other construction sectors, or from completely different sectors entirely. This is supported with a key focus on training programmes of all types – be it for apprentices and graduates or upskilling or skill transfer type training. We actively engage with schools and universities to enlighten young minds about the opportunities available within the construction and data centre sectors.

'I think we will see the shift towards consuming network infrastructure as a service, similar to cloud services, gain traction, while AI will play an even more significant role in predictive maintenance, anomaly detection and network optimisation.'

**RS: What's the best piece of advice you've been given and how has it helped you during your career?**

JH: Always keep learning and stay curious. This is especially true in our industry. Curiosity drives me to explore different angles and approaches to problem solving. It helps me consider various perspectives and offer solutions that might not be immediately obvious, ultimately enhancing the value I provide.

I have brought this ethos to BCS, where we believe in the power of continuous learning and development and coaching. We are committed to providing our colleagues with the resources and opportunities they need to grow both personally and professionally. Through innovative training programs, mentorship, coaching and our cutting-edge learning management system, we aim to foster a culture of lifelong learning. ■

# Quick clicks

Your one click guide to the very best industry events, webinars, electronic literature, white papers, blogs and videos

The Importance Of Cabling Standards is a white paper from Ian McKiernan of **Excel Networking Solutions** that addresses how standards impact the design and installation of reliable cabling networks.
**CLICK HERE** to download a copy.



Selecting The Right Cabling Infrastructure Supplier is an ebook from **Siemon.**
**CLICK HERE** to download a copy.

Small Modular Nuclear Reactors Suitability For Data Centers is a white paper from **Schneider Electric.**
**CLICK HERE** to download a copy.

**Kohler Uninterruptible Power (KUP)** has created a webinar entitled Charging Forward: UPS Battery Innovations, Selection And Considerations, which is CPD approved by The Chartered Institute of Building Service Engineers (CIBSE).
**CLICK HERE** to find out more.

The Global AI Index from **Tortoise Media** is the first index to benchmark nations on their level of investment, innovation and implementation of artificial intelligence (AI).
**CLICK HERE** to see it.

**Zoom's** Global Collaboration In The Workplace report looks at just how costly bad collaboration can be for businesses.
**CLICK HERE** to download a copy.

**Domino Data Lab** has released its 2024 REVelate report, which uncovers a disconnect between artificial intelligence (AI) ambitions and the resources required to execute responsible AI governance.
**CLICK HERE** to find out more.

# Unstoppable power a unmatched reliability

Our lives today have become reliant on digital capabilities unheard of even 10 years ago. From h games to collaborative work environments, Elliott Turek of Schneider Electric explains how we c all – if we have the right energy continuity capability

Bill Gates once said that 'the internet is becoming the town square for the global village of tomorrow'. From the comfort of our own homes, or just about anywhere with stable mobile service or Wi-Fi access, we can stream content, create art and connect with an unlimited number of other humans, or computers, as we so wish.



## VILLAGE PEOPLE

I've often wondered if the villages of yesterday, in the not-so-distant past, would marvel at what we are able to achieve with a few strokes of a keyboard and a click of a mouse, or whether they would be filled with immense fear, apprehension and/or a sense of crippling anxiety, while confronting the prospect of being able to 'know everything or nothing' at the same time. Without a doubt, the internet has proven to be as consequential a human invention as electricity and will shape the way we live our lives – at least for my lifetime.

Another existential question that now arises is, can you live without the internet? For most people who have grown up with it, or have become accustomed to it, it's highly doubtful. Sure, they are wishful of breaking free of the invisible chains of the internet and general connectivity to other humans, but there are too many societal interdependencies that make the internet beyond essential – it's in our DNA now.

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We have smart everything – from cars, phones and homes – and the number of connected devices is perpetually growing. One estimate expects the number of internet connected devices to top 75 billion by 2025. So, how do we ensure uptime for those devices? And, more importantly, for our networks powering those devices? Without the internet, our smart phones are just fancy flashlights and HD portable cameras.

## SUPPLY CHAIN

The forgotten hero is the uninterruptible power supply (UPS). Now available in a range of sizes, configurations and capabilities, these UPS often plug and wire into commercially available power outlets and panels, and leverage a battery component. A UPS provides the benefits of clean, managed power to connected devices, battery uptime during an outage and, depending on the model, automatic graceful shutdown of the connected devices if the battery runs out before power returns.

In the context of a home UPS set-up, battery run time can last anywhere from five minutes to well over an hour, depending on factors such as total wattage connected and battery size present. Consumers can source top line battery back-up at competitive pricing these days and can usually get 7-10 years of use out of a UPS if properly maintained, with regular battery replacements whenever necessary.

## GAME ON

As we have become more and more accustomed to constant availability of our digital services, even the slightest

'A UPS provides the benefits of clean, managed power to connected devices, battery uptime during an outage and, depending on the model, automatic graceful shutdown of the connected devices if the battery runs out before power returns.'

interruption can be an imposition. Dedicated gamers, for example, at a critical point in a gaming session, would rue an outage or voltage drop/spike. This is especially so when so many gamers host game servers themselves or multiplayer environments, where they may have several others depending on their equipment set-up.

Multiplayer online games such as Fortnite allow users to even design their own environments and host other players in them. A home UPS with appropriate power management capabilities can provide a level of energy independence that not only ensures continuity in an outage but also protects critical equipment such as game consoles, virtual reality headsets and sensitive interface controls in the event of fluctuations or spikes.



## HOME WORKING

Beyond gaming and home entertainment, home working is now a ubiquitous feature of workforces. Continuity, resilience and protection are equally, if not more, important here.

Remote work will also continue to be prevalent in 2025, with nearly a quarter of the American workforce being able to do so either part time or full time. Similarly, the Dutch said in 2023 that more than half (52 per cent) of workers had reported working from home, though most only occasionally. Ireland reported the highest proportion of the workforce that primarily worked from home (25 per cent), followed by Finland (23 per cent) and Sweden (18 per cent).

Most employees with work from home facilities have some kind of metrics for required online times and responsiveness. Not having the right level of power and internet connectivity may lead to increased productivity loss, loss of trust from coworkers and potential sanctions.

## CONTINUITY ASSURED

A 2023 study found that extreme weather is the most common cause of a power outage in Europe. With the effects of climate change, the incidence of extreme weather is only likely to increase, as seen in the recent central European floods.

A UPS is a simple solution that could save a lot of frustration in the long run when working from home, protecting reputationally as well as technologically. The assurance of an uninterruptable solution can allow workers to do more and confidently take on more sophisticated tasks, such as host webinars, collaborative work sessions or present to audiences. With the peace of mind that even in the event of extreme weather, or other power incident, you can complete a task on which others are depending can allay many fears about working outside the office.

Plus, even if you work from an office most of the time, you will always tend to leverage some sort of home Wi-Fi solution to access the internet for a wide range of work reasons. A UPS can also protect a Wi-Fi router that takes primary connectivity

from a cellular network that may be unaffected by a domestic outage.

## WHAT NEXT?

In a way we live in our own digital village – deeply connected to those who matter most in our lives, be it family, friends or work – while also being vastly connected to other villages in the complex universe that is the internet. What else will we achieve?

We are starting to see people unlock the power of technology even further, leveraging artificial intelligence (AI) – this new frontier is only just starting to be explored and we are all pioneers witnessing its evolution. With the power of AI, we may gain more insights as to when an outage might occur, how devices such as UPS could be optimised for our specific usage, and how it can better integrate with the grid for sustainability goals.

## THE FUTURE'S BRIGHT

As more people become prosumers through home systems that include solar PV with batteries that can feed back to the grid, the UPS will become another layer in an infrastructure that ever more closely mirrors the critical power of major energy users. As prosumers, we can think of supporting our digital needs as the critical power function in our homes – and plan accordingly. ■




**ELLIOT TUREK**

Elliot Turek is director of category management in the Secure Power Division of Schneider Electric. Turek plays a pivotal role in shaping and executing the business's new product introduction and future roadmaps of transactional and edge product offerings. His extensive experience and insights have enabled him to lead teams, navigate complex market dynamics and successfully launch cutting-edge solutions to meet the evolving needs of clients.

# Panduit

Panduit's UPS range provides a flexible, customer-centric solution, offering lithium-ion and valve regulated lead acid (VRLA) batteries across various capacities. It includes 1/2/3kVA options for lithium-ion and 5/6/10kVA, as well as 10/15/20kVA configurations, for VRLA that are available in both single-phase and three-phase set-ups.

The right UPS system is crucial for ensuring business continuity, especially as the transition between utility power failure and UPS switching takes a matter of milliseconds. Furthermore, interruptions lasting more than 20 milliseconds can cause IT systems to crash. Panduit's UPS range not only delivers power back-up but also offers intelligent network management, environmental monitoring, security sensors and the ability to connect to external battery packs.

Choosing the right UPS solution is essential to meet the demands of the IT load, especially for systems running critical applications. Also, as modern processors become faster and generate more heat, ensuring the UPS supports cooling systems is increasingly important.

Lithium-ion batteries offer different capabilities over VRLA including longer lifecycles, lighter weight, a smaller footprint and lower cooling requirements. Their potential is particularly valuable for small data centres and edge computing environments.

To find out more **CLICK HERE.**
**www.panduit.com**



# Schneider Electric

Schneider Electric's Easy UPS 3-Phase Modular is a robust UPS designed to protect critical loads while offering third-party verified live swap functionality. Easy UPS 3-Phase Modular is available in 50-250kW capacity with N+1 scalable configuration and supports the EcoStruxure architecture, which offers remote monitoring services.

With scalability top of mind, Easy UPS 3-Phase Modular enables you to pay as you grow, allowing you to optimise capital investment. It is a part of Schneider Electric's Green Premium portfolio, which ensures energy efficiency, durability, recyclability and transparency to help reduce environmental footprint.

In addition, this system features advanced technology such as a high efficiency design, intelligent battery management, real time monitoring and control capabilities. These features combine to make it one of the most cost effective and energy efficient UPS solutions available in the market.

To find out more **CLICK HERE.**
**www.se.com**

# Austin Hughes

Austin Hughes' InfraPower Z series enterprise level rack intelligent power distribution units (iPDUs) are embedded with dual Gigabit Ethernet LAN IP for redundant network access via IP. This ensures 100 per cent iPDU uptime reporting.

The Z series offers IP authentication support via Active Directory (AD) and Lightweight Directory Access Protocol (LDAPv3/LDAPS), as well as utilising the Remote Access Dial-In User Service (RADIUS) protocol and/or local credential database. Monitored and switched iPDU models are available to provide comprehensive remote monitoring and on/off outlet switching functionality from anywhere in the world.

Z series iPDUs are available in single-phase to three-phase, with new design intelligent meter and lockable/combo IEC outlets. The meter is hot swappable and field replaceable without needing to power down the iPDU or attached mission critical equipment. A 2.8-inch colour LCD with touchscreen displays kWh, kW, power factor, volt, amp, temperature and humidity, with billing-grade meter accuracy within +/- 0.5 per cent and a slim profile 0U chassis design.


Z Series rack iPDUs can be tailored to specific voltage, current and connection needs, providing flexibility to address diverse power distribution requirements within the data centre.

**CLICK HERE** to find out more, or to send an email **CLICK HERE.**

**www.austin-hughes.com**

# Mayflex

Mayflex offers the Uniti Power Symphony UPS range. Uniti Power is synonymous with high-quality UPS solutions, offering online double conversion UPS ranging from 1.5kVA to 10kVA – all delivering advanced technology and superior engineering.

Customers leveraging the Uniti Power UPS monitoring service gain access to an exclusive six-year warranty, ensuring comprehensive protection and peace of mind during power disruptions. This commitment to reliability and customer satisfaction is a cornerstone of the Uniti Power brand.


Uniti Power's comprehensive selection of products is complemented by exceptional technical knowledge, ensuring a seamless experience from start to finish. The company's unwavering commitment delivers unparalleled support, helping you navigate through its product range and offering expert advice precisely when you need it.

**CLICK HERE** to learn more.

**www.mayflex.com**

# Feeding the energy hog

Rob Shepherd talks to Centiel's Louis McGarry about the challenges artificial intelligence (AI) will bring with regards to energy use and management in data centres

**RS: Generative AI (GenAI) will put increased demands on data centres – what are the main challenges in relation to the scale and speed of demand?**

LM: AI is a huge beast and it's hungry! I've seen it described as an energy hog and that is very true. It's also growing rapidly and facilities are already gearing up to match the increased demand for data. However, no-one is quite sure about the future size of that demand.

At the moment we can't build data centres fast enough and to select and install the correct equipment for the future is a challenge, as we just don't know what that future looks like. Historically, data centres have been oversized from day one. However, oversized equipment costs more to purchase, run and maintain. Now facilities need to look for flexible solutions that will allow them to scale as needs change but minimise the cost of investment while the future size of the load is unclear.

**RS: AI requires far more power than conventional IT applications – what is the scale of the issue and how can it be addressed?**

LM: There is much consumer fear around the introduction of AI. While on the one hand it is an incredibly exciting development and offers huge potential in fields such as medical advancement, how it will be integrated into our everyday lives, for some, is terrifying.

Eventually it is likely that AI will simply become part of our everyday applications without us even noticing – but it requires significantly more computing power and, therefore, energy. For example, a voice AI internet search is estimated to take up 10 times more computing power than a

normal query and has knock-on effects in terms of energy use and data.

To quantify this further, the International Energy Agency has stated that data centres currently use about one per cent of global electricity demand. However, McKinsey has estimated that by 2030, data centres' power consumption will almost double and


is expected to reach 35GW annually, up from 17GW in 2022.

As a society we do need to think about the future impact of this huge increase. We all try and turn down our boiler a notch or make the effort to recycle plastic bags but these efforts will be so small in comparison with the use of AI and its hunger for power. It's human nature to enjoy the convenience of technological advancements but we do need to think long-term about its impact.

**RS: How will this affect uninterruptible power supplies (UPS)?**

LM: UPS systems protect and support critical loads over many different industry sectors. However, in the future they will become far more than simply a box sitting in the corner, because UPS offer the opportunity to manage energy better.

With its associated batteries, a UPS can potentially be used as a microgrid or energy hub to offset energy use at times of peak demand. It could also be used as an interface to accept alternative sources of renewable energy, which could contribute back to the grid. Energy companies realise how much power data centres use and so are likely to introduce incentives for facilities that can contribute to supporting the grid.

UPS solutions that are not future ready to accept, manage, store and contribute energy back to their own facilities and the grid are likely to become obsolete. Organisations investing in infrastructure and equipment now to manage future growth need to ensure such investment will last for the next 15-25 years, and not become outdated. Therefore, a UPS system with a long design life, which is flexible, adaptable in order to integrate with different energy management protocols, future ready to accept alternative energy sources and is also physically scalable, is an obvious choice.

**RS: How important will renewable sources of energy become and how does this relate to UPS?**

LM: Renewable energy will only be part of the puzzle. The challenge with renewable energy is that it requires a substantial amount of space to generate large amounts

‘With its associated batteries, a UPS can potentially be used as a microgrid or energy hub to offset energy use at times of peak demand. It could also be used as an interface to accept alternative sources of renewable energy, which could contribute back to the grid.’

of electricity. We are talking acres of photovoltaic arrangements to generate 1MW of power. While renewable energy will become important to support facilities, it will not be able to fully supply demand for every data centre.

Where renewable energy will be useful is to recharge battery banks and this energy used to take the peak off the grid energy demand. We have worked on numerous projects that allow UPS to take advantage of such peak shaving functionality. There is also an opportunity whereby a UPS could enable energy to be sent back to the grid simultaneously as accepting energy from renewables, while supporting the load. The short answer is that the grid, batteries and renewables will need to work together to satisfy and offset demand.

**RS: Will data centre locations need to change and, if so, how?**

LM: Data centres need space, power, cooling, access to a network and people to manage them. Data centres need to be accessible physically and they also need to be secure.

The challenge is that the UK is a compact nation – we live on top of each other in our cities and towns, so we are rather limited

for space. We have seen expansion into Ireland but laws now limit building of new data centres in some regions because of concerns about power availability.

No one knows what the future will look like. Will we need to saturate farmland with data centres? We can already see fields around motorways covered in photovoltaic arrays. Will our farming industry be impacted further?

**RS: How do you think AI will influence edge data centres?**

LM: The solution is likely to lie in slower transactional data being sent to data centres further afield. India, for example, already has huge data facilities taking advantage of more space and inexpensive labour. Edge data centres will be created and used for data which needs to be processed close to the source.

In our edge data centres, space is also likely to become an issue but if we can't go left or right the answer is go up! We will see power density tripling within the same racks, only taller. However, the challenge is that they will still need cooling and, therefore, energy.

Amazon Web Services (AWS) has announced it is to invest $10.5bn in for cloud and AI infrastructure over the next four years to build and operate data centres in the UK. Has it spoken to the energy companies to see where the energy needed to power these data centres will come from? The need for 20MW of power for AWS will be met with a yes and an associated cost but where does that leave the rest of us all needing a limited supply energy? Electricity costs will undoubtedly rise.

I certainly don't want to be negative about AI, as it offers the potential for huge, exciting technological advancement. It will also be good for business and create jobs in the data centre market. However, I do want to raise awareness of the challenges it will bring in relation to energy use and management, and how we need to work together to find answers and solutions to the many questions AI brings. We may even one day get to a point where we can simply ask the AI hog how to solve these challenges. It may well work out how to feed itself! ■

**LOUIS MCGARRY**

Louis McGarry is sales and marketing director at Centiel UK. His experience in the UPS industry spans many years, with an extensive knowledge of products that enables him to successfully design and deliver solutions for the critical power market. McGarry joined the Centiel team early in 2018 to assist in delivering the company's technology to the critical power market and build the Centiel brand.

## Wellcome Sanger Institute reduces data centre power consumption by 33 per cent with EfficiencyIT and Schneider Electric

EfficiencyIT has shared the results of a data centre digital transformation initiative for the Wellcome Sanger Institute. The project sought to increase the energy efficiency of its 4.5MW genomic data centre in Cambridge and improve both the resiliency and visibility of its critical systems.

Using Schneider Electric EcoStruxure IT Advisor, on-premises data centre infrastructure management (DCIM) software, and more than 300 custom designed APC rack power distribution unit (PDU) metering systems, the companies worked together to reduce the data centre's energy consumption by 33 per cent. This has been done by leveraging data analytics, machine learning and intelligent power monitoring to increase visibility across its data centre and distributed IT estate, remove stranded capacity and manage operating expenses, despite the increasing cost of energy.

The Wellcome Sanger Institute has also utilised the latest advancements in sequencing equipment, high performance computing (HPC) and graphics processing unit (GPU) technologies to increase its computational output by 50 per cent. This has been integral in accelerating the production of research data, allowing the Wellcome Sanger Institute to both undertake and contribute to a host of ground-breaking projects.



## Myo St Paul's chooses Freshwave for assured mobile connectivity

Freshwave is working with Myo to bring mobile connectivity from all four mobile network operators to its St Paul's co-working space in London. Situated at One New Change, Myo St Paul's spans three floors, all of which will benefit from 4G connectivity through Freshwave's managed service. The areas offers flexible office and event space, complemented by a rooftop terrace featuring a bar and hosts a vibrant programme of events and classes for its members.

People are working more flexibly than ever before and reliable mobile connectivity is essential for remaining productive. But with construction materials such as concrete and energy efficient glass blocking mobile signals from penetrating buildings from outside, an indoor mobile system is often needed to extend a network into the building. Freshwave is deploying small cells that connect securely into the operators' networks, assuring quality of service for Myo St Paul's and its members.

# Ultra-fast fibre connects winegrowers in Austria

Wine growing regions of Lower Austria now have reliable and super-fast optical fibre internet thanks to a partnership between Slovenia's Kontron and Speed Connect Austria. Lower Austria's rural areas are traditionally dependent on agriculture and known for vineyards and wine growing. They can now benefit from the new opportunities of a digital society.

The milestone has been reached less than a year into the project, with more than 800km of fibre being laid in Lower Austria as part of Speed Connect Austria's open access network. Kontron's Iskratel broadband products have been used as part of the project, enabling 10Gb/s connectivity for residents.

One of the locations benefitting is the Zellerndorf district located in the Retzer Land, a part of the Weinviertel wine-growing region in the northeast of Lower Austria. The Zellerndorf area has seen almost a 10 per cent population decrease over the last two decades and an improved online experience and internet access were identified as crucial to ensure residents have a better place to live and work.



# Kao Data starts work on the construction of its £350m Greater Manchester data centre

Kao Data has commenced construction of its new £350m data centre in Stockport, Greater Manchester. Work recently began to demolish existing buildings on the ex-industrial site in preparation for the new data centre, which is expected to be powering customers' workloads by 2026.

The state-of-the-art facility will further cement Greater Manchester's growing reputation as a major hub for UK digital infrastructure and technology innovation, and ties into the Greater Manchester Combined Authority's (GMCA) Greater Manchester Digital Blueprint by extending the region's world-class digital infrastructure.

Upon completion, the data centre will deliver computing capabilities to regional and international organisations, providing them with one of Europe's most advanced and sustainable hosting environments, powered by 100 per cent certified renewable energy. It is also expected to bring numerous employment opportunities to the area, creating both direct and indirect jobs across construction, engineering and operations, while attracting further tech professionals to the region.

# New full-fibre network enhances lifesaving operations around the UK's coastline

A £175m communications network connecting 163 remote radio sites across 11,000 miles of UK coastline is now operational, ensuring His Majesty's (HM) Coastguard's effective frontline emergency response continues for thousands of distress calls. Stretching from the Shetland Islands to the Isles of Scilly, it is one of the UK's largest private broadband networks, with Telent helping to install 1,220km of new infrastructure.

The first installations of the new network, combining full-fibre and microwave technology, began in December 2020, as Telent secured a new 10-year contract earlier that year with the Maritime and Coastguard Agency (MCA) to design, build and operate the upgraded network for HM Coastguard. This is part of the MCA's investment in the Radio Network Infrastructure Replacement Programme (RNIR). The upgraded full-fibre connectivity is set to deliver improvements such as greater bandwidth and security, along with enhanced performance and improved reliability.



# North secures £1m contract to transform the University of Central Lancashire into a smart campus

North has been awarded a contract worth over £1m to use new technology to transform the University of Central Lancashire into a smart campus. The project will transition the existing analogue CCTV control system to a state-of-the-art, hybrid cloud-based platform.

The new system will amalgamate multiple current systems into a single user interface that will integrate monitoring, reporting, alarms and management into one system. This will increase operators' ease of use and ensure faster response times from security staff on campus.

The upgrades will significantly improve security at one of the largest universities in the UK, with over 38,000 students and staff across its 350 undergraduate programmes and over 200 postgraduate courses. This new security upgrade lays the foundations for the continued creation of a smarter, safer and more sustainable campus.

## PROJECTS & CONTRACTS IN BRIEF

Saft has won a contract to deliver a turnkey, utility-scale battery energy storage system (BESS) for Genesis Energy, a listed New Zealand generation, wholesale and retail energy company. The 100MW 200MWh BESS will be installed at Huntly Power Station on the country's North Island.

MLL Telecom is to provide schools with the latest local area network (LAN) and Wi-Fi technology. 25 academies and schools in East Sussex, Essex, Kent, Hampshire and Surrey will benefit from upgraded fixed and wireless network connectivity supported by structured cabling infrastructure.

Centranet has become the first company to demonstrate a 50Gb/s optical fibre internet connection for a tribal nation in Oklahoma. The live commercial trial, using Nokia's Lightspan fibre solution, allowed Centranet to connect a pilot member of the Sac and Fox nation to one of the fastest residential internet speeds available globally. This marks a significant milestone for the company and its ability to close the digital divide for rural and indigenous communities.

Telehouse Europe has opened two additional floors at its Telehouse South data centre in London Docklands. Floors six and seven will each provide up to 2.7MW of peak IT load.

# Perstorp

Perstorp has worked with Intel's Open IP Advanced Liquid Cooling team and developed a high-performance synthetic thermal management fluid specifically designed for immersion cooling. Perstorp joined Intel's Open IP Advanced Liquid Cooling ecosystem in 2022 with a focus on developing a fluid that has low viscosity and long product life, as well as outstanding dielectric and fire safety properties.

Compared to conventional, single-phase immersion cooling with its cooling capacity of about 500W per chip, Intel's SuperFluid technology, which uses air as a lubrication system, can increase cooling capacity to 800W. This can be further improved to 1500W when it is combined with the low viscosity properties of Perstorp's advanced synthetic thermal management fluid, alongside flow field management, optimised system control and intelligent management of the cooling distribution unit.

This meets the needs of future high-end artificial intelligence (AI) chips, while complying with requirements for data centre Power Usage Effectiveness (PUE). Perstorp has also worked on enhancing the fluid's intrinsic sustainability profile – it is PFAS-free and therefore has a low global warming potential (>1) and an ozone depletion potential of zero.

To find out more **CLICK HERE.**
**www.perstorp.com**



# Telehouse Europe

Telehouse Europe has launched Telehouse Customer Plus, a premium concierge service designed to offer customers enhanced, highly personalised support for managing their operational relationship with Telehouse.

The service builds upon an already successful programme that has for several years been delivering results for customers with bespoke needs. Telehouse has now formalised the service to meet the increasing demand from businesses that require a highly integrated and strategic partnership with their colocation data centre provider, particularly in industries with stringent regulatory and operational needs.

Telehouse Customer Plus is available in two tiers – Gold and Platinum. The Gold tier is ideal for businesses requiring dedicated support, with regular service reviews and detailed reporting. For customers with more complex requirements or critical infrastructure needs, the Platinum tier offers enhanced support. In addition to all the benefits of the Gold tier, Platinum customers receive unlimited audit coordination and documentation support, helping them navigate regulatory compliance effortlessly.

For more information **CLICK HERE.**
**www.telehouse.net**

# Siemon

Siemon is now offering its full range of optical patching solutions to work specifically with NVIDIA artificial intelligence (AI) infrastructure for generative AI networks. Large complex graphics processing unit (GPU) clusters can benefit from using structured cabling patch panels versus point-to-point cabling.

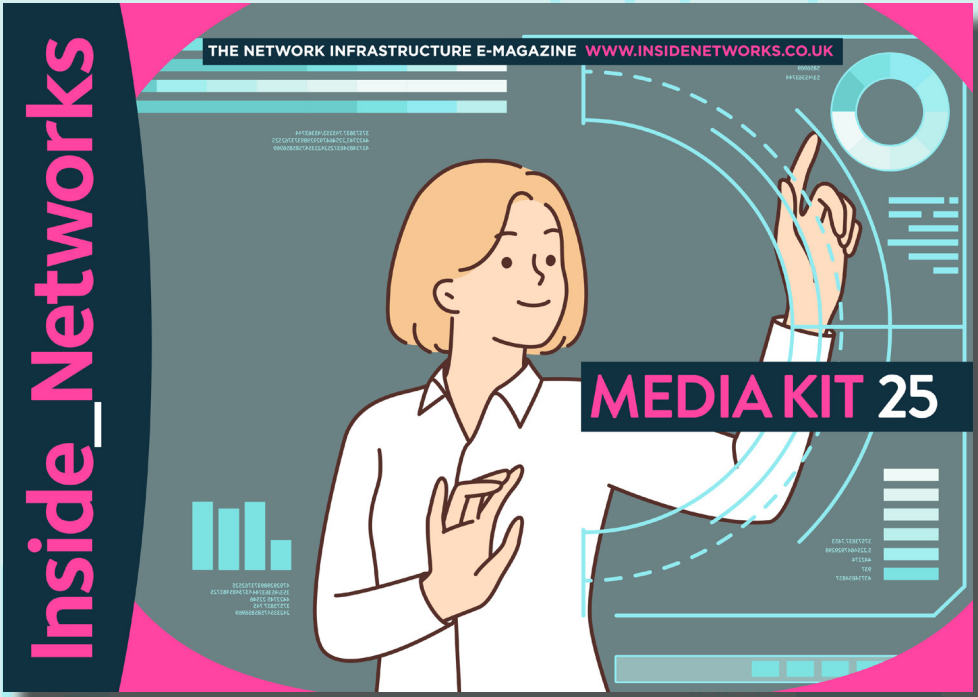
As part of the solution integration, Siemon has joined the NVIDIA Partner Network (NPN) as a solution advisor consultant. NPN solution advisor consultants provide consultation services and expert advice to customers looking to implement NVIDIA-based solutions or technologies. Siemon joins the network to offer its expertise in addressing the unique infrastructure and cabling challenges presented by accelerated computing.

NVIDIA optical reach specifications are calculated assuming two optical patch panels are used in the link and each employs two optical connectors, which makes for a total allowance of four optical connectors in the link. Siemon's optical patching solutions meet NVIDIA requirements and provide customers with flexibility and ease of management.

To find out more **CLICK HERE.**

**www.siemon.com**

# All you need to know

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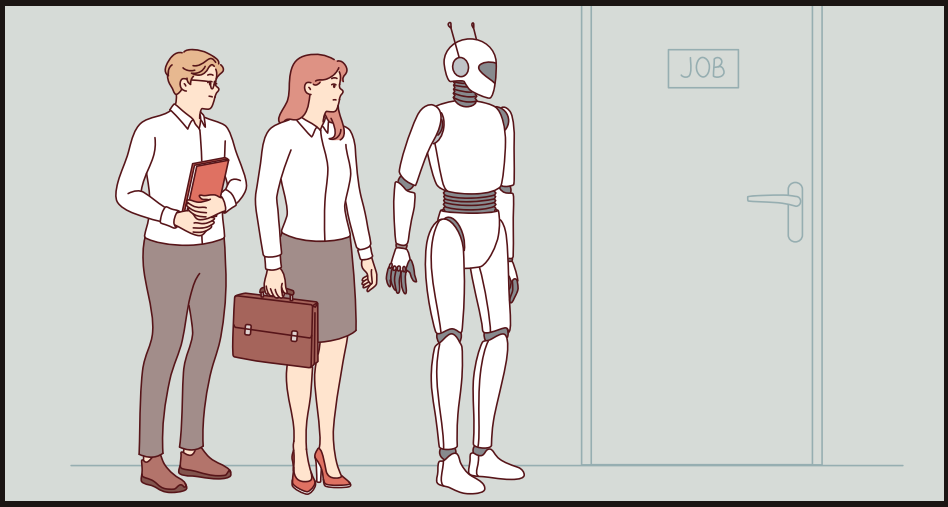
# The times they are a-changin'

Kam Patel of CommScope looks how data centres are adapting for the evolving needs of artificial intelligence (AI)






If 2023 marked a groundbreaking awakening to the vast potential of AI, 2024 has blossomed into a transformative era. AI's diverse applications – spanning machine learning, deep learning and natural language processing – have woven themselves seamlessly into the very fabric of our daily lives, revolutionising how we live, work and connect.

## FIGURING IT OUT

In the wake of its explosion in popularity, data centre managers and their teams are working hard to figure out how to handle not just the additional petabytes of data flooding their networks, but the ultra-low latency requirements. There are also challenges posed by the increase in power required and the higher optical fibre counts needed.

The rise of AI is driving a fundamental shift in the way data centres are built. These changes are set to significantly impact network infrastructure, encompassing everything from cabling and connectivity to architecture, resilience and adaptability. Let's explore some of the key challenges and opportunities of cabling AI data centres, along with a few best practices and tips for success.

## INSATIABLE DEMAND

In the Republic of Ireland, data centres now account for more than 20 per cent of all electricity consumption, up from just five per cent in 2015. As a result, we have reached a point, for the first time in history, where the ability to deliver the

power required for data centre operations can no longer be guaranteed.

More recently, we've also seen big tech's net-zero ambitions come under threat from the power demands of AI and energy intensive data centres. Google announced its greenhouse gas emissions have surged 48 per cent in the past five years due to the expansion of its data centres, while Microsoft's Scope 3 emissions are currently more than 30 per cent above its 2020 levels. If data centres are to successfully thread the needle between improved sustainability and increased capacity and performance, they'll need help from their infrastructure technology partners – and they're getting it in a variety of formats.



## GRAPHICAL COMMUNICATION

Processing these large AI models requires multiple interconnected graphics processing units (GPUs) spread over many servers and racks. An AI data centre deploys dozens of these AI clusters, and the cabling infrastructure that ties everything together to keep the data flowing presents a unique set of challenges.

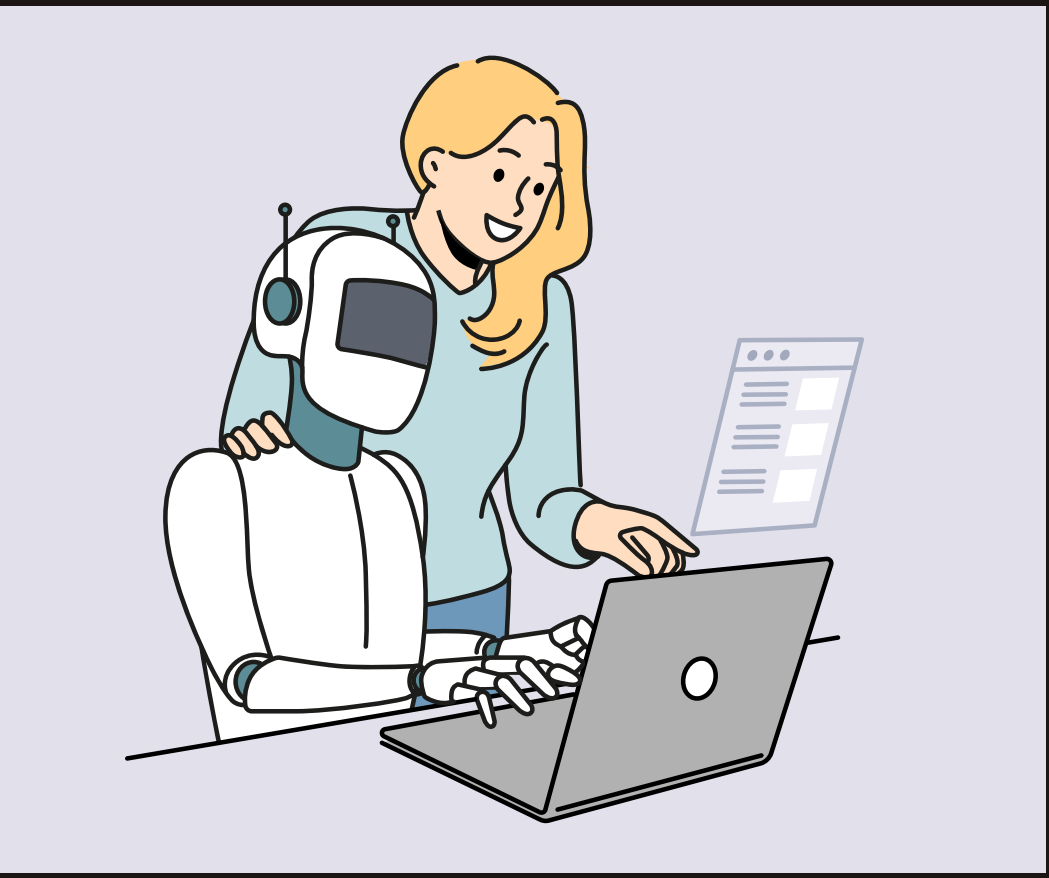
For example, GPU servers require much more connectivity between servers but, due to power and heat restraints, there are fewer servers per rack. Consequently, there is more inter-rack cabling in an AI data centre than in a traditional data centre. Every GPU server is connected to a switch within the row or room and these links require 400Gb/s and 800Gb/s at distances that can't be supported by traditional copper connections. Additionally, each server needs to be connected to the switch fabric, storage and out-of-band management.

> 'It is essential for infrastructure designers and planners to innovate in terms of efficiency, scalability and sustainability. A pivotal aspect of this innovation is the enhancement of cabling systems, which will enable operators to economise on costs, energy consumption and installation duration.'

## IDEAL WORLD

In an ideal scenario, all the GPU servers in an AI cluster will be close together because AI and machine learning algorithms, like high-performance computing (HPC), are extremely sensitive to latency. One estimate claims that 30 per cent of the time to run a large training model is spent on network latency and 70 per cent is spent on compute time.

To minimise latency, AI clusters aim to keep GPU servers in close proximity, with nearly all links limited to 100m reaches. Unfortunately, not all data centres will be able to place the GPU server racks in the same row. These racks easily need more





than 40kW to power the GPU server, which is considerably more power than typical server racks, and traditional data centres will need to space out their GPU racks as result.

## ROLL WITH IT

While extra space isn't a viable option for the tightly packed server rack layout of today's data centres, navigating their narrow and congested pathways and the increased cabling complexities that come with AI are possible with innovations such as rollable ribbon fibre. The unique design enables up to six 3,456 fibre cables to be loaded into one four-inch duct – more than twice the density of conventionally packed fibres.

With rollable ribbon fibre cable, the fibres are attached intermittently to form a loose web. This configuration makes the ribbon more flexible, allowing the fibres to flex with a degree of independence from one another. The fibres can now be rolled into a cylinder, making much better use of space when compared with flat ribbons. While the cables are lighter and simplify handling and installation, its intermittent bonding enables installers to position the fibres naturally into a smaller cross-section, making it perfect for splicing.

## FORWARD THINKING

The future business case for data centres lies in their massive processing and storage capacity, and operators should carefully consider which optical transceivers and fibre cables they will use in their AI clusters. Due to the short links within an AI cluster, the optics cost will be dominated by the transceiver. Transceivers that use parallel fibre, for example, are advantageous because they do not require the optical multiplexers and demultiplexers used for wavelength division multiplexing (WDM), resulting in both lower cost and lower power for transceivers with parallel fibre.

Links up to 100m are supported by singlemode fibre and multimode fibre applications, while advances like silicon photonics have reduced the cost of singlemode transceivers. Additionally, many AI clusters use active optical cables (AOCs) to interconnect GPUs spread over many servers and racks.

Most are used for short reaches and are typically paired with multimode fibre and vertical cavity surface emitting lasers (VCSELs). The transmitters and receivers in an AOC may be the same as in analogous transceivers but are the cast-offs. Neither the transmitter nor receiver must meet rigorous interoperability specifications because they only need to operate with the unit attached to the other end of the cable. Additionally, since no optical connectors are accessible to the installer, the skills required to clean and inspect fibre connectors aren't needed.

## CAREFUL CONSIDERATION

The evolution and adaptation of data centres are imperative to meet the burgeoning requirements of AI. It is essential for infrastructure designers and planners to innovate in terms of efficiency, scalability and sustainability. A pivotal aspect of this innovation is the enhancement of cabling systems, which will enable operators to economise on costs, energy consumption and installation duration. Such upgrades are crucial for equipping facilities with the capacity to handle not only current AI-driven workloads but also those anticipated in the future. By embracing these changes, we can establish data centres that are equipped to confront contemporary challenges, while being well-prepared for future advancements. ■

**KAM PATEL**

Kam Patel is CommScope's vice president of data centre market development. He has been with CommScope for more than 30 years in a variety of business development, engineering, marketing, operations, product management and strategy roles, and has authored numerous articles, white papers and presentations on the design of telecommunications and data networks. Patel holds more than 20 patents for network equipment.

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