

Inside Networks

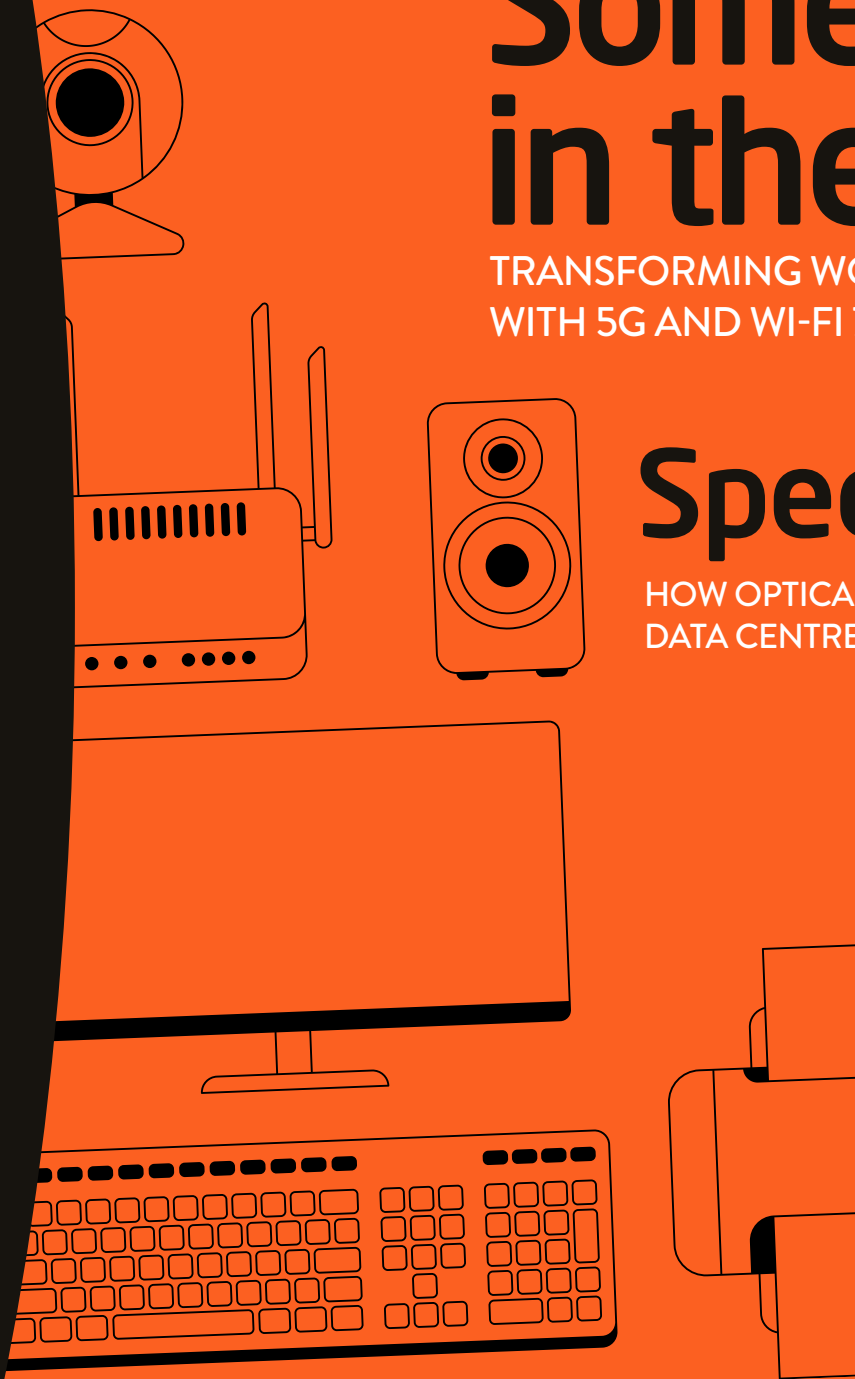
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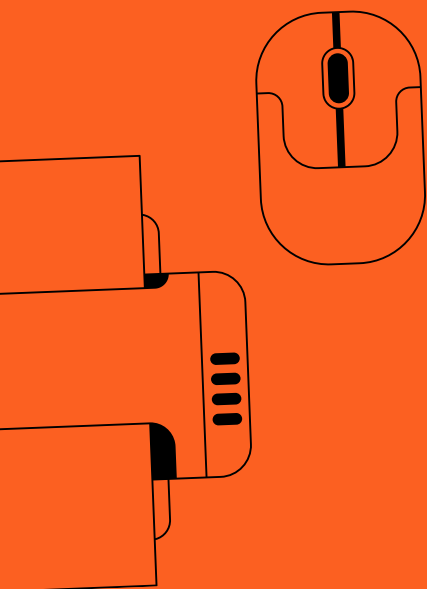
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Back to the future

WHY RETROFITTING IS
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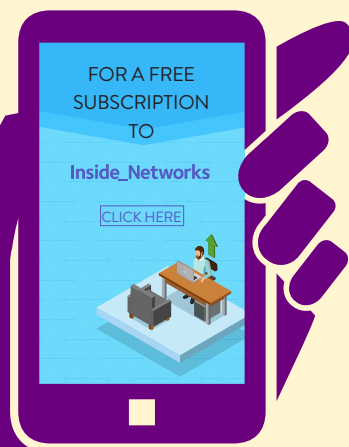
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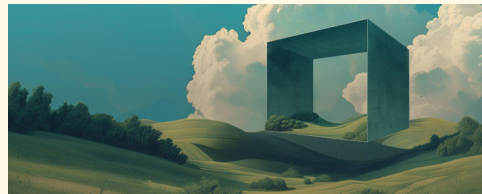
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Artificial intelligence (AI) has created unprecedented demand for high speed, low latency and low loss data transmission within data centres.

This has made efficient, high performance connectivity a critical factor and to support advanced AI systems, data centres must adopt infrastructure that can deliver exceptional speed, bandwidth, reliability and future readiness.

Optical fibre cabling is the optimal solution to meet these growing requirements. With its ability to transmit vast amounts of data at lightning fast speeds while maintaining low latency, fibre outperforms traditional copper connections in most data centre applications. Its superior bandwidth ensures smooth data flow, reducing bottlenecks and enhancing overall network efficiency. Additionally, fibre is immune to electromagnetic interference, offering improved stability.

As data centres race towards 400Gb/s, 800Gb/s and even 1Tb/s network speeds to meet the demands of AI, in this issue's Question Time we've asked a specially selected panel of industry experts to examine the ways it impacts the specification and installation of fibre cabling in these environments. They also look at how to maximise return on investment, while ensuring optimum longevity and reliability.

Also in this issue, as data centres scale to support AI workloads reliable power is vital and our old friend Louis McGarry of Centiel explains why we must raise our game in terms of power provision and management, while being as sustainable as possible. On a related subject, Ashish Moondra of Chatsworth Products (CPI) takes a deep dive into the role of prescriptive and predictive management in optimising data centre power.

We also have a feature on wireless network infrastructures, where Aginode's Rachid Ait Ben Ali explains how 5G, Wi-Fi 7 and wireless network infrastructures are transforming workspaces. He's followed by R&M's Matthias Gerber, who explains how to enhance wireless connectivity with hybrid cabling for Wi-Fi 7 and 5G access points.

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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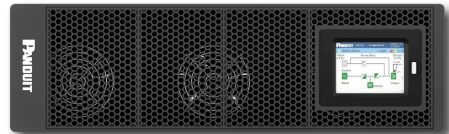
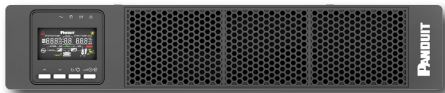
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North American data centre construction hit new heights in 2024 amid surging demand

The North American data centre sector doubled the amount of supply under construction in 2024 from the previous year to a record 6,350.1MW – a 12-fold increase from the 456.8MW under construction in 2020. This surge highlights the growing need for data centres that can meet the power demands of artificial intelligence (AI) companies, according to research from CBRE.

Last year, the eight primary North American data centre markets – Northern Virginia, Dallas-Fort Worth, Silicon Valley, Chicago, Phoenix, New York Tri-State, Atlanta and Hillsboro – saw a significant uptick in completed construction, with total supply reaching 6,922.6MW – a 34 per cent year on year increase. This growth outpaced the 26 per cent increase in new supply in 2023. Despite this, the sector is struggling to meet current demand due to extended construction timelines driven by power constraints and supply chain delays.

Although being outpaced in overall net absorption, Northern Virginia remained the largest data centre market with 2,930.1MW of total inventory, 17 per cent larger than a year prior due to robust construction. Northern Virginia recorded 451.7MW of total absorption in 2024. Two markets experienced significant increases in inventory in 2024 from the previous year – Atlanta with a 1,000.4MW total inventory, a 222 per cent increase, and Phoenix



with a 602.8MW total inventory, a 67 per cent increase.

In 2024, the average vacancy rate in primary markets reached a record low of 1.9 per cent, decreasing for the first time since CBRE started tracking the data centre sector in 2013. In tandem, the national average lease rate rose to a record

\$184.06 per kW/month, up 12.6 per cent from a year ago, marking the third straight year of double digit percentage increases.

The power demand of AI is a key influence on site selection as occupiers prioritise sites with power available in the next 18-24 months, a short timeframe in the current market. Sites with access to power are attracting attention from developers and investors regardless of location, which is a shift from previous years. Markets in North Carolina, Northern Louisiana and Indiana are positioned for significant growth due to greater power accessibility, available land and tax incentives.

‘We saw unprecedented demand last year in the North American data centre market fuelled in part by AI and digital services – which drive a need for modern data centres – and investment from hyperscalers and developers,’ said Pat Lynch, executive managing director and global head of CBRE Data Center Solutions. ‘However, the risk of oversupply in the near-term is minimal because of extended timelines for power delivery and wait times of 36 months or more for electrical equipment such as transformers, generators and switchgear.’

Schneider Electric exceeds its 2024 sustainability target

Schneider Electric has published details of its sustainability performance for the final quarter of 2024. The company's sustainability impact (SSI) score was 7.55 out of 10, surpassing the 2024 end year target of 7.40. Monitoring and reporting on the 11 global commitments of its SSI's quarterly progress is fundamental to achieving the company's goals tied to all dimensions of environmental, social and governance (ESG).

'In 2024, Schneider Electric was

recognised by Time and Statista as the world's most sustainable company,' said



Chris Leong, chief sustainability officer at Schneider Electric. 'Earlier this year, we were honoured to receive the same recognition from Corporate Knights as part of its Global 100 ranking – marking our second time topping this list and a first for any corporation. These

remarkable achievements are inspiring us to reach even greater heights in 2025.'

74 per cent of businesses will invest in AI this year but data quality issues threaten their ambitions

While 74 per cent of businesses plan to invest in artificial intelligence (AI) initiatives this year, less than half (46 per cent) are confident in their data quality. This is according to a survey of 1,050 senior business leaders across the US, UK and France by Semarchy.

This contrast highlights a critical challenge that businesses face as they rush to adopt AI without ensuring data

readiness. 98 per cent have encountered AI related data quality issues, primarily due to data privacy and compliance constraints (27 per cent), high volumes of duplicate records (25 per cent) and inefficient data

integration (21 per cent). These challenges have resulted in decreased trust in AI outputs for 19 per cent of businesses – a critical risk to AI credibility and adoption. Additionally, companies report delays in

new project deployment (22 per cent) and increased costs (20 per cent).

Craig Gravina, chief technology officer at Semarchy, said, 'The enthusiasm for AI adoption from businesses is clear, but our findings reveal a troubling gap between ambition and reality. Businesses are eager



to embrace AI, yet many lack the data quality necessary for success. Deploying AI at scale on a bad foundation will only magnify business risks and lead to wasted investments.'

Building engineering growth remains flat as skill shortages and volatile pricing persist

The latest Building Engineering Business Survey, carried out by ECA in partnership with BESA, SELECT and SNIPEF, shows that for the twelfth quarter in a row the biggest obstacle to growth in the sector is a shortage of skilled electricians. 37 per cent of respondents cite a significant shortage of qualified electricians as holding back growth in the sector.

ECA chief operating officer, Andrew Eldred, said, 'The electrical industry is the backbone of the net-zero transition, but

the sector is struggling to train new talent at the required scale or speed. The issue is not just the recent drop in apprenticeship starts – there is also a fundamental disconnect between further education and employment. Fewer than 10 per cent of individuals completing government funded, classroom based electrical courses progress to apprenticeships within a year. This means thousands of young people keen to enter the industry are unable to do so because the system does not have the capacity to support them.'



Andrew Eldred

Private cellular network market to grow 114 per cent by 2028 but 5G uptake continues to disappoint

Juniper Research has found that global private cellular network revenue will reach \$12.2bn by 2028. This significant increase from \$5.7bn in 2025 represents a growth rate of 114 per cent. Given the slow growth of this market in previous years, this marks a pivotal shift as more enterprises look to invest in private networks.

Research from the company further predicts nearly 3,000 new private networks will be deployed over the next two years, compared to just 2,500 in the last four years. The study found that the key catalyst of this growth is the

availability of network-as-a-service (NaaS) business models. The study also predicts 5G will only account for \$5.6bn of market value by 2028, despite 5G technology having been commercially available for private networks since 2019.

Michelle Joynson, research analyst at Juniper Research, stated, 'As the market grows, vendors must provide flexible business models such as NaaS to attract high spending private network users. This will also enable vendors to expand private

5G deployments, as businesses are better able to maintain the capital and operational cost of the network.'



Michelle Joynson

Worldwide IoT market to surpass \$1.8tn in 2028 driven by 5G and AI

The global internet of things (IoT) market is poised to grow at a compound annual growth rate (CAGR) of 13.5 per cent from \$959.6bn in 2023 to \$1.8tn in revenue in 2028, according to research from GlobalData. This growth is driven by the rise of enterprise applications, enhanced by new technologies like 5G and artificial intelligence (AI).

AI is increasingly important as an IoT catalyst. AI of things (AIoT) involves embedding AI into IoT devices, software and services. Combining data collected by connected sensors and actuators with

AI supports automated operations and predictive maintenance.

William Rojas, research director strategic intelligence at GlobalData, commented, 'AIoT technologies in the form of embedded AI acceleration microprocessors, combined with the addition of new wireless access technologies, will act as a further catalyst for IoT adoption across enterprise and consumer sectors. Deployments that might have initially used only one type of IoT sensor are expanding to include a wide range of sensors as the cloud analytics processing capability continues to expand.'

NEWS IN BRIEF

Vantage Data Centers has invested an additional \$500m CAD to drive growth, innovation and sustainability in Quebec, bringing the company's total investment in the region to \$2.5bn CAD.

Daljit Rehal, chief digital and information officer for HM Revenue and Customs (HMRC), has been announced as the new president of BCS, The Chartered Institute for IT. He takes over from Alastair Revell, who will remain active as immediate past president.

NTT Data and MUFG Bank have successfully migrated live banking systems between data centres up to 100km apart with less than one second of downtime. Using the IOWN All-Photonics Network, the test also demonstrated synchronous database replication over distances up to 2,500km. This type of real-time data synchronisation will help financial institutions prevent outages.

Portus Data Centers' colocation facility in Luxembourg has become the first in the European Union (EU) to receive the prestigious Swiss Datacenter Efficiency Association (SDEA) Label.

Oracle plans to invest \$5bn over the next five years to expand its cloud infrastructure in the UK. This initiative will enhance access to advanced AI, multicloud and sovereign cloud solutions for businesses and public services.

According to analysis by Storyblok of 200 European senior professionals involved in digital accessibility, only 47.5 per cent of companies are fully aware of the European Union's European Accessibility Act and have a solid understanding of it. 18.5 per cent admit they are still not aware of the Act's requirements at all.



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Why a 'cloud smart' strategy

Hi Rob

The evolution of public cloud over the past few years has been remarkable. Digital transformation and artificial intelligence (AI) have created breakneck growth but the economic outlook is shifting rapidly. Even amidst the incredible growth of AI and rapidly maturing internet of things (IoT) use cases, organisations have reconsidered their approach, with reviews of infrastructure exposing hidden risks – and costs.

Being locked into public cloud can expose a business to costs around excessive consumption, expensive and scarce management talent, data egress and increased security. By comparison, recent years have been an abject lesson that unpredictable energy prices, difficulties in scaling and increased costs of security can threaten the returns of a proprietary data centre.

It is these sobering realisations that have led to an increased interest in colocation. Businesses want to combine the flexibility and scalability from cloud with the cost control of owned infrastructure. This has been summarised as putting the right workload in the right place. Typically, this is now driven by a need for increased efficiency to improve profitability. The warnings from Gartner to beware of cloudwashing and aim for a 'cloud smart', as opposed to 'cloud first', approach have been embraced in this new context.

To be cloud smart, businesses need infrastructure partners that can offer comprehensive options to enable them to run lean, resilient IT operations. It is no

longer about just space and power in a colocation data centre – especially in an age of AI workloads that will push hardware to its limits.

The imperative is enabling customers



to focus on their core business, not just IT management. Colocation success is about strategic business capabilities being developed. This begins even before stepping inside a data centre – it starts where that facility is located.

One of the crucial issues with centralised, hyperscale cloud facilities has

Strategy is the way forward

been that businesses do not have control and access to their technology. Regional data centres put businesses closer to their data. This not only means better control, it improves performance and reduces

impact profitability. The most compelling rationale for any form of outsourcing is to enable a business to offload non-critical tasks. Digital infrastructure is no different.

After periods of innovation and adaptation, the pendulum has swung back and the goal for businesses in 2025 is profitability. Organisations once again need to focus on how to optimise infrastructure costs. In this respect, colocation provides the best of both worlds – cloud versatility and scalability, whilst maintaining on-premise control.

But providers must expand their focus and deliver more than space and power. They need to offer comprehensive solutions to help enterprises build resilient, lean foundations that drive the bottom line. Likewise, businesses looking to explore colocation need to integrate it into a comprehensive infrastructure designed to control costs and deliver a substantial return.

Mark Lewis
Pulsant

Editor's comment

Mark's comment about putting the right workload in the right place hits the nail on the head regarding this issue. Many companies that have spent the last few years prioritising the public cloud are now beginning to think differently. It has clearly led to a resurgence in interest in colocation data centres that allow businesses seek to blend the flexibility and scalability of the cloud with the cost efficiency of owning their own infrastructure.

support costs – especially in the event of maintenance or unexpected downtime.

To then go one step further, a colocation partner will not only minimise disruption or outages but also ensure that assets perform at their optimal level. Resilience and performance are not the same thing, and a true partner recognises how both



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Life in the fast lane

As data centres scale to support artificial intelligence (AI) workloads, optical fibre cabling must be carefully selected and deployed to ensure maximum efficiency, scalability and performance. [Inside_Networks](#) has assembled a panel of industry experts to discuss the key considerations

▶ The rapid growth of AI has significantly increased demand for high speed, low latency data transmission in data centres. As such, optical fibre cabling is considered the ideal solution to meet these demands due to its superior bandwidth, speed and reliability.

AI workloads require massive amounts of data to be processed in real-time, often across distributed computing environments. Fibre, with its ability to transmit data very quickly, allows AI large language models (LLMs) to be trained and deployed efficiently without bottlenecks.

As AI continues to evolve, data centres must scale their infrastructure

to accommodate the increasing complexity of LLMs and the exponential growth of data. Fibre supports this scalability by offering higher capacity and longer transmission distances, making it essential for connecting high performance computing clusters.

So, what impact is AI having on the specification and installation of optical fibre cabling and how can it be configured to provide the speed, reliability and scalability necessary to future proof data centres? Inside_Networks has assembled a panel of industry experts to give us their views and offer some advice.

AS DATA CENTRE OPERATORS LOOK TOWARDS ACHIEVING NETWORK SPEEDS OF 400GB/S, 800GB/S AND EVEN 1TB/S TO SUPPORT THE DEMANDS OF AI WORKLOADS, WHAT IMPACT IS THIS HAVING ON THE SPECIFICATION AND INSTALLATION OF OPTICAL FIBRE CABLING IN THESE ENVIRONMENTS? TO MAXIMISE RETURN ON INVESTMENT AND ENSURE OPTIMUM LONGEVITY AND RELIABILITY, WHAT ARE THE KEY CRITERIA TO CONSIDER?

NIKOLAY EFIMOV

TECHNICAL PROJECTS MANAGER UK, IRELAND AND CENTRAL ASIA AT SIEMON

As data centres race towards 400Gb/s, 800Gb/s and even 1Tb/s network speeds to meet the demands of AI, the backbone of these high speed networks – high speed interconnect (HSI) cables as well as traditional optical fibre cabling – has never been more critical. But it's not just about speed. The real challenge is building a cabling infrastructure that delivers performance today while remaining scalable for the future.

Quality is non-negotiable. At these speeds, even minor imperfections in fibre components can introduce latency and signal loss, impacting AI workloads that rely on real-time data processing. This is why only high quality fibre from trusted manufacturers, backed by strict warranty conditions, should be considered. Low latency performance is also key, particularly for short range, HSI cables within racks or between adjacent racks. Meanwhile, leaf-to-spine links demand a robust structured cabling system to maintain performance across longer distances.

Equally important is minimising optical loss. The more connections in a link, the greater the attenuation, which is why low loss bend insensitive OM4 multimode and OS2 singlemode fibre are essential. Getting this right isn't just about meeting today's requirements – it ensures seamless upgrades to even higher speeds in the future.

Then there's the issue of cable density. As

the number of ports and connection density increases, thoughtful cable management becomes absolutely essential. It directly impacts system maintenance and upgrades, reducing the risk of potential downtime associated with these processes.

Beyond connectivity, power and thermal management must also be considered. Higher speed optics generate more heat, so cabling should be carefully routed to avoid blocking airflow. Using precisely measured HSI cables and patch cords with reduced diameters ensures efficient cooling and prevents unnecessary congestion in racks. Installation best practices – proper bend radius, fibre

cleanliness and structured routing – are the finishing touches that make all the difference.

With AI pushing network demands to new heights, data centres can't afford to compromise on cabling. Investing in high quality, low loss and future ready infrastructure isn't just a technical decision, it's a strategic one that ensures efficiency, longevity and performance.



'INVESTING IN HIGH QUALITY, LOW LOSS AND FUTURE READY INFRASTRUCTURE ISN'T JUST A TECHNICAL DECISION, IT'S A STRATEGIC ONE THAT ENSURES EFFICIENCY, LONGEVITY AND PERFORMANCE.'

MICHAEL AKINLA

BUSINESS MANAGER NORTHERN EUROPE AT PANDUIT

AI training performance heavily depends on the underlying network's physical layer performance. For many data centres, future infrastructure upgrades are necessary to keep pace with the growth of AI models and the services they provide. As networks grow to multiple clusters, scaling and maintaining the network becomes challenging when direct point to point connections are used.

This is where structured cabling can play an important role. Its modular characteristics facilitate easy deployment, documentation, upgrades and network scaling, at the same time simplifying maintenance and cable management.

Fortunately, current high specification optical fibre cabling and connectivity technologies can support 400Gb/s to beyond 1.6Tb/s. The key criteria for maximising return on investment and ensuring longevity in optical fibre infrastructure are:

- **Latency.** Structured cabling introduces more connection points when compared to a point to point cabling approach. This does not translate to more latency, due to the short distances involved when deploying these super pods <50m, and corresponds to around 250ns of light propagation delay. Moreover, factors of latency produced at the transceivers and switches become more relevant. For example, forward error correction (FEC) encoding and decoding can take 100s of nanoseconds alone, while switch processes like buffering and queuing

can contribute from 100s to 1000s of nanoseconds.

- **Derisk AI.** Structured cabling derisks AI point to point connections and long lines – when the fibre infrastructure count is going up by a factor of eight it poses challenges when looking to scale. Having a permanent infrastructure deployed allows all additions to be managed in the patch field with short and easily manageable fibre interconnects.

- **Scalability and modularity.** Implementing modular and scalable cabling

solutions gives the option to preconfigure cabinet assets with the required active components. Using a structured cabling approach means the connectivity can be positioned in a zone above the cabinets, allowing a rack and roll approach.

By focusing on these criteria, data centre operators can effectively navigate the challenges associated with upgrading to higher network speeds, such as transitioning from 400Gb/s to 800Gb/s and 1.6Tb/s. A strategic approach to structured cabling infrastructure not only meets current AI workload demands but also positions the data centre for future technological advancements.

'IMPLEMENTING MODULAR AND SCALABLE CABLING SOLUTIONS ALLOWS THE OPTION TO PRECONFIGURE CABINET ASSETS WITH THE REQUIRED ACTIVE COMPONENTS.'





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CARSTEN LUDWIG

MARKET MANAGER DATA CENTRES AT R&M

As data centre operators adopt higher network speeds to meet AI workload demands, optical fibre cabling specifications and installation practices need to evolve in a variety of ways. One key requirement is upgrading IT hardware such as servers and switches. These need to be capable of accommodating high speed transceivers (xSFPs) that can handle 200Gb/s, 400Gb/s or 800Gb/s data streams. Additionally, connectors must now meet angled physical contact (APC) standards to ensure high quality signal transmission with minimal loss.

Cabling choices will continue to depend on distance and transmission methods. For short to medium distances, multimode fibre such as OM4 or OM5 is preferred. For longer distances, singlemode fibre remains the best option, particularly when wavelength division multiplexing (WDM) is involved.

If an application is latency sensitive and managed in one or two adjacent racks, the installation should use Category 6, or higher, copper connectivity to save several milliseconds, which would otherwise be spent on electrical-optical-electrical conversion. To ensure upgrading is possible, you need to use modular panels, as this helps secure a smooth transition from Base-12 to Base-8 and capacity upgrades from, for example, LCD to any type of MPO.

AI workloads require extensive cross-

connections between servers within racks, server rooms and even between data centre sites. This necessitates a robust spine-leaf switching architecture, ensuring every machine is directly connected to every other machine with which it interacts. Any data centre without this infrastructure will face significant challenges in adapting to new requirements.

Predicting future capacity and cross-connect requirements remain major industry concerns. One possible solution is a modular,

or 'power block', approach, which entails building IT infrastructure around predefined computational capacity. A modular solution allows for easy scalability – whenever additional capacity is needed IT blocks are simply replicated.

Finally, as IT hardware evolves at an unprecedented pace, modular approaches must be continuously reviewed and adapted. This is key to keeping up with technological advancements in the easiest, most cost effective way possible. A dynamic approach of this type will be critical in ensuring data centres remain flexible and capable of supporting the ever-increasing demands of AI-driven networks.



'PREDICTING FUTURE CAPACITY AND CROSS-CONNECT REQUIREMENTS REMAIN MAJOR INDUSTRY CONCERNS.'

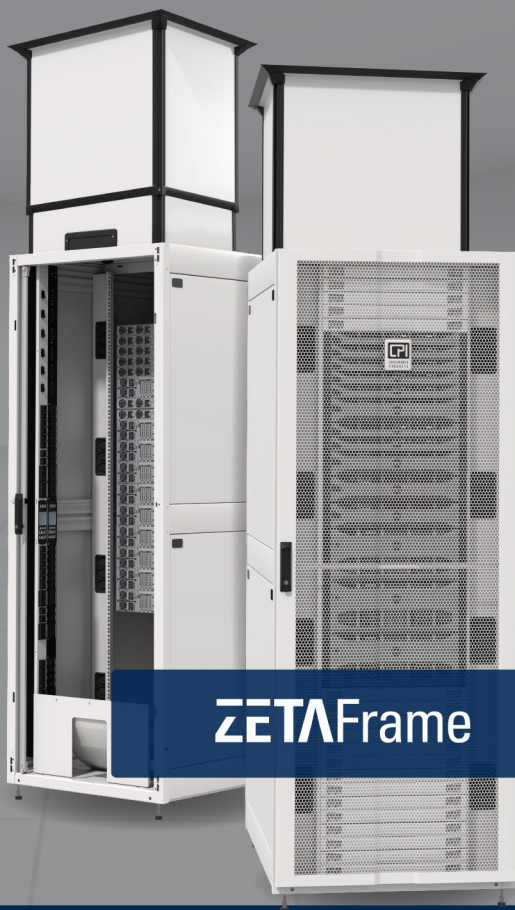


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CHRIS FRAZER

PRINCIPAL CONSULTANT AT LAYER ZERO SERVICES

Pods, super pods, clusters, nodes, cores, spine, leaf etc – so much to consider! The impact that AI has on optical fibre specifications is just another step in the design of the passive infrastructure in data centres, and we've seen plenty of them over the years.

There isn't one cabling specification that covers every eventuality and product, so where to begin? If an organisation has a standard fibre design, you can design accordingly but the underlying infrastructure for a data centre must still aim to support known and unknown day one and day two requirements. Equipment installed in data centres rapidly changes – is anyone confident enough to predict what AI equipment will look like in three years, let alone 5-10? Design flexibility is fundamental.

Something seemingly as simple as ICT containment is imperative to effective data centre cabling designs. Get that right and the ability to add and remove cabling to accommodate changing requirements is relatively easy.

Clearly state containment requirements, such as well-sized, purpose made, plastic trunking systems installed in the same plane, directly above and between all cabinets with at least 300mm clear access space all around. Even fibre trunks such as 144-core aren't very large, so trunking systems don't need to be huge, but they must be



adequate. I'd recommend at least 60 per cent spare capacity above known or estimated requirements.

The return on investment (ROI) of fibre trunking is amazing – rightsized it could last the lifetime of a data centre, is comparatively inexpensive and is extremely reliable. Multi-fibre cables can be installed in the trunking and added to or removed easily, if designed correctly. This is great news for owners and installers!

Once containment systems are designed, focus on what fibre connectivity is to be installed, even if that's not known in the early design and build stages. Singlemode, multimode, ultra physical contact (UPC) and angled physical contact (APC) all need to be considered. The amount of available power and cooling will also dictate what quantity of AI equipment can be accommodated, further defining cabling requirements.

Ultimately, fibre cabling to support AI must be part of a fully coordinated design process.

'EQUIPMENT INSTALLED IN DATA CENTRES RAPIDLY CHANGES – IS ANYONE CONFIDENT ENOUGH TO PREDICT WHAT AI EQUIPMENT WILL LOOK LIKE IN THREE YEARS, LET ALONE 5-10? DESIGN FLEXIBILITY IS FUNDAMENTAL.'

MICHAEL LAWRENCE

PRODUCT MANAGER AT LEVITON NETWORK SOLUTIONS

AI is quickly driving higher data rates in data centres. Today, 200Gb/s is likely the slowest data rate in a large scale AI cluster. In fact, 400Gb/s and 800Gb/s are typical, with 1.6Tb/s expected to gain adoption soon and 3.2Tb/s to follow.

Connection at the 400Gb/s data rate is dominated by traditional 12-fibre MPO and LC connectors. Additionally, at this rate, multimode interfaces will drive the adoption of angled physical contact (APC) end face geometry to improve return loss and performance, supporting higher data rates beyond 400Gb/s.

At the 800Gb/s rate, 16-fibre MPO connectors emerge as a solution. MPO-16 has its own unique connector interface while still using eight pairs of fibres for communication. Very small form factor (VSFF) connectors have also been introduced for these higher data rates. While the transceivers may keep using the MPO and LC interfaces, the smaller MMC connector, for example, can enable higher densities at the patch panel to facilitate the large volume of fibres that need to be managed.

From a cabling design perspective, one option for addressing such a high volume is to install direct connections from AI systems to the switching fabric using either active optical cables (AOCs) or MPO array cords. This is a straightforward approach, but it creates significant cable volume within cable trays and racks. Additionally,

transceiver connectors at the end of AOCs need to be pulled through pathways. This can be cumbersome and installers must be careful to avoid damage.



As an alternative to direct connections, structured cabling – using patch panels and MPO trunks between AI clusters and switching racks – offers significant benefits. It reduces congestion in overhead trays and cuts down on cabling runs, with fewer cables to manage. Also, the trunk cabling can be pre-installed before active equipment is

in place, so only patch cords need to be installed once any active equipment is in-situ.

Structured cabling allows for smaller in-rack cables on the front side of patch panels, reducing congestion within racks. It also adds flexibility to help with cable management, offering panel labelling, easy cable grouping, and colour coding of ports and connectors, making it easier to identify cables and reduce troubleshooting.

‘AS AN ALTERNATIVE TO DIRECT CONNECTIONS, STRUCTURED CABLING – USING PATCH PANELS AND MPO TRUNKS BETWEEN AI CLUSTERS AND SWITCHING RACKS – OFFERS SIGNIFICANT BENEFITS. IT REDUCES CONGESTION IN OVERHEAD TRAYS AND CUTS DOWN ON CABLING RUNS, WITH FEWER CABLES TO MANAGE.’

CARLOS MORA

MARKET DEVELOPMENT MANAGER AT CORNING OPTICAL COMMUNICATIONS

AI workloads demand extremely high data transfer speeds and low latency, and this is driving several fundamental changes in optical fibre cabling design and installation. For one, we're seeing a significant shift to large scale parallel processing, where massive datasets are broken into smaller tasks across interconnected graphics processing units (GPUs).

It's also notable that AI data centres focus on east-west traffic for machine-to-machine communication, requiring a back-end network layer that boosts device connectivity by up to 10x per rack. To meet these performance demands, fibre is now being extended directly to the GPU network interface card (NIC), replacing copper within the rack.

Singlemode fibre will increasingly be favoured in this environment due to its long reach and superior bandwidth capabilities, which make it a more future proofed solution overall. Multimode will continue to be viable for short reach links mostly within a row or a rack.

The need for more fibre connections overall also creates a necessity for higher density fibre solutions, such as smaller diameter fibres and new cable designs that double fibre capacity in the same space. Ultra-high fibre density solutions like 1,728-fibre or 3,456-fibre will therefore see wider adoption.

As fibre density increases, proper cable management is essential to prevent attenuation and support airflow and cooling. High density, space efficient fibre solutions, such as bend insensitive fibre cables with reduced diameter, should be prioritised to improve fill ratio and

reduce infrastructure expenses, while ensuring low signal loss. They also support power consumption, cooling and sustainability targets.

With AI models scaling to clusters of up to a million GPUs, modular and scalable cabling architectures are crucial for future proofing. Structured cabling, which employs a standardised system that can be easily managed and

upgraded, allows for much more scalability and flexibility than point to point when migrating to higher network speeds. High density, low latency and thermal efficient structured cabling will only become more vital as we move to 800Gb/s and beyond.



'STRUCTURED CABLING, WHICH EMPLOYS A STANDARDISED SYSTEM THAT CAN BE EASILY MANAGED AND UPGRADED, ALLOWS FOR MUCH MORE SCALABILITY AND FLEXIBILITY THAN POINT TO POINT WHEN MIGRATING TO HIGHER NETWORK SPEEDS.'



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This is the time for action

Louis McGarry of Centiel explains why the growth of artificial intelligence (AI) means we must raise our game when it comes to data centre power provision and reliability

▶ McKinsey's analysis in its AI Power: Expanding Data Center Capacity To Meet Growing Demand report suggests that global demand for data centre capacity could rise at an annual rate of between 19-22 per cent from 2023 to 2030, to reach an annual demand of 171-219GW. AI is big and it's only going to get bigger.

changing needs. They need high power density and rapid delivery, as the market is changing so quickly. Modular UPS can respond to rapid growth as they can be scaled easily. Just like Lego blocks, additional modules can be added to match infinite requirements. We can scale our UPS up to 3.75MW and beyond, and have

GET THE BALANCE RIGHT

The rapid growth of AI and the demand for data centres needs to be balanced against the global need for sustainability. While AI driven advancements are inevitable, they must not come at the cost of the environment and future generations.

While AI is undoubtedly driving a surge in power demand, businesses need to step up with systems that don't just focus on short-term growth but also prioritise long-term sustainability. Over the past few years we have worked with clients to develop the most sustainable systems possible and provide uninterruptible power supplies (UPS) that have been designed and manufactured to maximise efficiency for a lower carbon footprint. Yet suddenly it's all about how scalable, how big and how rapidly can we deploy our systems to cope with the demands of AI.

Electrical infrastructure and the scalability of UPS systems must meet



got our power density down to $1\text{MW}/\text{m}^3$ while achieving 97.6 per cent efficiency for reduced energy consumption.

UNDER PRESSURE

Already infrastructure is creaking! In Dublin, new data centre builds have been banned to ensure there is sufficient power for homes in the area. Furthermore, The International Energy Agency (IEA) in its Energy 24 report states that electricity consumption from data centres could double within the next two years. I believe we have no choice but to look at alternatives.

UPS technology offers an opportunity and this is how we will raise our game. In the future, it is likely that it will become

way more than simply power protection and will transition to becoming an active energy management tool. Data centre managers will need to select the right product to store, use and harvest energy. This also relates to the type of battery and application the UPS is used for.

We are already implementing peak shaving projects to enable facilities to use their own energy storage during peak times of demand. Peak shaving can be achieved by either reducing usage levels by switching off non-essential equipment, or by utilising other energy sources such as battery storage or UPS systems.

Similarly, variable load management is becoming commonplace. In a situation where the load can vary, UPS modules can be put into a 'sleep mode'. While not switching power, their monitoring circuitry is fully operational, so they are instantaneously ready to switch power if needed. Because it is the switching of power that causes the greatest energy losses, system efficiency is significantly increased and both energy waste and running costs are minimised.

ESSENTIAL MIX

But what happens if we bring renewable energy into the mix? We live in a world with limitless renewable energy. One where there is enough solar, wind or wave energy to power everything we need – clean and unlimited. We just need to be able to harness and store it.

We are already working to help facilities harness and store energy more effectively, so the UPS technology of the future will need to accept alternative energy sources. Configured correctly with lithium-ion phosphate (LiFePO_4) batteries, for example, a UPS has the potential to become a microgrid or



energy hub, storing and delivering energy into the facility when required.

This is important in the face of unstable electrical networks. Data centres are significant power users and the potential to offer a solution to support the grid will be welcomed by energy providers, while representing a new income stream for users. Not only would the UPS safeguard each critical element within a data centre, but it could leverage renewable and emerging power sources.

‘Configured correctly with LiFePO₄ batteries, for example, a UPS has the potential to become a microgrid or energy hub, storing and delivering energy into the facility when required.’

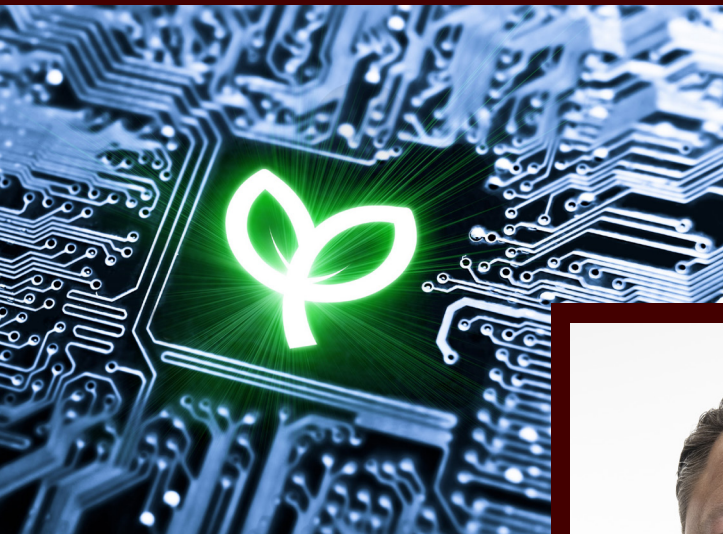
RESEARCH AND DEVELOPMENT

It is likely that energy storage will also be in for changes in the future. Take nickel zinc batteries – one day they may offer an alternative standby option for data centres.

Nickel zinc batteries can comfortably operate at high temperatures and we have a global abundance of zinc and nickel, unlike

lead and lithium. They are also almost 100 per cent recyclable, with less need for environmental and fire suppression controls. It will be interesting to see how





need to be developing more ways to manage power better and engage with renewables more than ever before. AI means we need to raise our game even higher as new power hungry technologies emerge. ■

these technologies continue to develop and how we can use them. UPS systems need to be ready to adapt and integrate with alternatives.

Some of the largest data centres already consume over 100MW of energy and with recent breakthroughs in AI this demand could easily double or even triple. In an industry which burns large amounts of energy, and will soon burn much more, we still have a huge responsibility to choose a more sustainable way forward. The good news is that the higher quality and more efficient a system is, the less energy it uses and, therefore, the smaller its carbon footprint. This goes together with lower running costs, while total cost of ownership (TCO) is reduced as sustainability is increased.

TAKING THE INITIATIVE

There are options where true modular UPS can help reduce energy use and improve carbon footprints. So even in the face of AI and its vast demand for power, data centres can be designed or adapted with sustainability in mind. As an industry we



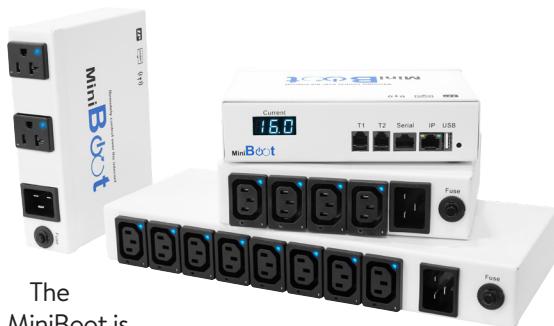
LOUIS MCGARRY

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.

Austin Hughes

Unlike traditional rack power strips that are mounted inside server rack enclosures, the Austin Hughes MiniBoot's smaller form factor brings innovativeness in power distribution outside the rack. The MiniBoot web power reboot and monitoring device offers a cost efficient power solution for any environment with electronic devices or systems.

Users can try to recover a crashed device by remote reboot, reducing the need to send engineers to site. This means less personnel and travel costs by negating the need for staff to be at the equipment location – therefore improving uptime and productivity. Alerts can also be received via SNMP, email (SMTP) and syslog when predefined thresholds are exceeded for both MiniBoot and environmental sensor events.



The MiniBoot is designed to meet the needs of a variety of industries in a diverse array of environments. These include transportation (air, land and sea), broadcasting, entertainment, advertising, manufacturing, mining, satellite, defence, education, telecommunication, and finance and banking.

[CLICK HERE](#) to find out more or to send an email [CLICK HERE](#).
www.austin-hughes.com

Networks Centre

Networks Centre is an authorised distributor of leading UPS and power distribution products from market leaders including Panduit and Legrand.

Legrand offers the industry leading Server Technology and Raritan power distribution units (PDUs) that are used by many global companies. It also offers an innovative range of smaller Keor tower and rackmount UPS, alongside larger variants from Borri.

Panduit's premium offering is the G6 iPDU, as well as the innovative G5 universal PDU. The same unit can be used globally with just the facility cord changed to



meet the power supply type such as Wye/Delta, and connector type such as 32A commando. Panduit's UPS products are available up to 20kVA, which can run in either line-interactive or

double-conversion, and there is the choice of lithium-ion batteries, which are smaller so less rack space is required.

For advice on the best solutions for UPS, in-rack PDUs, automatic transfer switches and power cords, please contact our team on 01403 754233 or [CLICK HERE](#) to send an email.

www.networkscentre.com

Panduit

Panduit's UPS range offers highly versatile and customer focused 1/2/3kVA lithium-ion and 5/6/10kVA and 10/15/20kVA valve regulated lead acid (VRLA) solutions, available in single-phase and three-phase configurations.

Power interruptions happen and being prepared can be the difference between business continuity and downtime. The right UPS ensures successful operational continuity, however, the time between utility power failure and the IT load transitioning to the UPS is critical – and milliseconds count. A power interruption longer than 20ms will probably result in an IT systems crash.

Panduit's UPS range provides intelligent network management, environmental and security sensors with the ability to connect to additional external battery packs to



scale the failsafe capability. UPS solutions must be suitable for the IT load they are supporting and primary concerns are the IT equipment running critical loads. For higher speed processors generating more heat at the server, UPS solutions for cooling systems are fast becoming critical.

Compared to VRLA, lithium-ion batteries offer longer lifecycles, reduced weight, a compact footprint and lower cooling requirements. Lithium-ion's potential is also key in small data centres and edge environments.

For further information [CLICK HERE](http://www.panduit.com).
www.panduit.com

Austin Hughes

Austin Hughes, manufacturer of rackmount solutions that support data centres and high density installations for powering artificial intelligence (AI) technology, has introduced its new InfraPower 2000 Series Z intelligent power distribution unit (iPDU) range.

The InfraPower 2000 Series Z range of enterprise level rack iPDU are embedded with dual Gigabit Ethernet LAN IP for redundant network access via IP (no dongles required). With 100 per cent iPDU uptime reporting, IP authentication support is provided 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

provide comprehensive remote monitoring and on/off outlet switching functionality from anywhere in the world.

InfraPower 2000 Series Z iPDU are available in single-phase to three-phase, with new design intelligent meter and lockable/combo IEC outlets. They can be tailored to specific voltage, current and connection needs, providing flexibility to address diverse power distribution requirements within the data centre.

To find out more [CLICK HERE](http://www.austin-hughes.com) or to send an email [CLICK HERE](mailto:info@austin-hughes.com).
www.austin-hughes.com



One step ahead

Ashish Moondra of Chatsworth Products (CPI) takes a deep dive into the role of prescriptive and predictive management in optimising data centre power

▶ As data centres evolve to accommodate increasingly dense and power intensive equipment, effective power management becomes crucial. Implementing prescriptive and predictive power management strategies can optimise energy consumption, enhance efficiency and ensure system reliability.

ALL UNDER CONTROL

Prescriptive power management involves setting predefined rules and policies to control power usage. This approach allows data centre operators to establish specific parameters for power distribution, ensuring that equipment operates within designated limits. For instance, administrators can set thresholds for power usage, triggering alerts or automated actions when these limits are approached or exceeded.

Predictive power management, on

the other hand, utilises data analytics and machine learning to forecast future power demands. By analysing historical data and identifying usage patterns, predictive models can anticipate periods of high or low power consumption. This foresight enables proactive adjustments to power distribution, ensuring that resources are allocated efficiently and potential issues addressed before they escalate.



‘Prescriptive power management involves setting predefined rules and policies to control power usage. This approach allows data centre operators to establish specific parameters for power distribution, ensuring that equipment operates within designated limits.’

ROLE PLAY

The rise of high density cabinets, which house a greater number of servers and networking devices within a standard footprint, has been a significant development in modern data centres. These cabinets maximise computational capacity without expanding the physical space, offering several advantages:

- **Space efficiency.**

Consolidating more equipment into a single cabinet reduces the overall space required, allowing data centres to accommodate growing computational needs without physical expansion.

- **Improved cooling.**

Advanced cooling solutions tailored to high density set-ups, such as hot aisle/cold aisle configurations and containment systems, enhance airflow and reduce the risk of overheating.

- **Reduced cabling.**

Denser equipment arrangements minimise the need for extensive cabling, improving airflow and simplifying maintenance.

- **Cost savings.**

By optimising space and power usage, high density cabinets can lead to significant capital and operational expenditure reductions.

MEETING THE CHALLENGE

Despite their benefits, high density

cabinets present challenges, particularly in power and heat management:

- **Power imbalances.**

Uneven power distribution can lead to overloaded circuits or underutilised capacity, affecting efficiency and equipment longevity.

- **Heat generation.**

Increased equipment density results in higher heat output, necessitating effective cooling strategies to prevent overheating and potential equipment failure.

- **Scalability concerns.**

As power demands grow, ensuring that the existing infrastructure can scale without compromising performance becomes critical.

ADVANCED FEATURES

To address these challenges, many data centres are adopting intelligent power distribution units (iPDUs). These devices offer advanced features that enhance power management:

- **Real-time monitoring.**

iPDUs provide continuous insights into power consumption at the outlet level, allowing for immediate detection of anomalies.

- **Remote management.**

Administrators can control power settings and respond to issues without physical intervention, increasing operational efficiency.



‘Predictive power management utilises data analytics and machine learning to forecast future power demands. By analysing historical data and identifying usage patterns, predictive models can anticipate periods of high or low power consumption.’

- **Environmental monitoring.**

Many iPDUs are equipped with sensors to monitor temperature and humidity, providing a comprehensive view of a cabinet's environment.

- **Automated alerts.**

Set thresholds can trigger alerts or automated actions, such as load shedding or equipment shutdowns, to prevent damage during power anomalies.

MANAGEMENT DECISION

Combining iPDUs with data centre infrastructure management (DCIM) software enhances the capabilities of predictive and prescriptive power management:

- **Data aggregation.**

DCIM platforms collect and analyse data from various sources, providing a holistic view of a data centre's operations.

- **Predictive analytics.**

By leveraging historical data, DCIM software can forecast future power demands and identify potential issues before they arise.

- **Resource optimisation.** DCIM tools assist in balancing workloads and power distribution, ensuring optimal utilisation of available resources.

BEST FOOT FORWARD

To maximise the benefits of prescriptive and predictive power management, consider the following best practices:

- **Regular data analysis.**

Continuously monitor and analyse power consumption data to identify trends and inform decision making.

- **Proactive maintenance.** Use predictive insights to schedule maintenance activities during low demand periods, minimising disruption.

- **Scalability planning.**

Ensure that power management



strategies can scale with growing demands, incorporating flexibility to adapt to future technologies.

- **Stakeholder collaboration.**

Engage with IT, facilities and operations teams to develop cohesive power management policies that align with organisational goals.

ESSENTIAL SELECTION

As data centres continue to evolve, adopting prescriptive and predictive

power management strategies is essential for optimising energy consumption, maintaining system reliability and achieving sustainability objectives. By leveraging iPDUs, DCIM software and best practices, data centre operators can effectively manage the challenges associated with high density environments and ensure efficient, reliable operations. ■



ASHISH MOONDRA

Ashish Moondra is senior director of electronics and software at CPI. He has more than 25 years of experience in developing, managing and selling rack power distribution, uninterruptible power supply (UPS), energy storage and DCIM solutions. Moondra has previously worked with American Power Conversion, Emerson Network Power and Active Power, and has been an expert speaker at various data centre forums.

Schneider Electric appoints Pablo Ruiz Escribano as SVP of its European Secure Power and Data Centre Business

Schneider Electric has appointed Pablo Ruiz Escribano as the new senior vice president (SVP) of its Secure Power and Data Centre Business in Europe. He first joined Schneider Electric as a key account manager in 2007 and has progressed through several leadership positions within the organisation.

Ruiz Escribano will be tasked with leading Schneider Electric's Secure Power and Data Centre Business across Europe to help customers solve the energy, infrastructure and sustainability challenges of artificial intelligence (AI). With extensive experience in both regional

and global roles, and a strong background in technical sales and customer relations,

he is well equipped to assist in this area.

'This is a transformative time for our industry,' said Ruiz Escribano. 'With AI accelerating growth on multiple fronts, there's an unprecedented opportunity to enhance the efficiency, resiliency and sustainability of the digital infrastructure landscape. I look

forward to working with our customers and partners to seize these opportunities and push the industry forward.'



Pablo Ruiz Escribano

Kao Data secures new customer contract from 20i

Kao Data has secured a new customer contract with 20i. Founded in 2016, 20i has quickly become a leader in managed hosting services. By working with Kao Data, it will be able to further optimise its service offerings, which include its 20i Managed Cloud Services, by leveraging a world class data centre environment that provides maximum levels of security, reliability and diverse connectivity options, with on-ramps to all major hyperscale cloud platforms.

Spencer Lamb, chief

commercial officer (CCO) at Kao Data, commented, 'We're delighted to welcome 20i to our Harlow campus. The company's decision to join Kao Data is a clear example

of our capabilities as one of the UK's leading providers of high performance colocation services for artificial intelligence (AI), cloud and enterprise. Our partnership also highlights the growing trend of compute workloads migrating from the west of London to the north and east.'



Spencer Lamb

Kent acquires Sudlows Consulting to open new doors for global growth

Sudlows Consulting has been acquired by Kent, marking the beginning of an exciting new chapter for its business. This positions Sudlows Consulting to fully capitalise on the extraordinary growth in the international data centre market and achieve even greater heights. It provides the company with the foundation to scale its business, broaden its global reach and reinforce its leadership position in a sector experiencing sustained growth driven by data demand, cloud adoption and artificial intelligence (AI).



‘This is a defining moment for us,’ said John Rippingale, CEO at Sudlows Consulting. ‘Over the past decade we’ve built a reputation as leaders in data centre engineering and joining Kent provides us with the platform we need to reach our full potential. This partnership validates the work we’ve done and amplifies what we can achieve together. We’re excited about the opportunities ahead and look forward to continuing to deliver exceptional value to our clients.’

CHANNEL UPDATE IN BRIEF

Black Box Network Services has achieved ISO 14001:2015 accreditation. It provides a framework not only for designing and implementing an environmental management system (EMS) but also for continually improving environmental performance.

Micah Deriso has joined Verkada as head of global channel. In this role, Deriso will lead Verkada's global channel strategy and partnerships.

Evolve has opened a new £250,000 warehouse in Wigan as the company experiences rapid growth.

Harold Rivas has joined Absolute Security as its new chief information security officer (CISO). He has more than two decades of experience and proven leadership in the cybersecurity industry.

Davenham Switchgear has chosen Nottingham as the home of its new global manufacturing site. The new 100,000ft² facility will manufacture cutting edge low voltage switchgear for the world's largest data centre operators.

MLL Telecom has appointed James Withers as chief financial officer and Matt Baker as strategic client director.

Effortlessly cool

Committed to driving growth, innovation and success, **Rachel Canales** transforms challenges into opportunities. Rob Shepherd spoke to her about her life and career, and some of the big issues affecting the data centre sector

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

RC: I'm a sales and business leader with over 15 years of experience in strategy, customer relationships and team leadership. As vice president of business strategy and execution at Iceotope, I focus on streamlining operations and aligning sales, marketing and procurement for growth. I'm passionate about mentoring teams, fostering innovation and building strong partnerships.

Outside of work, I enjoy spending time with my family and dogs in New Mexico, which is the home state of my alma mater, the University of New Mexico. Go Lobos!

RS: How and why did you decide to embark on a career in data centres?

RC: I originally went to college for advertising, but I've always been drawn to technology. I still remember sitting in an advertising class when they first got colour computers connected to the world wide web – I was fascinated. At the time, I was working at Blue Cross Blue Shield and kept finding myself helping people navigate computer systems because I was so enraptured with the technology. From there, every new role pulled me closer to technology.

I never set out to be in data centres but I kept following my curiosity, learning new things and taking on bigger challenges. My first tech job was at CompUSA, where I was a business sales executive and then I held

IT training roles and IT asset management roles, which allowed me to dive deeper into data centre purchasing and solutions.

Eventually, I landed at Hewlett Packard, where I oversaw end-to-end IT infrastructure, and my first role was focused on storage and servers. That was the turning point. Since then, my career has



built itself around my love for innovation and problem solving. Even now, I geek out over new tools and trends, whether it's AI, emerging infrastructure or the latest advancements in cooling. I love discovering

what's possible, and that's what keeps me in this space.

RS: What excites you about the sector at present?

RC: Right now, the majority of the conversation in the data centre industry is around artificial intelligence (AI), and it is a truly exciting technology that will flourish in unimaginable ways in the future. I see AI as an incredible opportunity – not just to make us more efficient at work, but to create more fulfilling jobs by letting AI handle the tasks we don't enjoy.

Beyond that, I'm excited about the role AI can play in driving sustainability. I have kids and I want them to grow up in a world that's healthier and more stable, not one where we're constantly battling climate crises.

AI, combined with advancements in edge and far edge computing, is opening doors we once only speculated about, like smart cities, extreme environment computing and data centres in places we never thought possible. We're at a pivotal moment where technology can help us improve not just business and innovation, but also the planet and humanity as a whole. It's exciting to be part of that change.

RS: Is the battle for the energy efficient data centre being won and is it really possible to have a sustainable digital infrastructure?

RC: The battle for energy efficient data centres is ongoing, but it's far from being won. With the rise of AI and the

'I've been in rooms where less than 10 per cent of the voices were women and that's a loss for the industry. Women bring different perspectives – we're strategic, we think holistically, we nurture teams and we push for growth beyond just individual success.'

increasing demand for compute power, data centres are consuming more energy than ever. That said, this challenge also presents an opportunity – one that's driving innovation toward a more sustainable digital infrastructure.

Technologies like liquid cooling are gaining traction, helping data centres operate more efficiently by reducing energy consumption and minimising environmental impact. The industry is at a turning point where the choices we make now, like embracing alternative cooling methods, optimising energy use and integrating renewables, will determine whether we can truly achieve sustainable digital infrastructure.

So, while AI and high performance computing are increasing power demands, they're also pushing the industry to rethink how we design and operate data centres. Sustainability isn't out of reach, but it requires commitment, innovation and a willingness to adopt solutions like liquid cooling that put us back on the right path.

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

RC: AI computing is getting bigger and

‘We’re at a pivotal moment where technology can help us improve not just business and innovation, but also the planet and humanity as a whole.’

more power hungry. That means one thing – more heat than ever before. AI’s rapid growth is also creating challenges in power sourcing, rising costs and sustainability. Many regions face grid limitations, making it harder to scale efficiently.

However, these challenges also present opportunities. The need for efficiency is accelerating innovations like liquid cooling, on-site renewables and smarter workload management. AI is pushing the industry to rethink infrastructure, making data centres more energy conscious and sustainable.

Those who adapt will lead the future of digital infrastructure. As AI workloads push the limits of our current digital infrastructure, data centres need a way to cool things down without slowing things down, and that presents a tremendous opportunity for Iceotope. We have a major role to play in what the AI data centres of tomorrow look like.

RS: Is there sufficient understanding of the advantages of liquid cooling and how does it enhance operational efficiency, reduce energy consumption and align with emerging sustainability standards?

RC: We’ve reached a point where liquid cooling is widely accepted as the technology that is going to be able to handle AI workloads in ways that air cooling alone cannot. Liquid cooling directly transfers heat away from critical components, enhancing operational efficiency by reducing the energy needed for cooling compared to traditional air based methods. As an industry, broad adoption and understanding of liquid

cooling continues to evolve, but AI has brought liquid cooling to the forefront of the conversation.

We perform a lot of testing around the efficacy of liquid cooling at Iceotope and what those numbers show is tremendous gains in operational efficiency and sustainability. Specifically, our cooling solutions are designed to meet the unique demands of AI by delivering up to 40 per cent less power usage, up to 100 per cent less water usage, up to 40 per cent fewer carbon emissions and up to 84 per cent less cooling usage. I believe those are compelling numbers that prove how big of an impact liquid cooling will have for AI data centre build-outs.

RS: It’s that crystal ball moment – how do you see the world of data centre power and cooling developing over the next few years and what would you like to see happen?

RC: Looking ahead, I see the data centre world navigating significant power constraints while embracing greener energy solutions. Over the next few years, I’d love to see a shift toward widespread adoption of sustainable power sources paired with innovative cooling technologies to meet the intense energy demands of AI.

Building AI data centres requires great collaboration – between regional data centre operators, hyperscalers, original equipment manufacturers (OEMs), original design manufacturers (ODMs), cloud providers, hardware manufacturers, chip makers and more – to solve the complex infrastructure challenges AI presents. I

think we'll continue to see growth amongst these stakeholders in digital infrastructure development.

Finally, as demand for edge computing continues to rise, the industry will need to deliver AI capabilities at the edge. Rather than focusing on a one size fits all edge solution, the trend will be about integrating innovative cooling technologies that can support the specific power and thermal demands of AI workloads. This will ensure that data centres remain agile, energy efficient and capable of handling the next wave of digital transformation.

RS: Is enough being done to encourage more women to have science, technology, engineering and mathematics (STEM) based careers and, if not, what would you like to see happening?

RC: No, I don't think enough is being done to encourage more women in STEM, and part of that starts with how we raise and support girls from a young age. Too often, little girls are taught to be cautious,

'The choices we make now, like embracing alternative cooling methods, optimising energy use and integrating renewables, will determine whether we can truly achieve sustainable digital infrastructure.'

not to be too loud, not to take up too much space – while boys are encouraged to be bold, confident and take charge. When that carries over into STEM fields, where they're already outnumbered, it creates a real challenge.

Encouragement must start early – ideally at home, with parents

introducing STEM toys and making technology feel normal for girls from day one. By the time they reach school, behaviours and beliefs are already forming and if they don't see representation they may not pursue these careers.

I've been in rooms where less than 10 per cent of the voices were women and that's a loss for the industry. Women bring different perspectives – we're strategic, we think holistically, we nurture teams and we push for growth beyond just individual success. The more diverse voices we have, the smarter and stronger the industry becomes. If we truly want innovation, we can't afford to keep limiting the potential of half the population.

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

RC: Don't set your own ceiling. There are already plenty of barriers out there and we don't need to be the ones limiting ourselves. This has stuck with me

throughout my career, reminding me to keep expanding, learning and pushing forward – even when faced with challenges.

It's easy to get discouraged if you're not getting the support or recognition you deserve in your career, but I've learned that I have control

over how I respond. If I'm not appreciated in one space, I can choose to pivot, grow or even seek opportunities elsewhere. Most importantly, I've learned to know my own value and not let anyone else define it for me. That mindset has helped me take risks, embrace change and build a career I'm proud of. ■

Quickclicks

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

Spirent Communications has released its sixth annual 5G Outlook Report, based on analysis and takeaways from 415 new 5G engagements globally.

CLICK HERE to download a copy of It's Halftime for 5G: Progress, Key Plays and Future Prospects.

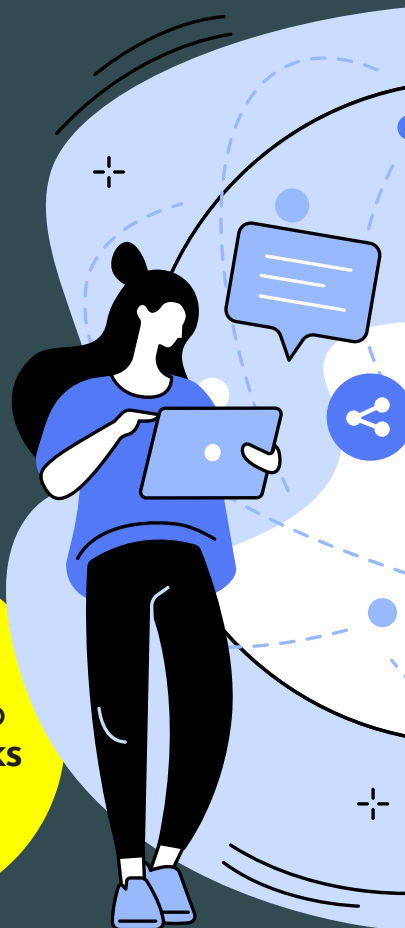
AI Data Centers: Scaling Up And Scaling Out is a white paper from **AFL**.

CLICK HERE to read it.

Network Transformation – A Guide For IT Directors is a report from **Beaming** which found that 69 per cent of UK businesses have made their IT infrastructure and networks more vulnerable to attack by failing to encrypt data flowing over their networks.

CLICK HERE to read it.

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Supporting AI In The UK: A White Paper To Government from **Colt Technology Services** outlines four ways it believes the government should act to help reposition the UK as an AI superpower. [CLICK HERE](#) to download a copy.

Why Busway Is The Future Of Data Center Power Distribution is an on-demand webinar from **Legrand**. [CLICK HERE](#) to watch it.

CBRE's latest North American Data Center Trend Report is now available. [CLICK HERE](#) to download a copy.

The **European Data Centre Association (EUDCA)** has published its State of European Data Centres 2025 report, highlighting the key challenges and opportunities shaping the industry including access to energy, sustainability and regulatory compliance. [CLICK HERE](#) to download a copy.



Moving with the times

Aginode's **Rachid Ait Ben Ali** explains how 5G, Wi-Fi 7 and wireless network infrastructures are transforming workspaces



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Use of workspaces is becoming more flexible. More of us spend our days transitioning from traditional meeting rooms to office spaces, participating in Microsoft Teams calls in separate spaces, eating and relaxing in dedicated areas, or even going to the gym. We need to be seamlessly connected at all times, no matter where we are or what activity we're engaged in. As a result, we rely on wireless networks rather than cables to stay connected, and seamless, high performance connectivity is crucial.

AIR FORCE

Wireless connectivity brings enhanced benefits and new requirements. Compared to previous generations, 5G and Wi-Fi 7 offer significantly higher speeds, lower latency and enhanced flexibility and scalability. These advancements assist hybrid working, improve real-

time communications and support data intensive applications such as video conferencing, augmented reality (AR) and virtual reality (VR).

Additionally, as smart office environments grow, the demand for connectivity increases with more internet of things (IoT) based systems such as smart lighting and security cameras, as well as heating, ventilation and air conditioning (HVAC) technology. 5G's ability to support high device density and Wi-Fi 7's improved capacity allows more devices to connect simultaneously without performance degradation.

SEVEN UP

Wi-Fi 7, based on the IEEE 802.11be standard, offers enhanced data throughput by doubling the channel bandwidth of Wi-Fi 6 to 320MHz. This increase allows Wi-Fi 7 to achieve higher data throughput and



improved wireless network performance. For example, target wake time (TWT) helps devices save power when they are not actively communicating, as instead of constantly searching for signals or staying active a device can 'sleep' and wake up at predetermined intervals to send or receive data. This reduces power consumption, which is ideal for devices that don't need continuous connectivity.

To fully utilise Wi-Fi 7's capabilities, access points will often need multigigabit backhaul connections. Many modern access points support dual Ethernet ports to aggregate bandwidth, allowing for more efficient handling of high speed traffic.

It's important to note that the coverage offered by Wi-Fi 7 is slightly lower than that provided by its predecessors. That means a greater number of access points are needed to cover the same area. However, as more access points are added,

often in ceilings, powering them can be challenging. Copper cables can provide power, via power over Ethernet (PoE), as well as data capacity. Meanwhile, hybrid cables combining a fibre optic and power cable can save considerable time and cost in terms of installation.

FIVE ALIVE

5G requires extremely high bandwidth and low latency for optimal performance. The main challenge of 5G technology is indoor coverage. This is primarily due to the characteristics of millimetre wave frequencies, such as 26GHz, which have limited penetration power through walls.

Since 80 per cent of 5G usage occurs indoors, enterprises must implement solutions like active antennas and distributed antenna systems (DAS) to enhance coverage. These systems require both data and power, often supplied

‘A digital ceiling approach integrates advanced technology into the physical ceiling space of a building, which becomes a platform to distribute power, data and connectivity, often including critical connectivity elements like 5G small cells, IoT sensors and access points.’

through a well configured network infrastructure.

UP ABOVE

A state-of-the-art local area network (LAN) and digital ceiling approach can be especially beneficial to 5G and Wi-Fi 7. A modern LAN with sufficient bandwidth and robust infrastructure ensures high speed demands are met without congestion, interruptions or delays, with latency low enough to support cloud based applications, voice over IP and video conferencing. A scalable LAN supports increasing numbers of connected devices of all kinds, as well as higher traffic loads, ensuring the network can evolve alongside business needs.

A digital ceiling approach integrates advanced technology into the physical ceiling space of a building, which becomes a platform to distribute power, data and connectivity, often including critical connectivity elements like 5G small cells, IoT sensors and access points. The digital ceiling reduces the need for additional wiring and minimises the clutter in office spaces. This can lead to improved aesthetics and less disruption when

upgrading or adding new devices.

Centralisation simplifies network design, management and troubleshooting, as everything can be accessed and monitored from a single location. A clear line of sight for signals reduces interference and improves overall coverage across all building areas. As workspaces evolve with changing layouts, network



infrastructure can be easily adjusted or reconfigured without disruption.

SUPPORT STRUCTURE

In digital ceiling configurations supporting advanced wireless technologies like 5G and Wi-Fi 7, selecting the appropriate cabling is crucial to ensure optimal performance and future proofing. If there's significant electromagnetic interference (EMI) and long distances are required, optical fibre can be an option. Furthermore, Wi-Fi 7 access points and 5G small cells often require PoE for power and a notable

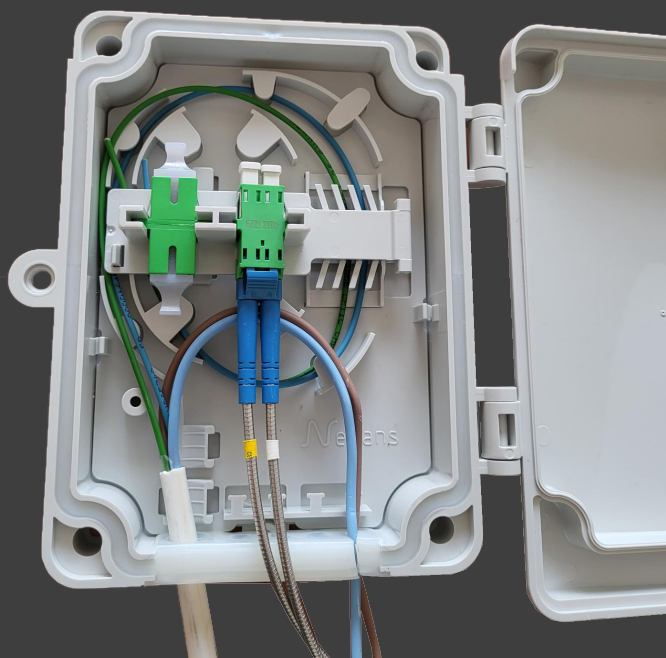
limitation of fibre cabling is its inability to transmit electrical power.

Category 6A supports data rates up to 10Gb/s over 100m as well as PoE, making it suitable for Wi-Fi 6 access points. For fibre-to-the-office (FTTO), using a fibre based access network for data whilst also delivering PoE via locally distributed digital ceiling switches can be a good alternative solution to support devices like Wi-Fi access points, IP cameras and VoIP phones, without requiring additional local power source.

Furthermore, hybrid cables combine fibre and copper conductors within a single sheath, offering a comprehensive solution that addresses both data transmission and power delivery. This solution is ideal for Wi-Fi 7 access points and 5G small cells, combining high speed fibre data transmission with copper's power delivery. Fibre cables support longer distances without signal loss and are immune to EMI.

BE PREPARED

Planning for indoor coverage must be considered at the early stages of a building design. This involves careful anticipation, design and placement of antennas – whether Wi-Fi or 5G – to ensure optimal coverage and performance. By combining both fibre and copper in a hybrid approach, buildings are set up to meet current 5G and Wi-Fi requirements, as well as future upgrades as the technology continues to evolve. ■



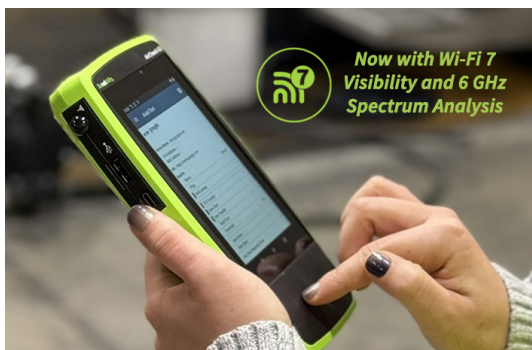
RACHID AIT BEN ALI

Rachid Ait Ben Ali has worked in the cable industry for 15 years. After a stint teaching electronics and physics, he joined a French structured cabling brand in 2009 as product manager for racks and copper. He joined Aginode in 2023 as a product solution manager in charge of defining the strategy for smart buildings and data centres.

NetAlly

NetAlly's innovative network test solutions have been helping wireless engineers and technicians better, deploy, manage, maintain and secure complex wired and Wi-Fi networks for decades.

They can help you test, verify and troubleshoot Wi-Fi and Bluetooth/BLE networks with purpose built hardware, find the location of Wi-Fi access points and clients, or complete spectrum analysis sweeps on the 2.4/5/6GHz bands. NetAlly's test solutions also perform faster and easier site surveys, can generate a topology map of your wired and Wi-Fi networks,



and enable you to collaborate with on-site technicians to solve tough problems at remote sites.

The AirCheck G3 Pro is a powerful wireless site survey and Wi-Fi diagnostic

tool that helps engineers and technicians to quickly deploy, maintain, monitor, analyse and secure Wi-Fi and Bluetooth/BLE access networks. Meanwhile, the LinkRunner AT 3000 network and cable tester validates copper and optical fibre Ethernet connections in less than 30 seconds.

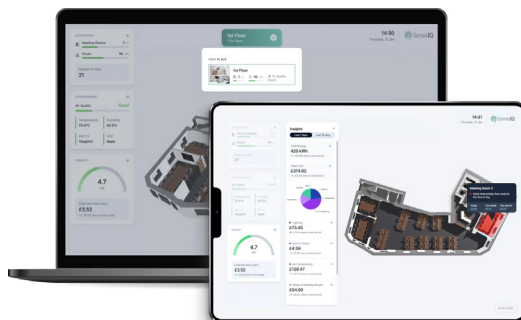
To find out more **CLICK HERE.**
www.netally.com

LMG

SenselQ from LMG gives building owners and operators the information they need to make better decisions about how to manage their buildings.

The flexible, easy to use technology enables maximum visibility of key building performance data. With a simple to deploy integrated solution, SenselQ has been designed to provide building owners with unique insight into how their buildings are performing and being used. It also provides occupants with a safer, improved user experience.

Internet of things (IoT) sensors



communicate via wireless gateways to the SenselQ software that resides either on the user's enterprise network or in the cloud. Building owners and operators

can choose to have the solution added to their network infrastructure or kept entirely separate. They can then monitor temperature, humidity, indoor air quality and energy usage, as well as desk and room occupancy in real-time via SenselQ's network of sensors.

To find out more **CLICK HERE.**
lmgq.com

R&M

R&M's CONEXIO range offers fibre to the antenna (FTTA) and power to the antenna (PTTA) solutions for the 5G era. The integrated product family brings site and operator specific infrastructure system solutions for 5G and mobile communications within reach. They are an easy, fast and cost-effective way to create end to end 5G cell tower connections. **CLICK HERE** to find out more about CONEXIO.

R&M's HEC harsh environment connector is developed for fibre optic connection of 5G and mobile



communication antennas in the harshest outdoor applications. The HEC-BR and HEC-QR withstand extreme temperatures, vibrations, salt spray, dirt and moisture – providing lasting connectivity anywhere. **CLICK HERE** to find out more about HEC.

The SYNO dome closure with innovative gel cold sealing and variable cable entries offers great freedom in accommodating specific site conditions and requirements quickly and cost effectively. **CLICK HERE** to find out more about SYNO.

www.rdm.com

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Inside Networks

2025 CHARITY GOLF DAY 21ST MAY

*An opportunity to compete and entertain clients and colleagues at the superb Marriot Hanbury Manor Hotel & Country Club, in aid of **Macmillan Cancer Support***

This prestigious golf course was the first to be designed by Jack Nicklaus II and still incorporates features from an earlier 9-hole course designed by the great Harry Vardon. The course is now widely recognised as one of the best in England.

The event will ask for 4-ball teams to compete in a 'best 2 from 4' full handicap Stableford competition over 18 holes (with a 2-tee start from 10:30am).

Live Scoring sponsorship is available.

Golf will be preceded by tea, coffee and bacon rolls at registration and will be followed by a 3-course private dinner and prize giving with charity raffle.

There will also be opportunities for sponsorship of all aspects of the day – all raising money for Macmillan Cancer Support – since 2005 this industry event has raised just under £100,000 through our charity golf events!

**MACMILLAN
CANCER SUPPORT**

To book a team or for more information:

- ☎ 07769696976
- ✉ info@slicegolf.co.uk
- 🌐 insidenetworkscharitygolf.com

The cost of a 4-ball team is £860 (+VAT).

Discounted accommodation is available at Hanbury Manor Hotel & Country Club, which will include breakfast and use of the extensive leisure facilities. www.marriottgolf.co.uk/club/hanbury-manor

Teams are invited to provide a raffle/auction prize.

Organised by:



Promoted & Supported by:



Best of both wo

R&M's **Matthias Gerber** explains how to enhance wireless connectivity with hybrid cabling for Wi-Fi 7 and 5G access points

 Wireless connectivity has become the backbone of modern digital infrastructure, with Wi-Fi and cellular technologies powering smart offices, industrial facilities and public spaces. Hybrid cabling can facilitate the swift deployment of comprehensive Wi-Fi 7 and 5G infrastructures with access points based on structured LAN cabling principles. However, which applications does this make sense and what is there to consider when choosing a solution?

DRIVING FORCE

Demand for high speed, low latency wireless networks has skyrocketed, driven by data intensive applications such as cloud computing, real-time video streaming, augmented reality and the internet of things (IoT), as well as more flexible approaches to the use of office space and smart building management. Wi-Fi 7 (IEEE 802.11be) and 5G standards promise unprecedented performance improvements in these areas.

While this is positive, their deployment introduces new challenges, particularly for in-building network infrastructure. Conventional network cabling solutions struggle to keep up with the bandwidth and power demands of these new technologies. Hybrid cabling solutions, integrating fibre optic and power transmission in a single cabling solution, provide an answer to these challenges, helping streamline installation and improving scalability and long-term adaptability.

LEARNING CURVE

Although Wi-Fi 7 and 5G promise faster speeds, greater capacity and lower latency, their implementation in buildings is not straightforward. Let's look at several key challenges:

- **Higher bandwidth and data rates.**

Wi-Fi 7 operates at up to 46Gb/s and relies on wider 320MHz channels, demanding fast backhaul connections, which traditional copper cabling may struggle to provide.

- **Increased power requirements.**

Modern access points, especially those supporting multiple frequency bands, require higher power over Ethernet (PoE) levels, often challenging 4PPoE (IEEE 802.3bt) standards.

- **Denser access point deployment.**

Due to the shorter effective range of Wi-Fi 7 and 5G small cells, a higher density of access points is required, increasing cabling complexity.

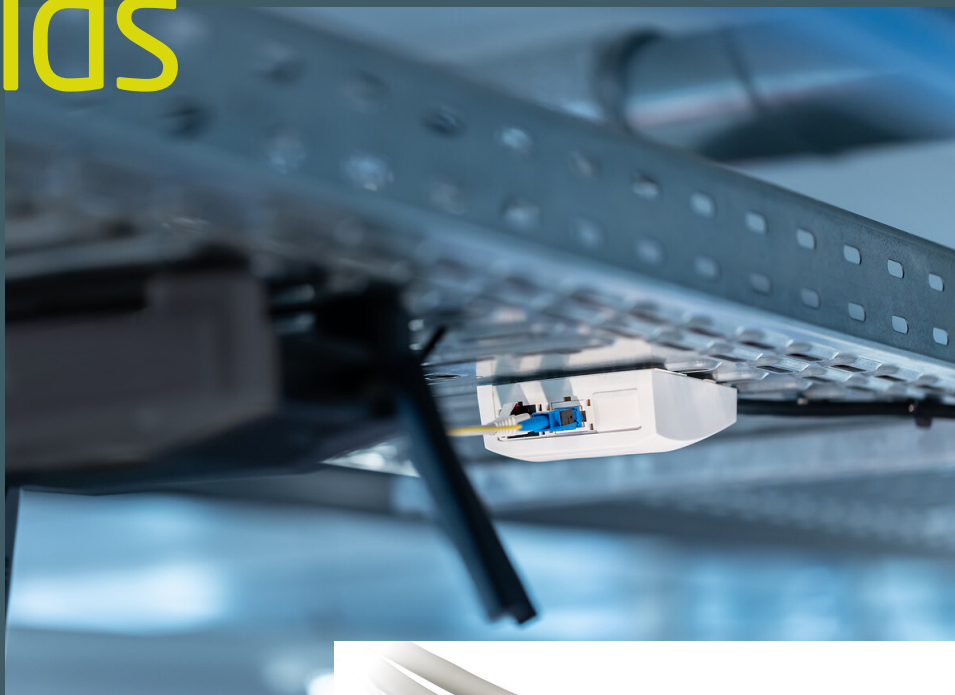
- **Interference and network reliability**

Wi-Fi 7's higher frequencies and multi-link operation (MLO) require consistent, interference free data transmission.

BENEFIT CHECK

Hybrid cabling solutions have emerged as an effective means of delivering power and high speed data while reducing installation costs and complexity. Hybrid cabling combines the advantages of fibre strands for high speed data transmission with copper conductors for power delivery. Fibre ensures high speed, interference

orlds



free data transfer over long distances, while copper conductors deliver power via PoE, eliminating the need for separate power cables.

This integration simplifies the deployment of Wi-Fi 7 access points and 5G small cells, particularly in environments where traditional Ethernet based solutions are costly or impractical. Hybrid cabling offers significant advantages by simplifying installation and reducing costs.

Traditional set-ups require separate runs for power and data, leading to increased labour and material expenses. By combining power and data in a single cabling concept, hybrid solutions streamline the installation process, cutting down on time, complexity and overall costs. This makes hybrid cabling a cost effective and efficient alternative,



particularly in large scale deployments where reducing installation efforts translates into substantial savings.

THINK AHEAD

Hybrid cabling provides higher bandwidth and future proofing capabilities. Fibre cables can support speeds of 100Gb/s and beyond, ensuring scalability for future upgrades.

Another key benefit is its extended deployment range. Traditional copper based

Ethernet is limited to a maximum transmission distance of 100m, requiring additional equipment or repeaters for longer connections. In contrast, hybrid cabling with fibre can extend connectivity to 200-300m, depending on power

requirements, making it an ideal choice for large office buildings, expansive campuses and industrial sites that require long distance network coverage without sacrificing performance.

EXPRESS DELIVERY

Hybrid solutions also support high power PoE (4PPoE), enabling delivery of up to 70W to connected devices. This eliminates the need for additional power outlets or local PoE injectors, simplifying infrastructure requirements while ensuring compatibility with next generation access points and other high power network devices. By integrating power delivery within the cabling system, hybrid solutions facilitate a more flexible and scalable network set-up that can accommodate evolving technological demands.

Finally, hybrid cabling enhances network reliability and redundancy by leveraging fibre for data transmission. Because fibre is resistant to electromagnetic interference (EMI), crosstalk and signal degradation, it significantly reduces the risk of network downtime and performance issues.

This increased stability makes hybrid cabling an excellent choice for mission

'Hybrid cabling solutions have emerged as an effective means of delivering power and high speed data while reducing installation costs and complexity. Hybrid cabling combines the advantages of fibre strands for high speed data transmission with copper conductors for power delivery.'

critical applications where network uptime and reliability are essential. With its ability to support both power and high speed data transmission over long distances, hybrid cabling represents a future ready solution for modern networking needs.

TAKING ADVANTAGE

The advantages of hybrid cabling are particularly evident in Wi-Fi 7 and 5G deployments across various sectors. Application examples include enterprise and office buildings, smart cities and public spaces, healthcare facilities, industrial and manufacturing environments, and educational campuses. Hybrid cabling offers a solution wherever stable, scalable, easily upgradable infrastructure is essential for high speed performance and/or extended reach, which is also resilient to environmental factors and interference.

Implementation of hybrid cabling should follow the established local area network (LAN) cabling best practices, using permanent link structures and patch cords to attach network equipment to the cabling. However, the use of pre-terminated point to point hybrid cables should be discouraged in these environments due to lack of flexibility and operational robustness.

For distances up to 100m, integrating hybrid cabling into an existing digital ceiling cabling according to EN 50173-6 is ideal, providing maximum flexibility in operation. In this way, existing LAN cabling can be used for legacy data equipment or power transmission – only the fibre cables need to

be added to connect to the newly hybrid service outlets. Where no digital ceiling exists, or for distances beyond 100m, hybrid cables with fibre and copper wires for power transmission within a single sheath are the obvious choice.

SELECTION PROCEDURE

Considerations when choosing a hybrid cabling solution include:

- **Cabling type and construction.**

Hybrid cables can support quick, efficient and cost effective installation. The use of copper LAN cables for power supply can provide maximum flexibility by also providing connectivity to legacy equipment. Customised configurations for specific deployment needs are relatively easy to realise thanks to the high degree of solution standardisation.

- **Power delivery requirements.**

It is advisable to ensure compatibility with 4PPoE (IEEE 802.3bt) standards to support high powered access points and small cells.

- **Fibre type and fibre count.**

Singlemode fibre is recommended for high bandwidth and long distances. A minimum of two fibres per service outlet is advisable, whereas four fibres will provide some level of operational redundancy.

- **Environmental considerations.**

Outdoor and harsh environments require ruggedised hybrid cables resistant to temperature fluctuations, moisture and mechanical stress.

- **Compliance and standards.**

Ensure compliance with structured cabling standards (TIA/EIA, ISO/IEC 11801, EN 50173) and fire safety regulations.

CONNECTIVITY INVESTMENT

Wi-Fi 7 and 5G are helping reshape digital infrastructure and enable the type of

flexible, adaptable and scalable building environments we need today. Hybrid cabling presents an optimal solution for seamless, high performance wireless connectivity. By integrating fibre and power within a single cabling solution, businesses and institutions can reduce costs, simplify deployment and future proof their networks. As organisations plan new builds or structured cabling upgrades, it's worth investigating whether investing in hybrid solutions can help handle the bandwidth, power and reliability demands of modern wireless networks. ■



MATTHIAS GERBER

Matthias Gerber is market manager LAN cabling at R&M and has held various positions within the company for over 20 years. He has ample experience in the development and marketing of cabling systems and RJ-45 connectors. In addition, Gerber is a participating or past member of various standardisation bodies (IEC, ISO/IEC and TIA), as well as being chairman of the Swiss National Mirror Committee for TC48.

Markerstudy Group increases resilience, efficiency and data centre sustainability with Schneider Electric and on365

Schneider Electric has worked with on365 to deliver a series of data centre and critical power projects to Markerstudy Group – one of the fastest growing providers of general insurance services for more than eight million customers across the UK.

Working together, they devised an upgrade and consolidation strategy for Markerstudy's electrical infrastructure, data centres and networking systems. Equal consideration was given to the need for increased reliability, security and energy efficiency, while helping the organisation to better manage and scale its distributed systems.



Components from Schneider Electric's EcoStruxure portfolio were deployed including its Galaxy V-series three phase uninterruptible power supplies (UPS) and APC Smart-UPS RT single phase UPS,

EcoStruxure Row Data Center solution, InRow DX cooling units and chilled water systems, APC racks and power distribution units (PDUs), and EcoStruxure IT Expert data centre infrastructure management (DCIM) software. Additionally, on365 secured a strategic five year, managed service level agreement (SLA) to manage and maintain all critical power and cooling infrastructure.

ODATA announces energisation of Mexico's largest data centre campus

ODATA, an Aligned Data Centers company, has announced the energisation and expansion of critical substation and transmission infrastructure near its DC QR03 data centre campus, solving the data centre energy scarcity in Querétaro, Mexico. This establishes ODATA as the main provider in the country, with the robust infrastructure required to support large and hyperscale cloud computing and AI deployments, which are essential for the advancement of the country's digital economy.



In partnership with Ammper, ODATA successfully energised 200MW in the first phase of this project. The energisation

addresses a critical constraint on Mexico's data centres – the grid's historical lag in meeting technological demand. This achievement was made possible by significant regional infrastructure investments including

expanding a 400kV switching substation, installing 6.2 miles of transmission lines and building two new substations. With significant expansion infrastructure already completed, the project is on track to reach 400MW.

Ori selects Kao Data for its first UK AI cloud region

Kao Data has been chosen by Ori to host its first UK based cloud region. The deployment at Kao Data's Harlow campus, which mixes high density data centre infrastructure, renewable energy and close proximity to London and Cambridge's thriving artificial intelligence (AI) and tech ecosystems, marks a significant milestone in Ori's European cloud expansion.

Ori's AI cloud infrastructure at Kao Data includes a substantial cluster of Nvidia's

state-of-the-art H200 Tensor Core graphics processing units (GPUs). The most powerful devices on the market, with breakthrough performance and memory

capabilities, these are the preferred GPUs for generative AI and large language models (LLMs).

The partnership illustrates the continued need for the UK to be investing in, supporting and hosting AI architectures, and showcases how it can

continue to be a leader in the AI race by attracting and working with innovative, world class start-ups.



PROJECTS & CONTRACTS IN BRIEF

Aligned Data Centers has expanded in the Dallas-Fort Worth Metro Area with a new data centre campus in Mansfield, Texas. Aligned's DFW-03, situated on a 27-acre site with an on-site substation, is anticipated to be available in Q4 2025, providing customers with rapid access to critical infrastructure.

NTT Data has announced its latest private 5G customer deployment for the Roularta Media Group (RMG), Belgium's largest printing company.

EXA Infrastructure has expanded its London metro offering by installing two fully diverse, high fibre count cables in Telehouse South – Telehouse Europe's newest data centre located in London Docklands.

Nokia has announced a significant upgrade to the data centre infrastructure of Maxis, Malaysia's leading integrated telecommunications provider, aimed at enhancing connectivity and scalability with Nokia's data centre switches and Event-Driven Automation (EDA) platform. The deployment will support Maxis' business growth by providing a scalable, secure and efficient data centre architecture.

Vertiv is collaborating with Oxigen to design and implement the company's largest data centre. Vertiv's power and thermal solutions deliver scalability and energy efficiency, and its services provide comprehensive support, helping to position Oxigen as a benchmark for high performance data centres in Spain.

Excel Networking Solutions

Excel Networking Solutions has launched the **Enbeam Fibre Configurator**, an online tool designed to streamline fibre optic product selection. The Enbeam Fibre Configurator simplifies the process of choosing compatible components, helping users specify fibre panels, cassettes, adaptors and pigtails with ease.

By guiding users through a step-by-step selection process, the tool ensures compatibility while reducing the risk of errors. It also provides downloadable specification sheets and an opportunity to



create a list of materials required, enhancing the efficiency of the ordering process.

Excel's Enbeam fibre range is known for its high performance solutions, and this new configurator further supports customers in designing and deploying fibre networks quickly and accurately. Available now on Excel's website, the Enbeam Fibre

Configurator is accessible to all, offering a user friendly experience to simplify fibre infrastructure planning.

CLICK HERE to find out more and see how it can streamline your next fibre project.

www.excel-networking.com

HellermannTyton

For 20 years HellermannTyton has been a pioneer in pre-terminated infrastructure with its RapidNet solution. RapidNet is the pre-terminated, pre-tested cassette-based plug and play system developed by HellermannTyton and designed to deliver high performance and improve the ease and speed of infrastructure deployments.

HellermannTyton has now launched RapidNet Ultra, taking the existing data centre optical fibre solution beyond today's requirement. It offers 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.

With a range of cassette formats and fibre assemblies, RapidNet Ultra delivers high performance and fibre capacity to meet the demands of the modern data centre.

To find out more about RapidNet Ultra **CLICK HERE.**

www.htdata.co.uk

Excel Networking Solutions

Excel Networking Solutions has introduced **Elevate - Future Faster**, a new suite of products tailored for data centres and high power compute applications in the EMEA region.

Pre-launched at Data Centre World London and officially released on 2nd April, Elevate's initial offerings encompass high and ultra-density fibre optic cabling, rack and aisle containment, fibre raceway and intelligent rack power distribution. These solutions are engineered for exceptional performance and are supported by a dedicated team focused on reducing lead times.

While Excel has been a leader in LAN environments, Elevate addresses the distinct needs of data centre white space and high power compute markets. Notably, Elevate introduces a partnership with

ELEVATE

Future Faster

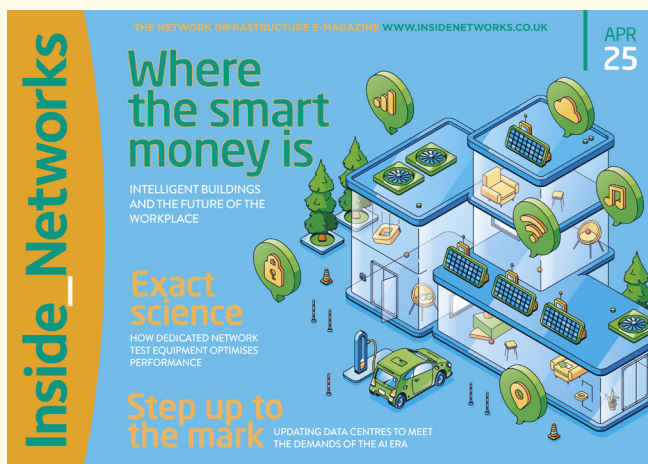
Senko Precision Components for ultra-low loss multifibre MPO and VSFF connectors, utilising B2ca cables as standard. It has also invested in an in-house UK MPO termination facility.

Additionally, technology partnerships with companies like nVent for liquid cooling and power distribution, and Sunbird for data centre infrastructure management (DCIM), are being established to provide integrated solutions for data centre operators.

CLICK HERE to register your interest.
www.elevate.excel-networking.com

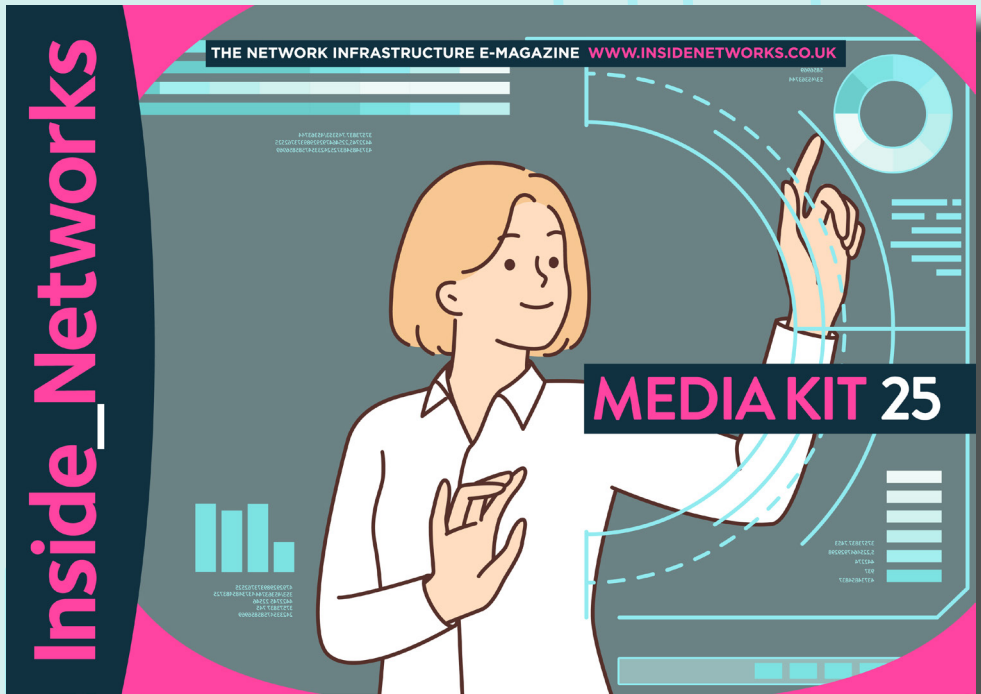
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Fit for purpose

Julian Hennessy of Telehouse Europe explains how retrofitting data centres can potentially transform existing facilities into sustainable, efficient and community focused hubs



▶ Data centres are essential to the modern digital economy but as demand for these facilities grows so too does the need to ensure they operate sustainably. With innovative strategies and modern technologies, data centres can enhance their environmental credentials, becoming more energy efficient and resource conscious. Retrofitting – updating existing facilities instead of building new ones – offers a forward thinking way to achieve these goals while maximising the value of existing resources.

GET THE BALANCE RIGHT

Far from being a stopgap measure, retrofitting breathes new life into legacy systems, unlocking efficiencies, cutting emissions and maximising the use of

existing resources. Done right, it ensures operations remain seamless while setting a benchmark for sustainability in urban environments.

Retrofitting a live data centre is a complex undertaking, where maintaining uninterrupted service becomes a critical challenge. These facilities often host sensitive and essential operations for sectors like finance, healthcare and public safety, so planning upgrades while minimising downtime requires precision and creativity.

The physical constraints of older buildings present another hurdle. Legacy facilities may struggle to support advancements like high density server racks and advanced cooling solutions due to their original design parameters

on floor loadings and limited space, particularly in densely built urban areas. Here, retrofitting efforts must carefully navigate those complexities, adding further intricacies to the process.

CLIMATE CONTROL

Cooling systems, a major energy

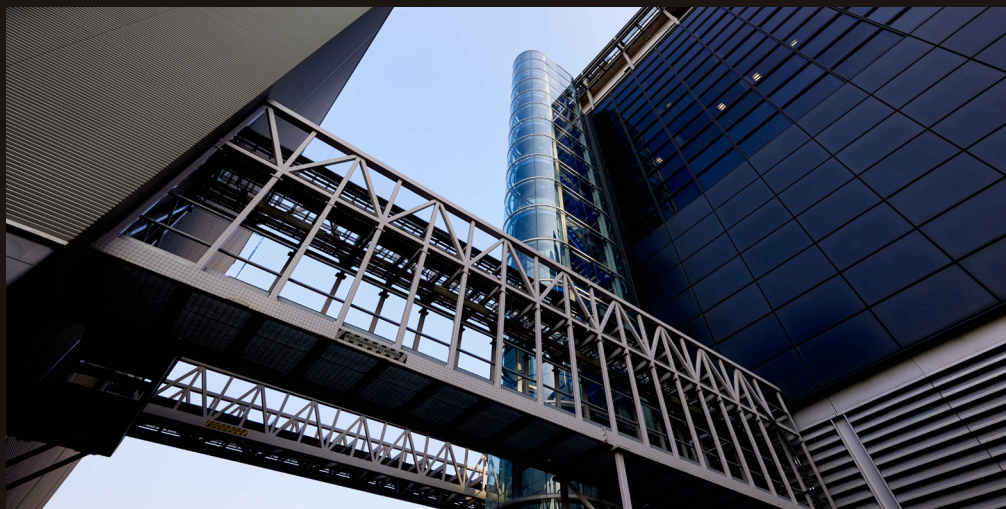
consumer in any data centre, also come under scrutiny in any retrofitting project. Older cooling technology will have greater energy consumption and some systems rely heavily on consistent water usage, creating challenges in areas already facing water stress. By retrofitting, facilities can explore alternative options such as free cooling based systems or innovative energy efficient designs, offering a chance to reduce operational costs while meeting sustainability goals and alleviating any avoidable pressure on utility supplies in

‘Beyond technological upgrades, retrofitting aligns perfectly with the principles of sustainability and the circular economy. Thousands of tons of CO2 emissions can be saved during construction by making the decision to retrofit, rather than demolishing and rebuilding.’

local communities.

Energy optimisation is another key focus, with advanced techniques transforming the way cooling is managed. For instance, hot and cold aisle containment systems enhance airflow by preventing the mixing of hot and cold air, directing cooling efforts precisely where they’re needed most. This targeted approach not only improves efficiency but also reduces overall energy consumption.

Economisers, which tap into free cooling methods by utilising outside



air, add another layer of innovation. Together, these solutions drive significant environmental benefits while cutting operational costs, showcasing how modernisation can achieve both sustainability and financial efficiency.

A CIRCULAR APPROACH

Beyond technological upgrades, retrofitting aligns perfectly with the principles of sustainability and the circular economy. Thousands of tons of CO₂ emissions can be saved by making the decision to retrofit, rather than demolishing and rebuilding. By reusing and repurposing materials during the upgrade process, operators can minimise construction waste and reduce embodied carbon. This approach not only mitigates environmental impact but also fosters community engagement.

For instance, salvaged materials such as metals, furniture and equipment can be donated to local charities, schools and businesses, turning what might have been waste into valuable resources. A recent Telehouse project in London generated £33,000 for local charities by recycling extracted materials, directly supporting community initiatives while reducing landfill contributions. Furthermore, materials such as raised floor tiles and containment systems from office floors that were converted into data hall floors were repurposed.

GENERATION GAME

This model of sustainability extends to operational practices as well. Data centres consume significant amounts of electricity, but retrofitting offers the chance to integrate renewable energy sources and energy efficient systems.

Facilities can now incorporate energy

efficient equipment to replace outdated technology. Back-up generators are now cleaner burning and have the option of using different fuel sources, on-site battery storage can be explored and advanced power management systems deployed to improve overall facility efficiency, reduce carbon footprints and the lower reliance on fossil fuels.

These advances not only help operators meet their own environmental, social and governance (ESG) goals but also make retrofitted facilities more attractive to clients with their own sustainability commitments. In a market where environmental credentials increasingly influence decision making, the ability to demonstrate greener practices is a competitive advantage.

COMMUNITY CHEST

The benefits of retrofitting extend beyond environmental gains. Community engagement and support are vital components of successful projects, particularly in urban areas. Retrofitting initiatives often create local jobs in construction, engineering and project management, while supporting apprenticeships in fields such as electrical systems; heating, ventilation and air conditioning (HVAC) maintenance; and sustainable design. This contributes to economic and social resilience.

Additionally, thoughtful project planning can ensure that disruption to surrounding areas is minimised, whether by managing construction noise or adopting green procurement practices to reduce transport emissions. Some projects even involve outreach initiatives, such as introducing young people to careers in data centre management and construction, ensuring a pipeline of local talent for the future.



MORE TO IT

Ultimately, retrofitting is about more than just modernising data centres. It's about creating a smarter, greener future and one where innovation, sustainability and community impact go hand in hand. For operators, the message is clear – retrofitting isn't merely a choice, it's a responsibility and an opportunity to lead by example. ■

When executed with care, retrofitting projects can go beyond the walls of the data centre, becoming a force for positive change in the community. By integrating charitable work, educational opportunities and sustainable design, operators can leave a lasting legacy that benefits both people and the planet.

VISION FOR THE FUTURE

As the data centre industry evolves, retrofitting is set to play an increasingly pivotal role in shaping its future. Advances in technology, such as liquid cooling systems and heat reuse capabilities, promise even greater efficiencies, enabling facilities to do more with less.

Urban settings, where space is limited, pose unique challenges. Retrofitting older facilities provides a practical solution by transforming them into cutting edge hubs that meet modern demands, while preserving valuable real estate. This approach also avoids many of the logistical and regulatory hurdles associated with developing new builds in densely built areas and lessens any impact on the local community.

Collaboration will be key to unlocking the full potential of retrofitting. Operators, engineers, local authorities and community stakeholders must work together to share knowledge, adopt best practices and scale successful models across the industry.



JULIAN HENNESSY

As projects director with Telehouse Europe, Julian Hennessy has a strong passion for ESG and developing the company's next generation of industry professionals. He currently manages multiple major works projects and is overseeing a portfolio of business as usual projects across Telehouse campuses. His career includes developer and contractor experience on a range of data centre projects from new builds to large retrofits and upgrade works in live facilities, plus large scale semi-conductor, pharmaceutical and commercial fit-outs.

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