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ARE DATA CENTRES SCALING QUICK
ENOUGH TO KEEP UP WITH AI?

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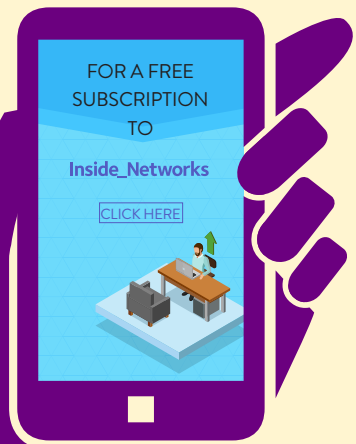
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Growing concern

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The relentless growth of artificial intelligence (AI) is fuelling a massive data centre revolution. Although this is generally a very positive sign that points to the long-term health of the sector, it brings with it significant issues that also need to be addressed.

The chief concern is whether enough existing data centres can cope with this enhanced demand. The bottom line is that many of them simply weren't designed and built to accommodate AI and are limited in their ability to provide sufficient power and cooling for this type of compute. It means many owners and operators are now having to scale their data centres accordingly in order to have the robust digital infrastructure required.

This isn't a one-dimensional challenge though. The vast amounts of data required by AI are seeing mass adoption of graphics processing units (GPUs), due to their capability to concurrently process multiple computations more efficiently.

Although GPUs are more power efficient per byte of data processed than central processing units (CPUs), the total power consumption is expected to rise. Data centres will therefore need to carefully manage environmental and regulatory concerns. Inside_Networks has assembled a panel of experts to examine whether data centres are scaling quickly enough to keep up with the demands that AI presents and whether they can do this while also cutting carbon emissions.

This issue also contains special features on intelligent building network infrastructures and testing and test equipment, with experts from Siemon, LMG, AEM and Sudlows providing fascinating insight into a range of subjects. These include the need for smart retrofit in existing buildings to meet environmental obligations, the benefits of high-speed Wi-Fi, the various network infrastructure configurations found in modern intelligent buildings and why a robust testing strategy is vital.

With lots more besides, 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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UTC initiative scales-up following success at Heathrow

The University Technical College (UTC) Heathrow initiative, which sees leading industry employers working in collaboration alongside education to create a solution to the industry's ongoing skills shortage, is expanding its reach to three further locations.



Activate Learning Education Trust (ALET), which incorporates UTC Heathrow, is now launching the Digital Futures Programme in a further three of its UTCs – UTC Reading, UTC Oxfordshire and UTC Swindon. Each UTC can accept 150 students per year on to the Digital Futures Programme. Across the four ALET UTCs, this will result in a total of 600 students per academic year.

The rollout was officially launched at an event attended by nine of the employer partners – Amazon Web Services, ARK

Data Centres, CBRE, CNet Training, CyrusOne, Digital Realty, LMG, Virtus Data Centres and Yondr. These companies have committed to supporting all ALET UTCs that will be delivering the Digital Futures Programme and will be known as ALET Trust Partners.

Jo Harper, CEO of ALET, said, 'The Digital Futures Programme is focused on equipping students with the skills to succeed in the digital industries, bringing together companies that are serious about acting to address the skills shortage.'

Microsoft to expand its Spanish AI and cloud infrastructure with \$2.1bn investment

Microsoft is set to expand its artificial intelligence (AI) and cloud-based infrastructure in Spain through an investment of \$2.1bn over the next two years, according to the company's vice chair and president, Brad Smith. The company has been investing in Spain for 37 years and in 2021 it announced a new research and development hub for AI technologies based in Barcelona.

The move comes after Microsoft's announcement of a \$3.45bn AI focused investment in Germany, spanning the next two years. In a post on X, Smith said, 'Our investment is beyond just building data centres, it's a testament to our 37-year commitment to Spain, its security, and development and digital transformation of its government, businesses and people.'



Siemon achieves EcoVadis Gold rating in annual ESG review

Siemon has achieved a Gold rating from EcoVadis, placing it in the top five per cent of the 100,000+ companies EcoVadis rates globally. EcoVadis' ratings are anchored in internationally recognised sustainability standards including the UN Global Compact's Ten Principles, SBTi, ILO conventions, GRI standards, and ISO 14001, ISO 45001 and ISO 26000.

This prestigious recognition signifies the latest key milestone in Siemon's ongoing environmental, social and governance

(ESG) roadmap and demonstrates a marked increase from Siemon's previous



John Siemon

Silver rating. John Siemon, chairman of Siemon's board of directors, said, 'It's a powerful validation of our unwavering commitment to sustainability excellence, woven into every facet of our operations. The Gold rating is a direct result of our strategic progress towards our

ambitious sustainability goals and we are determined to continue to see the bar rise further in the 2024 assessment.'

By 2026 80 per cent of enterprises will design and run new digital infrastructure using subscription-based services

By 2026 80 per cent of new enterprise digital infrastructure investment is forecast to be operated through a subscription-based model, according to the Equinix Global Interconnection Index (GXI) 2024. GXI 2024 predicts that to meet the ever-growing demands of data dense technologies, IT decision makers are

increasingly shifting away from purchases of physical equipment, in favour of flexible subscription-based models.

This shift started with multicloud adoption but is now becoming the norm across all infrastructure out to the edge.

It is providing enterprises with greater agility in architecting their infrastructure everywhere, while ensuring they have access to the most efficient technologies.



Steve Madden

'The traditional procurement process of buying your own IT hardware is becoming a competitive disadvantage,' said Steve Madden, vice president of digital transformation and segmentation at Equinix. 'The pace of hardware innovation

is increasing, putting pressure on price performance ratio and infrastructure efficiency. Subscription models offer continuous improvement and easier adoption of new technologies already in place.'

More people taking up digital apprenticeships in the age of AI

The popularity of digital apprenticeships has hit new highs, partly fuelled by the surging profile of artificial intelligence (AI) according to BCS, The Chartered Institute and UCAS.

New figures from BCS show a 27 per cent year-on-year increase of its final assessments of IT apprenticeships. Exactly half of those who applied to study computing through the UCAS Hub in 2023 also expressed an interest in an apprenticeship – up from 46.8 per cent in 2022.

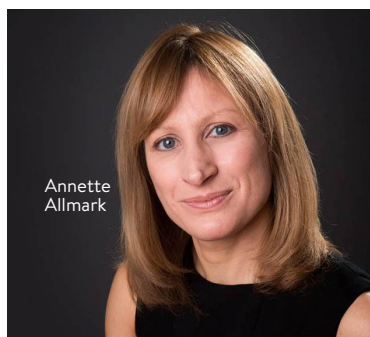
Annette Allmark, director of learning and development at BCS, said, ‘The shortage of tech skills costs the UK

economy and its workers billions yearly.

Digital apprenticeships are an effective way of boosting the tech talent pipeline, especially for underrepresented groups. We know more people are applying for and completing digital apprenticeships, and we believe the popularity of emerging technologies like AI is fuelling that increase.’

BCS has also found that the number of

young women in the UK applying to start computing degrees in 2024 has risen by 10 per cent on last year. In total there were 18,880 applications from 18-year-old women to study computing at university this year, up from 17,140 in 2023.



Equinix and wpd sign one of the largest corporate power purchase agreement deals in French history

Equinix and wpd have signed seven 20-year power purchase agreements (PPAs) that will provide over 100MW in capacity, and more than 300GWh per year of green

energy output in France. The agreement, which is one of the largest of its kind signed in France, was facilitated by Schneider Electric and includes four wind projects in Nouvelle-Aquitaine, two in Hauts-de-France and one wind farm in Pays de la Loire.

It will see long-term financial support to help further the deployment of renewable energy in France. In addition it will make a major contribution in decarbonising the grid as

well as reaffirming Equinix’s commitment to sustainability.

Régis Castagné, managing director of Equinix France, said, ‘Through aligning with



France’s own renewable energy production goals, we’re delighted to be positively and proactively contributing to the nation’s decarbonisation and renewable investments. Equinix is committed to making responsible business decisions that will support our customers on their

sustainable journeys. The signing of this deal with wpd helps us make a big leap forward in on our own path to becoming climate neutral by 2030.’

64 per cent of organisations see their use of multicloud increasing in the next two years

OVHcloud's executive report on the state of multicloud examined the views of over 500 IT decision makers in large organisations across the UK. According to the study, 62 per cent of organisations are currently using a multicloud environment, with a further 18 per cent actively in the process of transitioning to one.



workload is rapidly being accepted as the best way to do business today,' said Matt

Tebay, sales director at OVHcloud. 'Almost two thirds (64 per cent) of organisations see their use of multicloud increasing in the next two years, so although it can bring considerable complexity, the benefits are clear to companies. In fact, only three per cent of organisations said that their use of multicloud would decrease in the next two

years, and fewer than one per cent have no plans to use multicloud at all.'

'Using the right cloud for the right

NEWS IN BRIEF

Keysource has been appointed to YPO's Framework for the provision of data centre design and build solutions, maintenance and support and colocation services.

NTT and Schneider Electric have unveiled a new joint offering that enables enterprises to harness the power of edge computing and drive artificial intelligence innovation at the edge. The co-innovation combines edge, private 5G, internet of things (IoT) and modular data centres, enabling edge connectivity anywhere, even in the most remote locations, and ensuring the safe delivery of actionable data insights in real time.

Colt Technology Services has expanded its Internet On Demand service to 10 new countries – the US, Canada, Australia, Bulgaria, Hungary, Luxembourg, Poland, Romania, Serbia and Slovakia – with increased bandwidth available at up to 10Gb/s.

Sweden's research institute, RISE, has been commissioned by the European Union's Satellite Centre (SatCen) to conduct a feasibility study. It will provide an overview of the potential of a common framework for artificial intelligence in applications based on satellite imagery data. The results will be presented at the end of 2024.

Telehouse has partnered with Transatel to bolster the digital infrastructure for Transatel's expanding connected car business. The collaboration will see Telehouse supply extended data centre capacities to aid Transatel in rolling out VoLTE and TG SA services, key to its connected car segment.

A change for the better

Hi Rob

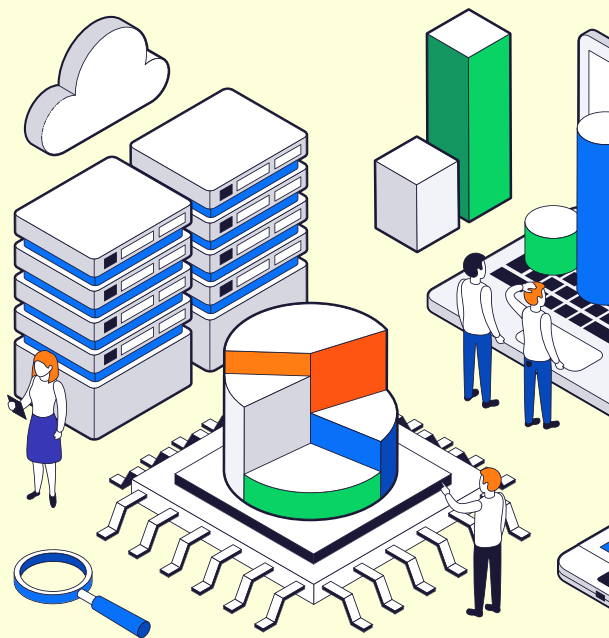
Recently, data centres have gained heightened significance in delivering information technology services, facilitating communication, networking and data storage to accommodate the growing prevalence of networked devices, internet connected applications, customers and business processes. These data centres empower major digital technology providers to operate seamlessly through robust servers, ensuring uninterrupted daily functions and service provision. However, it is crucial to note that data centres, in their optimisation, demand substantial electricity consumption.

Adopting the newest developments in the ever-changing field of technology is crucial to the industry's efficiency and sustainability. The question arises – could poorly executed change management implementations be hindering the integration of energy efficient technologies in data centres, or is it the result of a lack of comprehensive stakeholder analysis by the companies pioneering these innovations?

It is well known in the data centre sector that most creative immersion cooling companies struggle to fulfil the demands of data centres eager to implement cutting edge technologies. Might this be among the numerous explanations for the delayed uptake in the data centre industry?

Effective change management is essential for the successful implementation of any technological transformation. In

the context of data centres, where the demand for increased computing power is met with concerns about environmental sustainability, the integration of energy efficient technologies becomes imperative. Poorly executed change management may lead to resistance



from employees, inadequate training and insufficient communication, ultimately impeding the seamless adoption of technologies designed to reduce electricity consumption.

Companies must navigate the complexities of transitioning from conventional to energy efficient technologies, addressing potential challenges such as employee scepticism,

tter

workflow disruption and the need for skill upgradation. A failure in change management may result in a reluctance to embrace these advancements, hindering the overall progress towards sustainable data centre operations.

On the other hand, the absence of thorough stakeholder analysis may be another bottleneck in the widespread adoption of energy efficient technologies in data centres. Stakeholders, including employees, customers, investors and regulatory bodies, play a crucial role in determining the success of any technological innovation. Without a comprehensive understanding of their needs, expectations and concerns, companies risk implementing solutions that may not align with the broader interests of the various stakeholders.

Lack of stakeholder analysis can lead to a misalignment of goals and priorities, resulting in resistance from within the organisation or dissatisfaction among customers and investors. In the context of energy efficient technologies in data centres, where environmental sustainability is a key concern, understanding and addressing stakeholder expectations becomes paramount in garnering support and ensuring successful

implementation.

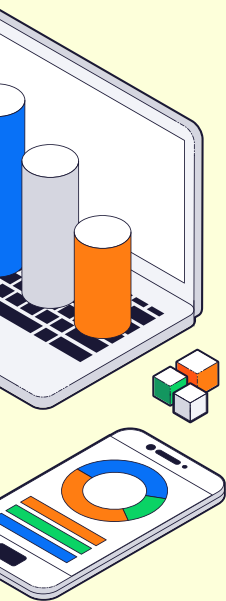
The adoption of energy efficient technologies in data centres is a multifaceted process that involves both effective change management and comprehensive stakeholder analysis. Poorly executed change management can impede progress by creating internal barriers, while a lack of stakeholder analysis may lead to solutions that do not resonate with the broader interests of those involved.

To foster a more sustainable data centre industry, companies must prioritise robust change management strategies and engage in thorough stakeholder analysis to ensure the seamless integration of the latest technologies designed to reduce electricity consumption. Only through a holistic approach can the industry achieve a harmonious balance between technological advancement and environmental responsibility.

George Atijohn
AJ Technology

Editor's comment

George addresses a subject that often flies under the radar and is not given the consideration it deserves. Managing change in data centres requires more than just implementing new technology quickly and efficiently – it also needs all stakeholders to be fully onboard with any developments. As he points out, this can maximise the effectiveness of any change and mean the difference between success and failure.



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Keeping up appearances

Artificial intelligence (AI) is reshaping the demands on data centres, providing a real challenge for facilities that weren't designed to cope with it. **Inside_Networks** has assembled a panel of industry experts to discuss whether data centres are scaling quickly enough to meet the demand that AI presents


▶ Over the last 18 months AI has dominated the headlines and led to a rapid increase in data centre demand. However, the rise in computing power storage space and low latency networking brings challenges to existing facilities – especially those that were not designed for AI.

Owners and operators are having to scale their data centres accordingly, with high performance servers, storage systems, networking infrastructure and specialised hardware accelerators. Furthermore, the rack power density required by AI generates significant heat, presenting

energy efficiency and sustainability challenges. The data centre sector has collectively worked to limit energy consumption, yet continuing this trend could prove difficult.

In the rush to meet demand, it's important that operators tread carefully to avoid making an expensive mistake. So, as the rise of AI continues unabated, Inside_Networks has assembled a panel of experts to examine whether data centres scaling quickly enough to keep up with the demands of AI and have the right strategies to ensure they meet the intensified demands of this technology.

15



AS WORKLOADS CONTINUE TO GROW EXPONENTIALLY, ARE DATA CENTRES SCALING QUICKLY ENOUGH TO KEEP UP WITH THE DEMAND THAT ARTIFICIAL INTELLIGENCE (AI) PRESENTS? HOW CAN DATA CENTRE OWNERS AND OPERATORS MEET THIS SIGNIFICANT OPERATIONAL CHALLENGE, WHILE ALSO CUTTING CARBON EMISSIONS AND MEETING THEIR ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) OBLIGATIONS?

DANIEL BURGON

HEAD OF RISK & COMPLIANCE AT TELEHOUSE EU

Data centres are limited in their ability to provide sufficient power and cooling for AI compute. In addition, the ability to scale with AI driven demand is also limited. Data centres that have surety of power and can facilitate high-density IT deployments are leading the charge. This brings us to the scalability issues:

- **Surety of supply**

Power availability in grid supplied networks is the largest limiting factor to meeting AI driven demand. National grids have both limited load and restricted capacity in select locations. The scale at which AI compute can grow in a particular region can only be supported by available power.

- **High-density deployments**

AI compute has increased need for high(er) powered server deployments in smaller footprints. 50kW server racks are on the lower end of the spectrum. Higher density deployments come with a multiplied cooling factor, as heat is generated in a condensed area. Data centres that have the agility to cool such deployments already have a leading edge.

- **Business models**

Data centre operators have very different business models and target customers. There is no market norm, as each deployment is suited to meet the needs of individual customers. Do you design a data centre purely for 50kW plus deployments only? Installing a 5kW-30kW

rack deployment in such a data centre will be deemed overkill, as the supporting infrastructure would inevitably drive-up

Power Usage Effectiveness (PUE). Do you design a data centre for sub-50kW deployments only? You will quickly realise that your infrastructure won't be able to support high density deployments, or it will be seen as a poor use of space. Getting the balance right is key.

New technologies can support this – for example, liquid cooling. Despite

the need for increased floor loading, the energy needs for the cooling elements are significantly reduced and can support high heat generating, high-powered AI compute deployments.

Modularity and finetuning of servers to operate within a specific knowledge domain reduces the overall energy consumption whilst maintaining a high level of compute performance. Furthermore, modulating AI compute activity strictly against energy consumption and availability can levy significant benefits.

High-density computing (dependant on design and infrastructure) leads to higher efficiencies in PUE and cooling deltas. This results in less wasted energy and better data hall heat dissipation.



'POWER AVAILABILITY IN GRID SUPPLIED NETWORKS IS THE LARGEST LIMITING FACTOR TO MEETING AI DRIVEN DEMAND.'

STEPHEN BOWES-PHIPPS

VICE PRESIDENT EMEA DATA CENTRES AND CLOUD AT STATE STREET

In the spirit of responding to a question about AI in data centres, I thought I'd plug said question through Merlin.AI to see what it said. Interestingly, it highlighted the following areas of concern:

- Scalability and capacity planning
- Efficient resource utilisation
- Energy efficiency and carbon emissions reduction
- Environmental, social and governance (ESG) obligations and regulatory compliance
- Innovative cooling and heat reuse
- Adoption of AI for data centre optimisation



As interesting as those topics are, the biggest issue facing the industry is not captured under any of those headings. NVIDIA graphics processing units (GPUs), used to train GenAI instances, are heavy energy users and are getting heavier. The question is not whether data centres can power and cool them (though that will present challenges as chipsets consume more than 1kW/chip) but should data centres power and cool them? With a finite and limited energy supply, what makes GenAI more important than hospitals, education, government, heavy industry, residences, etc?

This political question is going to exercise regulatory authorities across the world unless the data centre industry re-evaluates its approach to powering the digital

revolution. Either the most power-hungry data centres move to areas of the world where energy is in abundance (but that's usually at a significant carbon intensity cost), or we move to large scale on-site generation – a solution considered only

briefly by most data centre providers.

The easiest way of turning up on-site 30-300MW, local and national planning regulations aside, is to employ the latest small modular reactors (SMR). SMRs have been considered safe for Royal Navy submarines for the last 60 years, so it seems odd that no-one has considered using them for

energy intensive businesses.

The largest hurdle is going to be people – more specifically, people who live close by. What would happen to house prices if a nuclear device is installed nearby? Do we really build data centres specifically for the technology, only to further embed negative perceptions that data centres are destroying the planet, or do we now establish a new energy supply paradigm, required to support the inevitable demand-led growth? Government policy will likely determine this outcome.

'SMRS HAVE BEEN CONSIDERED SAFE FOR ROYAL NAVY SUBMARINES FOR THE LAST 60 YEARS, SO IT SEEMS ODD THAT NO-ONE HAS CONSIDERED USING THEM FOR ENERGY INTENSIVE BUSINESSES.'

JOHN SIEMON

CHIEF TECHNOLOGY OFFICER & CHIEF OPERATING OFFICER AT SIEMON

Just as AI and machine learning will accelerate advances in a broad array of scientific and technological pursuits, the rapid deployment of high-performance computing (HPC) will require accelerated advancement of known technologies and strategies to support unprecedented demands for power and cooling. These strategies include site selection in locations that can tap into sources of stranded and renewable power.

Efficiency gains require rapid deployment of reference architectures and data processing units (DPUs) to efficiently manage storage and compute through dynamic power allocation. Migration from DGX to PCX systems will also increase power efficiency.

The biggest challenge faced by these systems is heat dissipation. HPC racks considered to be high density operate at 15-30kW, whereas extreme density racks can handle 40-125kW, with levels exceeding 200kW on the horizon. Heat management of these systems will require a variety of transformative solutions including on-chip to immersion cooling technologies that are also capable of heat recovery.

The additional step of proactively reviewing your supply chain is a key foundation for all owners and operators. Ensure that your named vendors have the

solutions and expertise to deliver what you will need for this next generation of connectivity, power and cooling, while ensuring that their organisations,

supply chains and products demonstrate a clear commitment to environmental, social and governance (ESG) principles and values.

As the old saying goes, 'with great power comes great responsibility'. In the case of power hungry HPC, those responsibilities

include the use of renewable energy, highly efficient reference architectures and cooling technologies that efficiently dissipate and reuse heat generated by these systems, and a supplier ecosystem with a clear commitment to ESG.



'ENSURE THAT YOUR NAMED VENDORS HAVE THE SOLUTIONS AND EXPERTISE TO DELIVER WHAT YOU WILL NEED FOR THIS NEXT GENERATION OF CONNECTIVITY, POWER AND COOLING, WHILE ENSURING THAT THEIR ORGANISATIONS, SUPPLY CHAINS AND PRODUCTS DEMONSTRATE A CLEAR COMMITMENT TO ESG PRINCIPLES AND VALUES.'

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BRUCE OWEN

MANAGING DIRECTOR UK AT EQUINIX

The need for a robust digital infrastructure for on demand interconnectivity in an increasingly AI orientated world is at an all-time high. The broader digital infrastructure industry can

help support its customers and meet the challenge of a skyrocketing demand for AI by embracing sustainable practices and by incorporating environmental efficiencies in the design, development and deployment of AI systems.

Creating the conditions to cater for a rapidly growing infrastructure and to ensure AI remains sustainable is undoubtedly a challenge for the industry. This involves optimising server efficiency, using advanced cooling methods, and leveraging efficient colocation data centres with renewable energy and innovative technologies like direct to chip liquid cooling for high density AI hardware.

As more heat gets generated from the increased workloads AI brings, the industry is also exploring ways to reuse waste heat and promote circularity. In Finland for instance, Equinix has been repurposing waste heat to warm Helsinki homes since 2010. In Paris, we are channelling waste heat to the Aquatic Centre for the 2024 Olympic Games.

The increased demand from customers for AI also brings with it an increased

demand for power. The digital infrastructure industry must explore solutions like local power generation and flexible options such as fuel cells to provide flexible grid solutions

that feed into and support the grid, rather than simply use it. This is a practice we are already implementing in Ireland and are looking to rollout to other sites over time and when feasible.

I strongly believe that by continuing to adopt and research new technologies and sustainable practices, data centres can continue to reduce their carbon footprint, meet their environmental, social and governance (ESG)

obligations, and contribute to a more sustainable future.



'CREATING THE CONDITIONS TO CATER FOR A RAPIDLY GROWING INFRASTRUCTURE AND TO ENSURE AI REMAINS SUSTAINABLE IS UNDOUBTEDLY A CHALLENGE FOR THE INDUSTRY. THIS INVOLVES OPTIMISING SERVER EFFICIENCY, USING ADVANCED COOLING METHODS AND LEVERAGING EFFICIENT COLOCATION DATA CENTRES WITH RENEWABLE ENERGY AND INNOVATIVE TECHNOLOGIES.'

STEVEN CARLINI

VICE PRESIDENT OF INNOVATION AND DATA CENTRE AT SCHNEIDER ELECTRIC

Many data centres have turned to digital tools to streamline the design, build and deployment processes. AI servers use chips that provide unprecedented levels of processing power and use significantly more utility power, with many designs looking

at the adoption of high-density and liquid cooling. The industry is experiencing significant changes in design and deployment, and there are several factors creating challenges that could limit exponential capacity growth, or cause a ripple effect to stop supply meeting demand.

Planning constraints have been a hindrance to new builds and AI demand, especially where the type of land, availability of power and potential community or environmental impact are concerned. Data centre owners and operators cannot, therefore, just put a new facility anywhere and, more generally, they can't simply repurpose an unused, vacant building without major modernisation. In that respect both approaches require careful consideration.

With the energy requirements of data centres and AI expected to grow, environmental, social and governance (ESG), sustainability and energy efficiency must remain central to the growth of the industry. As such, and to ensure they mitigate any environmental implications, operators must undertake rigorous planning and permitting processes for a proposed location. I recommend a subsequent study is also undertaken to determine what sort of demand a data centre will place on municipal services.

Additionally, to overcome potential planning rejections, the data centre must comply with air quality and noise ordinances, be powered by renewables, and meet efficiency and sustainability standards. Aesthetic approvals may also be required to

adhere with the design of the surrounding environment.

From a compute perspective, legacy systems cannot serve AI demands because it requires more power than traditional environments. As such, access to power can create issues for both operators and utility

companies, causing complicated queues, delays in projects and some being blocked entirely. Other limitations that can affect growth are network bandwidth capabilities and optical fibre for large scale data workloads.

Data centres face key challenges to meet the soaring growth of AI. Striking a balance between operational efficiency and sustainability is imperative to navigate this complex landscape effectively, and meet the growing demands of the technology in a responsible manner.



'PLANNING CONSTRAINTS HAVE BEEN A HINDRANCE TO NEW BUILDS AND AI DEMAND, ESPECIALLY WHERE THE TYPE OF LAND, AVAILABILITY OF POWER AND POTENTIAL COMMUNITY OR ENVIRONMENTAL IMPACT ARE CONCERNED.'

MICHAEL AKINLA

BUSINESS MANAGER NORTHERN EUROPE AT PANDUIT

Over the last 10 years, data centres have evolved from being hidden inside corporate structures and designed as camouflaged grey buildings to flaunting their size and energy requirements.

At the same time, FLAP (Frankfurt, London, Amsterdam and Paris) has become an acronym for one of the most important global data centre markets. Meanwhile, new technology users, increasing mobile app uptake and the explosion in interest in artificial intelligence (AI) is driving high levels of data volume growth annually.

Data centres, including multiple hyperscalers, need the latest physical infrastructure for their global expansion plans. This demonstrates how cloud providers are extending their presence and driving other data centre companies to scale at pace. However, recent data centre development pushback at planning stage, such as at Abbots Langley, illustrates that UK local authorities are keen to maximise any benefit that a data centre development will bring, but are unwilling to accept plans that do not demonstrate a positive local outcome.

Data centre design has shifted. Today many new sites are configured to maximise the location's climate to minimise the energy used to cool the data centre's IT equipment space. Older facilities are being refitted or extensively renovated to house the latest technologies in chips and

cooling. New builds are being constructed under more stringent building regulations and judged in accordance with BREEAM standards to drive up asset performance and sustainability.

Cooling is central to data centre performance. Faster chips and the infrastructure supporting them requires more effective heat removal, which can offer secondary heat reuse. In the right situations this can provide heating to local buildings and amenities. Data centre IT equipment infrastructure, such as hot and cold containment units, and the systems within them, are an

ecosystem. Choosing purpose designed and built solutions can help optimise the data centre for efficiency, capacity, security and resilience, whilst driving down energy use.

The growth in data centre developments and occupation levels indicates that organisations are looking more broadly with data management, cost optimisation, distributed computing and hybrid strategies as key considerations. This dictates the use of single or multiple data centre suppliers, dependent on customer need and supplier capability.



'DATA CENTRE DESIGN HAS SHIFTED. TODAY MANY NEW SITES ARE CONFIGURED TO MAXIMISE THE LOCATION'S CLIMATE TO MINIMISE THE ENERGY USED TO COOL THE DATA CENTRE'S IT EQUIPMENT SPACE.'

JON HEALY

CHIEF OPERATING OFFICER AT KEYSOURCE

The data centre sector continues to work hard to meet demand from a range of customers requiring capacity for both collocation and cloud workloads, as well as surges in regional development. Artificial intelligence (AI) has created a new type of data centre demand, given the specification of the hardware. Relatively higher rack power densities, dense footprints and large-scale deployments typically result in traditional data centres being unsuitable.

Both traditional and AI ready data centres have the same challenges in accessing suitable space/land, power and connectivity – driving increasing costs in a growingly competitive market. Those with existing resources or assets have opportunities to fast-track capacity to market, while this has intensified the race for AI ready data centres for some operators.

As highlighted in Keysource's sixth annual State Of The Industry Report, speed, substance and sustainability are key considerations for success for owners and operators of data centres. Experience in managing the critical path to shorten overall programme and taking measured risk to improve or de-risk project speed through design, procurement or construction methodologies, are vital. High quality and robust designs provide end user confidence and avoid operational issues post

deployment for operational teams.

Data centre sustainability is a priority of all owners and operators for new builds

and existing facilities. As we see marginal gains in design efficiency and a decarbonising grid supply, focus turns to embodied carbon along with Scope 3 opportunities. Whole life carbon modelling has helped make informed decisions around materials, products and even design methodologies to reduce carbon and retain expected resilience, as well as considering local

or project based environmental, social and governance (ESG) benefits – often influenced by regional location.



'BOTH TRADITIONAL AND AI READY DATA CENTRES HAVE THE SAME CHALLENGES IN ACCESSING SUITABLE SPACE/LAND, POWER AND CONNECTIVITY – DRIVING INCREASING COSTS IN A GROWINGLY COMPETITIVE MARKET. THOSE WITH EXISTING RESOURCES OR ASSETS HAVE OPPORTUNITIES TO FAST-TRACK CAPACITY TO MARKET, WHILE THIS HAS INTENSIFIED THE RACE FOR AI READY DATA CENTRES FOR SOME OPERATORS.'

John Kreyling joins Centiel as its business development director

Centiel has strengthened its senior management team with the appointment of John Kreyling as business development director. Kreyling has more than two decades' experience in the power distribution industry and will be responsible for driving Centiel's continued growth within the data centre market. He joins Centiel from Kohler, where he spent nine years in roles including area, regional and UK sales management.

Kreyling said, 'Data centres value working closely with the factory manufacturing their uninterruptible power supply (UPS) solutions. My role will now be to help cement such relationships and contribute

to driving Centiel's vision of further expansion in this global market. Centiel's UPS solutions lead the industry and are designed to be highly efficient to help data centres save energy.'

David Bond, chairman at Centiel, commented, 'John is a well-known industry expert and brings with him a significant amount of experience, which will benefit our valued clients both in the UK and further afield. We are delighted to welcome him as another trusted advisor in our team, tasked to help our customers improve the availability and efficiency of their

data centres, while reducing total cost of ownership and taking steps to improve sustainability at the same time.'



L-R - John Kreyling, Aaron Oddy, Louis McGarry and Shane Brailsford

Mayflex appoints Francesco Bellavia as director of sales for security

Mayflex has appointed Francesco Bellavia in the role of director of sales for security. He brings with him a wealth of knowledge and experience in the distribution of security products, having worked for several distributors in his career, most recently as the divisional director for Nimans in the south.

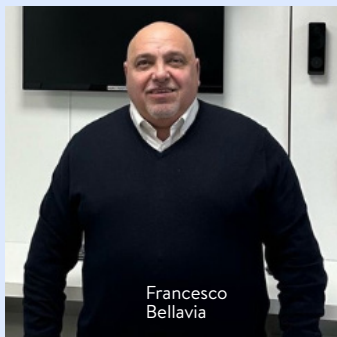
Ross McLetchie, sales director at Mayflex, commented, 'We are delighted to welcome Frankie to the

team. Having his knowledge and proven

success in leading sales teams, working with multiple vendors and ensuring the best customer experience, really stood out.'

Bellavia said, 'I'm excited to join Mayflex and to lead the external security sales team. Having competed against Mayflex for many years, I'm looking forward to bringing my experience and

ideas to shape the team and the way that we work.'



Francesco Bellavia

Epsilon appoints Warren Aw as CCO and David Yoon as COO

Epsilon Telecommunications has appointed Warren Aw as its chief commercial officer (CCO) and David Yoon as its chief operating officer (COO). These appointments will enhance Epsilon's global business strategy and product portfolio.

Aw has more than 20 years of experience in the telecommunications industry, most recently as Epsilon's managing director APAC. He said, 'I am honoured to take on the role of CCO at Epsilon. Over the past few years at the company I have seen Epsilon's dedication to innovation, and I am excited to be at the

forefront of this.'

David Yoon has 20 years of industry experience, most recently serving as Epsilon's director of business synergy for the past two years. He commented, 'I'm

looking forward to embarking on my next step at Epsilon as COO to drive operational efficiency. We're in a great position to take Epsilon to new heights and achieve

opportunities for growth, ensuring we stay at the forefront of connectivity innovation for our customers.'



L-R Warren Aw and David Yoon

Inside Networks

2024 CHARITY GOLF DAY 22ND 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!

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CANCER SUPPORT**

For more information:

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- ✉ info@slice.co.uk
- 🌐 insidenetworkscharitygolf.com

The cost of a 4-ball team will be £790 (+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.

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nLighten UK makes further key sales appointments

nLighten UK has appointed three more members to its expanding sales team.

This is the third round of sales appointments in only six months following nLighten's acquisition of Proximity Data Centres last year.

Peter Seabright joins as account director. He has extensive experience of managing transformations of complex software and infrastructure technologies into the retail, technology and service provider sectors. Andrew Ward has also joined the nLighten UK sales team as account director, bringing over a decade's

experience in corporate client business development and account management.

Finally, Rizwaan Raja has been appointed senior sales engineer. He has a proven track-record in helping organisations maximise the potential of their data centre infrastructure.

Justin Nesbitt, UK sales director at nLighten, said, 'I am delighted to welcome Peter, Andrew and Rizwaan to nLighten UK. Their individual and collective experience further strengthens and complements our rapidly expanding sales team's ability to win new business, as well as maintain and grow existing client and partner relationships.'

Justin
Nesbitt



CHANNEL UPDATE IN BRIEF

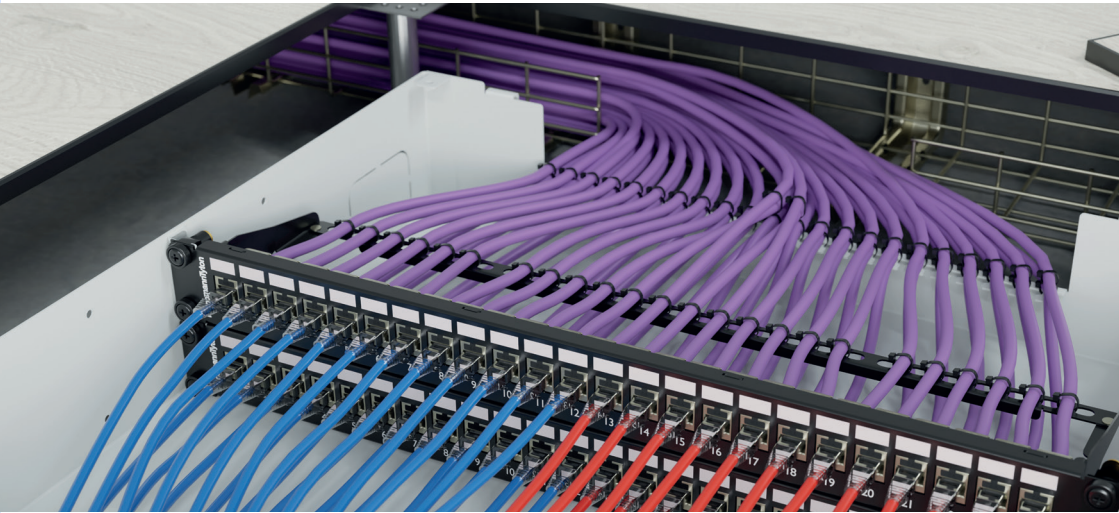
Epsilon Telecommunications has appointed Damon (Young Seok) Lee as its group chief executive officer. Lee joins Epsilon with over 27 years of experience in the telecommunications and technology sectors.

Netskope has appointed Jenn Jakubowicz as senior director of global channels and alliances marketing, with worldwide responsibility for all aspects of global partner marketing execution. The company has also appointed Raphaël Bousquet to executive vice president worldwide sales, leading all aspects of the company's global sales and channel strategy.

Virtus Data Centres has appointed Michael Dada as managing director for Virtus Germany. This strategic move reinforces Virtus' commitment to expanding its footprint across Europe.

Gigamon has opened its new EMEA headquarters in London. The new offices serve as an executive briefing and experiential centre for customer engagement and collaboration, and as a strategic hub for partner training and enablement.

Mitel has appointed Eric Hanson to its executive team as chief marketing officer (CMO). Hanson will lead Mitel's global marketing strategy, including solutions marketing for Mitel's extensive communications portfolio, demand generation, brand, partner engagement marketing, customer marketing and global communications.



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MADE TO CONNECT



Pillar of strength

Rob Kelly of Sudlows identifies the various network infrastructure configurations found in modern intelligent buildings and explains why a robust testing strategy is vital

▶ Today's intelligent buildings feature a myriad of technologies that connect people to their resources, applications, friends and colleagues. They also provide the systems essential for the comfort, safety and security of those who occupy them. As the drive for a near invisible, seamless user experience continues to grow, this puts emphasis on the connectivity between these different systems. As bandwidth, reliability and availability become key factors for delivering solutions, integrators must provide a robust network infrastructure to support these needs, and the testing and documenting any solution is essential.

POINT OF ORDER

If we look at network infrastructure, it's important to consider that it may exist in several different mediums and topologies. All of these warrant their own due diligence and testing plan to ensure they will suitably support the systems that are placed upon them. Examples of different mediums include:

- Twisted pair Ethernet technologies
- Optical fibre solutions
- Coaxial based systems
- Wireless fidelity (Wi-Fi) solutions
- Light fidelity (Li-Fi) solutions

Some of these may even break down further such as four pair Ethernet and single pair Ethernet solutions. The conversation about wireless solutions

could be quite expansive, taking in not only the more obvious Wi-Fi based solutions, but also those that operate at other frequencies. These include Zigbee, in-



building cellular networks or technologies more geared towards internet of things (IoT) type solutions that communicate

with each other on some of the lower frequencies between 400MHz and 900MHz – way away from the common Wi-Fi frequencies that people tend to relate to.

HORSES FOR COURSES

With such an array of different network infrastructure mediums it's not unexpected that the method and approach of testing them will vary quite wildly. That being said,



there should most definitely be a common starting point. The testing of any of these solutions should not be an afterthought,

but rather understood and costed in at the project design stage and fully documented out as part of any pre-project planning. After all, how do you really know what you're delivering if you can't, or haven't, adequately documented what the expectation, testing process and success criteria are going to be?

Understanding and documenting a test plan, which can sometimes be part of a larger overall quality management plan for a project, needs to document the full understanding of the task. In simple terms, it should look to address various questions:

- **Why?** – Why is the testing taking place, what is the overall scope of the testing and how does this tie in with customer's desired outcomes?
- **What?** – What is it that you are testing? Maybe it's the one solution or infrastructure medium, or maybe it's a multi-medium solution, which may create some dependencies in your test plan?
- **When?** – When will said testing take place, is downtime a consideration and does it need factoring into the test plan, or is there a sequencing of works that needs to take place. For example, if your deployment includes a wireless solution, would you need to test your structured cabling outlets before your wireless access points can be made live so that the wireless provision could then be tested?
- **Who?** – Who will do the testing, do they need any specific manufacturer accreditations, or will they need to be competent and trained on certain test equipment or applications that may be used in the test process? Does there need to be an internal or externally managed

‘As bandwidth, reliability and availability become key factors for delivering solutions, it is clear that integrators must provide a robust network infrastructure to support these needs, and that the testing and documenting any solution is essential.’

peer review of the results and, if so, who completes this?

• **How?** – What is the test method and what test equipment is needed for the testing. Are the multiple test cycles such as completing a visual quality inspection of the works, followed by a full testing schedule of the infrastructure, followed by a percentage witness test with the end customer and/or their agents?

DIFFERENT STROKES

A test plan may include a few different types of testing requirements and it is also worth bearing in mind, particularly for organisations that may exist in multiple different regions or countries, that some testing requirements and standards the solutions must meet may be different in different regions and countries. Many of these testing requirements can be included in some of the below camps.

• **Visual inspection.** Prior to any in-depth testing it is always worthwhile conducting a visual inspection of the works completed. This step may be completed sectionally

throughout the project install, where quality assurance and control are already baked into the quality management plan. There are several good quality auditing tools in the marketplace, and I would encourage installers and engineers to be self-auditing their own works. Visual inspections, particularly on infrastructure that uses a physical medium, can often provide an early indication of potential issues.

• **Physical testing.** Once solutions have passed visual inspection, all components should be fully tested to ensure that the installation meets all relevant standards for its location. Examples of this include testing structured cabling outlets to the applicable standards within that region or



conducting light source and power meter testing of fibre optic cables. Your test plan may also stipulate optical time domain reflectometer (OTDR) testing and further useful information to be included within the final project documentation.

Once you have completed your required test schedule, it is possible the customer and/or its agents may wish to complete

a percentage of witness tests. For other solutions such as Wi-Fi, testing may be more staged. For example, if a predictive survey has been completed, a site visit to measure and validate wall attenuation or an on-site 'access point on a stick' survey may be completed to start building a level of confidence in the original design even before the access points are finally installed and made live, enabling a wireless exit survey to take place.

- **Device and application testing.** Another group of tests to consider is device and application testing. Here we are discussing completing a series of documented tests using the devices and applications that the network infrastructure solution has been designed for. Examples here could



be simulating traffic across the network and monitoring bit error rates or, if the infrastructure is supporting a meeting room environment, then completing a test call with the meeting space with suitable content. Testing wireless devices within a new Wi-Fi solution and the applications they use is also an important step for that element of the infrastructure. Different

devices and applications may perform differently within a Wi-Fi environment.

DOCUMENTARY EVIDENCE

All testing activities should be fully documented, along with any remedial activities that may have had to be completed. This forms valuable information for the project completion documentation and should be included in any operation and maintenance information provided. In summary, building in a robust testing plan and quality management strategy into a project enables an installer to document and fully meet the customers' requirements and validate successful delivery. ■



ROB KELLY

Rob Kelly has been in the communications and networking industry for over 20 years, since entering as an apprentice cabling engineer. He now holds the position of smart technology director at Sudlows. During his career Kelly has successfully delivered projects across numerous technology disciplines and in a range of different environments.

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TREND Networks, your trusted partner for dependable network testing equipment, offers a comprehensive range of solutions to empower data cable installers, network technicians and systems integrators.

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NetAlly

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

For more than 25 years, we have been the number one ally of network and security professionals worldwide. We began by making the world's first handheld network analyser – the LANMeter – and have continued as industry pacesetters ever since. NetAlly continues to set the standard for portable network testing and

assessment, and our best-in-class tools deliver the visibility needed to get the job done, fast.



EtherScope nXG – our flagship product – is a powerful network tester and Wi-Fi 6 diagnostic tool that helps engineers and technicians to quickly deploy, maintain, monitor, analyse and secure Wi-Fi, Bluetooth/ BLE and Ethernet access networks. The LinkRunner AT network and cable tester validates copper and optical fibre Ethernet

connections in less than 10 seconds.

To find out more **CLICK HERE**.
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Cable Management Warehouse (CMW)

Testing copper and optical fibre cables after installation is essential to ensure the reliability, performance and compliance of the network infrastructure. However, purchasing a tester can be expensive, especially if you only need it for occasional use. You're also committed to using that specific model until you decide to upgrade or replace it.

CMW recently launched its equipment hire service with a range of products available to hire including models from Fluke Networks, Fujikura, Softing, Brady and NetAlly.

Hiring gives you access to up-to-date technology without having to make a



significant investment every time a new model is released. It also gives you the flexibility to choose the right model for your specific needs and only pay for it when you need it.

To find out more about CMW's hire service and to check availability [CLICK HERE](#), or you can speak to the CMW team by calling 01234 848030. www.cmwltd.co.uk

Networks Centre

Geoff Day, UK and Ireland technical sales manager at Fluke Networks, is proud to announce that its leading distributor in the UK is, once again, Networks Centre. The partnership that has seen growth year on year for the last decade goes from strength to strength and we look forward to continued success.

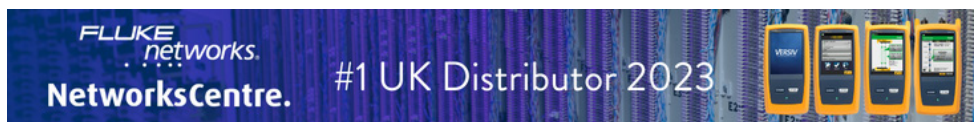
Beginning 1st March, Fluke Networks is offering savings of up to 28 per cent on a selection of its bestselling testing equipment, with Gold Support included, for a limited time. The expert team at Networks Centre is on hand to deliver

these unmissable savings and offer support with any queries.

Fluke Networks' leading range of high-quality and versatile copper and optical fibre testing equipment is a reliable choice for any project. Paired with premium care Gold Support, Fluke Networks testers provide accurate results every time, proving to be a future proof network solution.

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Results driven business

Lisa Schwartz of AEM looks at how smart building network environments are reshaping cable testing requirements

▶ The continuous integration of previously disparate systems into the IT network necessitates seamless delivery of simultaneous data and power over the same cabling. With each device having unique network and power requirements, it is imperative for installers, integrators and network owners to comprehend the significance of certifying the cable at the outset and continuing with ongoing troubleshooting, as well as moves, adds and changes (MACs) throughout the lifecycle of the cabling infrastructure. This ensures network continuity and reliability.

A NEW ERA

In the era of smart building systems, the testing of cable and connectivity has become more complex. Today, testing encompasses new technologies and assurance of active and passive components to ensure it will support the needed bandwidth, power and distance. A few of these new technologies include power over Ethernet (PoE), hybrid powered fibre and Single Pair Ethernet (SPE).

Smart buildings introduce new performance challenges, driven by heightened power and transport requirements placed on installed cabling. This encompasses more than just accommodating increased bandwidth and data speeds – it entails integrating previously segregated building systems, such as heating, ventilation and air conditioning (HVAC) and public safety, on to a unified enterprise network platform. Consequently, the convergence of

information technology (IT) and operation technology (OT) roles is essential, requiring collaborative efforts to ensure optimal system performance and scalability, while accommodating future device integrations.

Industry standards such as TIA 568.2D and ISO/IEC 11801-1 specify cable certification test requirements that address field measurements and connectivity options. These standards define measurements that include wiremap, DC loop resistance, DC resistance unbalance within two wires of a pair, DC resistance unbalance pair to pair, length, delay, delay skew, insertion loss, return



ness

loss, TCL, ELTCTL, coupling attenuation, NEXT, PSNEXT, ACRF, PSACRF, PSANEXT, PSAACRF and, in some cases, ACRN/PSACRN.

Some of these measurements are considered typical and some are defined as optional.

NEW CHALLENGES

Understanding the evolution of smart building network environments necessitates that system designers, integrators, and IT and OT personnel acknowledge the expanded requirements for cable testing. The emergence of technologies addressing data, power and link speed for each unique endpoint

further underscores the need for updated testing considerations. These technologies encompass a range of wired and wireless applications including private 5G, Wi-Fi, 5, 6 and 6E, as well as Multigigabit Ethernet.

Additionally, deploying new technologies on existing cable infrastructure introduces additional testing requirements. Let's explore some of the key technologies driving this imperative for expanded testing considerations.

• PoE

PoE is one of the biggest technology shifts for enabling smart buildings. It is the means in which many devices receive their power. Utilising DC power has a huge impact on installation and operational cost savings. But there are different methods of delivery. The PoE type selected – Type 1 PoE, Type 2 PoE+, Type 3 and 4 PoE++, Cisco's UPoE, or SPoE – will be determined by the wattage, voltage and distance required by the powered device and the power source equipment.

PoE is designed to operate without interfering with data transmission. However, DC resistance unbalance between wires and wire-pairs can cause deterioration in data transmission performance, particularly with high PoE current. From a testing perspective, you should be able to test DC resistance unbalance as an initial indicator during certification that the cabling will support the intended application. From an ongoing perspective, the ability to test actual power load along with power source equipment configuration is needed.

• Hybrid powered fibre

Hybrid fibre cable is also an option for long distance applications, such as security cameras in parking lots. These cables extend far beyond traditional Ethernet limits and can carry data and power under



‘Understanding the evolution of smart building network environments necessitates that system designers, integrators, and IT and OT personnel acknowledge the expanded requirements for cable testing.’

one jacket. This cable consists of two fibres to run the data, while the power is transmitted over adjacent electrical copper conductors. In addition to testing for optical loss, you will need to be able to validate the electrical voltage on the copper wires.

• SPE

SPE is an emerging technology for cabling in many different environments, ranging from automotive to industrial to enterprise, and TIA-568.5 specifies SPE cabling for enterprise environment. SPE has several advantages, most notably the ability to



support distances upwards of 1,000m and even PoE for lower power consumption devices, such as sensors and simple cameras.

CABLE TESTERS

Cable test equipment traditionally falls into categories such as verification, qualification and certification. Certification testers are essential for contractors to secure manufacturers' cable warranties post-installation. However, once the contractor completes the cabling project and hands it over to the building owner, the responsibility

shifts to network managers. They must ensure real world network connectivity and delve deep into applications to maintain consistent network uptime.

With the growing reliance on network

connected technologies, particularly in smart buildings, IT departments require cable testers that offer a comprehensive range of testing functionality. This might include physical cable testing for both copper and fibre, network device connectivity, troubleshooting features such as ping and trace route, and the ability to verify link speed and PoE loads. Meeting these diverse testing needs is essential for addressing the complexities of modern network environments effectively.

Various types of cable testers are available in today's market, and it's crucial to discern the appropriate level of tester to meet your specific testing needs. If certification and warranty support from the cable manufacturer are prerequisites, opting for a certificate grade tester is imperative. These testers enable selection of standards compliant test protocols, facilitating comprehensive testing against predetermined criteria. Additionally, they generate printed reports that can be furnished to the cable manufacturer to validate warranty claims.

FURTHER READING

If the cable has already undergone certification, and you're conducting MACs or general troubleshooting, you may consider a validator, qualifier, or even qualification+ tester. For further insights into the diverse categories of cable testing and to ascertain the appropriate level of test equipment based on your specific requirements, I recommend referring to the February 2024 issue of Inside Networks and an article titled Speaking Terms. This article provides detailed information on the various testing levels and may help you to determine the type of cable tester you need. [CLICK HERE](#) to read it. ■



LISA SCHWARTZ

Lisa Schwartz is director of product marketing at AEM. She has worked in the test and measurement industry for 31 years, spanning five major brands of test equipment for cable certification and network connectivity testing. The primary capacities Schwartz has served in have been product management, business development and marketing. In her current role at AEM she oversees product marketing, working closely with sales and engineering to ensure AEM's test solutions are competitive and innovative.

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Reducing Data Center Costs And Environmental Impact By Deploying Six Effective Cabinet Airflow Management Measures is a white paper from **Minkels**. **CLICK HERE** to download a copy.

Recommended Inventory For Data Center S 3 GHG Emissions Reporting is white paper from **Schneider Electric**. **CLICK HERE** to download a copy.

The Generative AI Revolution Is Here is an online resource from **Siemon** that explores the network infrastructure solutions needed to design and deploy high performance computing artificial intelligence environments. **CLICK HERE** to access it.

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Airflow Management In Data Centres – A Practical Approach is a white paper from the **European Data Centre Association (EUDCA)**.

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Scope
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Achieving Chip Cooling At 1000W And Beyond With Single Phase Precision Liquid Cooling is a white paper from **Iceotope**.

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Mastering Connectivity: A Roadmap To Building An Agile, Reliable And Future Proof Cabling Infrastructure is an eight-step guide from **Legrand**.

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Mastering Data Centre Modularity: The Critical Role Of Cabling is an ebook by **Onnec**.

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Finger on the pulse

Having worked across a wide range of data centre technologies, **Abed Jishi** now oversees the design and development of next generation facilities throughout EMEA. Rob Shepherd spoke to him about his life and career, and gets his thoughts on 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?**

AJ: I am currently serving as the EMEA vice president of design at Vantage Data Centers, where I oversee design development activities across the region. My responsibilities encompass supporting the asset development lifecycle, from sales to operations, and fortifying Vantage's growth in the region. Leveraging over 16 years of sector experience, my expertise spans building and leading engineering teams, executing data centre campus planning and space programs, ensuring robust critical infrastructure redundancy and availability, managing design development, and supporting live operational sites.

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

AJ: My entry was fuelled by an interest in the intersection of technology and infrastructure. Starting my career in the mid-2000s in telecommunication infrastructure projects, I progressed from structured data cabling systems to network switching and routing of enterprise architectures. My curiosity led me to focus more on the critical distribution systems that enabled the uptime of technology services.

Continued education, training and experience in project design and execution shifted my interest to data centre site development, aiming for a solid redundant

architecture with high availability and a healthy investment return. In 2016 I joined Etx Everywhere, providing pre-sales technical support to the sales team, eventually leading me to serve as chief technical officer, responsible for supporting the growth of the edge data centre business. In 2020, Vantage Data Centers acquired Etx Everywhere.

RS: What differentiates a good data centre from a not-so-good one?

AJ: The difference between a good and a less effective data centre lies in the approach to design, planning, development, operations and scaling. With redundant power and cooling systems having no single points of failure, the design must account for efficiency as well.

Power Usage Effectiveness (PUE) and Water Usage Effectiveness (WUE) targets should be consistent and critical equipment must be rightsized in capacity to support the power utilisation of IT loads. White spaces experience high annualised PUEs



when IT power utilisation is below 20-25 per cent of available IT loads. A low annualised PUE is already regulated in Germany, with the Energy Efficiency Act mandating set targets for data centres currently in operation or those that will be commissioned in July 2026.

Another factor of efficient design is incorporating green routes within the building for phased or staged deployment of infrastructure. They allow for a secure physical separation between spaces in

operation and those under construction. They also serve as the path for equipment replacement without any major modification to the building fabric.

As design targets are set and well developed through engineering studies, plans and calculations, executing the design safely on time and on budget is essential. Skilled engineering consultants, contractors and third-party commissioning

agents are key to meeting data centre milestones, end user and local code requirements.

Ensuring all systems are stress tested before commencing operations, from factory acceptance tests to the final integrated system test, documenting in detail every step of the way, contributes to a high-quality handover from construction to operations teams. With the right

skillset to operate, well defined standards, methods, emergency operating procedures and preventive maintenance programs, a data centre can ensure that service level agreements (SLAs) are always met, and the facility operates efficiently and sustainably.

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

AJ: The growing impact of AI offers exciting prospects for the data centre sector, especially as the demand for cloud services and high-performance computing continues to rise. However, this expansion comes with its set of challenges, notably increased power consumption and heat generation. Predictions indicate that average rack densities are on track to exceed 20kW, peaking at 100+ kW. This poses a significant hurdle for facilities relying solely on air cooling.

To tackle this challenge effectively, a strategic shift is necessary. The integration of a mix of air cooled and liquid cooled racks within the same environment becomes crucial. This dual approach not only addresses the challenge of accommodating higher density racks but also aligns with the evolving landscape of blended environments, encompassing cloud computing, AI inferencing and training, and high performance computing (HPC). This strategic alignment ensures that data centres are equipped to meet the diverse demands of contemporary computing.

Furthermore, in response to this challenge, the adoption of rack-mounted cold plates or rear door heat exchangers emerge as practical retrofit strategies, particularly for live operational sites. This innovative approach enhances the cooling capacity per rack, improving the overall thermal management capabilities



of the facility. These not only address the impending challenges associated with rising rack densities but also facilitate faster and more efficient deployments of IT loads. This adaptability proves crucial in meeting the dynamic requirements of modern data centre operations, where swift and responsive capacity deployments are essential for maintaining optimal performance and scalability.

RS: Is the battle for the energy efficient data centre being won?

AJ: In the continuous pursuit for energy efficiency in data centres, notable progress has been made, yet the journey remains ongoing. The surge in AI and HPC deployments has prompted a shift towards higher operating temperatures, whether utilising air cooled or liquid cooled racks.

This transition facilitates increased use of free cooling, efficient power consumption for plants, and reduced losses for critical equipment, resulting in a lowered annualised PUE. At Vantage, we are strategically scaling our deployed infrastructure to align with forecasted customer capacity demands and power utilisation ramp-up schedules. This proactive approach optimises resource utilisation, allowing us to meet growing industry demands while maximising efficiency. The focus is to continue bringing cooling closer to central processing units (CPUs) and graphics processing units (GPUs) to enhance heat transfer and facilitate better waste heat reuse.

Despite the positive track so far, there is still a considerable distance to cover in the industry's pursuit of data centre optimisation towards a carbon neutral future.

RS: What more should be done to address the industry skills shortage and encourage more young people to pursue

science, technology, engineering and mathematics (STEM) based careers?

AJ: In our commitment to addressing the skills shortage in the data centre industry, we engage proactively with educational institutions. This involves raising awareness among students about diverse opportunities and establishing mentorship programs, facilitating connections between experienced professionals and young talent. Our approach highlights a variety of career paths, encompassing technical aspects, management, design, construction and sustainability.

We actively foster the advancement of our employees' careers through apprenticeships, recognising the significance of self-investment. Enrolling in apprenticeship courses provides individuals with the opportunity to upskill and obtain a formal qualification.

The EMEA Women's Network, with nearly 100 members and growing, holds influence within Vantage Data Centers. Serving as an advocate for gender equity, the network supports local women owned businesses and has plans in 2024 to collaborate with universities and schools to attract female talent to the industry.

Recognising the untapped potential of ex-military personnel and veterans is also important to address the skills shortage. With a unique skill set and disciplined background developed through military service, these individuals bring technical

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are becoming
components
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sustainability
including
hyper densified
building
allowing to
reduce loads and
emissions on-site,
enabling liquid
cooling
as integral
of future

expertise and leadership capabilities.

At Vantage, where approximately eight per cent of our workforce comprises individuals with military backgrounds, we have taken proactive steps by establishing a global affinity group known as the Ex-Military Network. This initiative serves multiple purposes including celebrating the common bond of military service, supporting the broader military community and showcasing the data centre sector's recognition of military skills.

RS: Do you think trade associations have an important role to play, and are they doing enough to promote the sector?

AJ: While trade associations play a pivotal role in fostering collaboration and disseminating best practices in the data centre sector, there is always room for improvement. Enhancing outreach and promotional activities will highlight the industry's value, attract talent and emphasise its contributions to innovation, sustainability and economic development.

Additionally, trade associations can innovate by collaborating with educational institutions to integrate data centre related curricula, attracting qualified professionals. Moreover, they can play an active role in promoting diversity and inclusion by supporting initiatives that encourage underrepresented groups to pursue STEM careers and facilitating their entry into the data centre industry.

RS: What will be the next big 'game-changer' to affect the data centre sector?

AJ: Anticipated increases in power demand through the adoption of AI and HPC, drives innovative on-site power generation concepts, prompting data centre developers to consider supporting national grids with islanded facilities. At Vantage, we are committed to achieve our net zero carbon target by 2030 and sourcing renewable power and the adoption of sustainability measures is no longer optional. Advanced sustainability measures including building smaller densified spaces, using building energy modelling to reduce house loads and carbon emissions on-site, and incorporating liquid and immersion cooling are becoming integral components of future projects.

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

AJ: I've been fortunate to receive valuable guidance, with one insight standing out. Being customer-centric and understanding customer objectives when defining requirements has empowered my team to drive innovative solutions.

I've also realised the importance of considering the needs and perspectives of external stakeholders, such as partners and the community. As client demands evolve from prioritising speed to market and cloud deployments to densified spaces and sustainability measures, the ability to adapt and innovate quickly remains a crucial aspect of my approach. This includes staying updated on new technologies and industry trends.

Encouraging a customer-centric approach has not only enhanced our ability to meet and exceed expectations but has also nurtured stronger relationships, fostering long-term loyalty and sustainable growth. This shift in perspective has been instrumental in shaping my journey so far. ■

Something in the air

Mike Boisseau of Siemon takes a closer look at the benefits of high-speed Wi-Fi and explains why deploying high-performance cabling is not only critical for faster speed connections inside the building, but also when networks extend outdoors

▶ Intelligent buildings are the future of sustainability and operational efficiency. This movement is made possible by converging low voltage applications such as audiovisual, security, lighting, distributed antenna systems (DAS) and/or building automation systems over an IP based platform with end point devices using power over Ethernet (PoE) cabling. One of the applications that has seen

rapid adoption across our day-to-day environments is next generation Wi-Fi.

NEED FOR SPEED

Wi-Fi has steadily advanced in recent years to keep up with the growing demand for throughput that the latest applications such as remote working, wireless gaming and 4K/8K video streaming demand. The introduction of multiple input, multiple



output (MIMO) technology that transmits over multiple send and receive antennas has enabled wireless speeds to increase to greater than 5Gb/s over the past two decades, while maintaining backward compatibility within the same frequency band.

Following the introduction of Wi-Fi 6 and Wi-Fi 6E, end users now benefit from four times faster average throughput compared to the previous Wi-Fi 5 technology. Whilst many large organisations are in the process of upgrading their networks to the

latest Wi-Fi 6/6E today, the next generation Wi-Fi standard

– Wi-Fi 7 – which is anticipated to release later this year, has a theoretical data rate of ~46Gb/s. However, the expected actual data rate is actually $\leq 20\text{Gb/s}$ (upstream and downstream), so can be accommodated by two 10Gb/s ports supported by Category 6A structured cabling.

If you then also consider the latest advancements in 5G cellular network technology, which many have proposed is ideally placed to support a wide variety of emerging mobile technologies, it doesn't come as a huge surprise that some end users may start questioning

if this will mean the end for structured cabling in their environments. But there are several reasons that underline that quite the opposite is true.

WIRED AND WIRELESS

When comparing wired and wireless

networks, end users need to consider that wireless is a shared media with one access point serving multiple users, where the maximum available bandwidth is split between multiple users. A 1000BASE-T network, on the contrary, delivers full 1Gb/s bandwidth to each device.

Secondly, 10GBASE-T transmits in full duplex (transmitting and receiving over the same cable pairs at

the same time) and operates at a maximum rate of 10Gb/s in the upstream direction and 10Gb/s in the downstream direction, whereas wireless networks transmit in half duplex and stated bandwidth is an indication of throughput in both directions combined.

GREAT EXPECTATIONS

When running emerging, high bandwidth applications over a wireless network at the capacity and with the reliability that users expect, it has never been more critical to specify a quality structured cabling system. That system must be capable of supporting high-throughput, high-efficiency, Wi-Fi transmission and the delivery of PoE to

‘When running emerging, high bandwidth applications over a wireless network at the capacity and the reliability that users expect today, it has never been more critical to specify a quality structured cabling system. That system must be capable of supporting high-throughput, high-efficiency, Wi-Fi transmission and the delivery of PoE to Wi-Fi access points.’



Wi-Fi access points. Also, network professionals are advised to follow certain design and installation principles in order achieve greater than 5Gb/s throughput. The key recommendations for the structured cabling infrastructure include:

- Installing a minimum of 10Gb/s capable balanced twisted pair copper or optical fibre cabling such as Category 6A/Class EA or higher copper cabling and OM3 (or higher) optical fibre cabling for wireless access points to support higher data rates.
- Shielded cabling (such as Category 6A/Class EA or higher) is recommended to ensure a lower temperature rise when remote power is applied. Since remote power delivery increases the temperature in cable bundles, shielded cables provide greater thermal stability and support longer channel lengths when deployed in high temperature environments.
- Two Category 6A/Class EA connections are required to support redundancy and link aggregation for 2.5/5Gb/s applications, and this will become imperative for supporting Wi-Fi 7 deployments.
- Deploying optical fibre to connect wireless access points can support extended distance requirements beyond 100m but may require media conversion and/or local power.

THE GREAT OUTDOORS

Wi-Fi is no longer just bound to the corporate office space but extends to all



types of facilities and environments that need to provide network access to mobile devices, laptops and other wireless enabled equipment. Demand for outdoor wireless access has grown significantly and where large numbers of people gather, such as in university grounds, theme parks, stadiums or sports arenas, higher speed Wi-Fi such as Wi-Fi 6/6E is now capable of supporting a much larger volume of mobile devices.

These types of locations require more rugged network components to withstand the impact and possible damage from environmental factors including moisture, contaminants and vibration. Extreme temperatures can break down plastics used in connector housings and cable jacketing materials, moisture can cause the corrosion of plug and outlet contacts, and vibration can cause connections to come loose.

Also, with more network devices located in public spaces there is the risk of physical tampering with outlets or other network components. Selecting the right adapted network cabling infrastructure is therefore imperative to maintain long-term network reliability.

MANY AND VARIED

There is a variety of options for cabling outdoor wireless access points mounted on the outside of buildings or poles. Indoor/outdoor cable can be used to connect outdoor wireless access points. However, if the link to the outdoor wireless access



point requires cable to be deployed in a direct burial, lashed aerial or underground conduit application subject to moisture and ultraviolet radiation, outside plant (OSP) cable is required and must transition from indoor cable at

the building entrance.

There are several options available to protect outdoor Wi-Fi devices/connections:

- Utilise high-quality protective metal glands, instead of plastic, to protect plugs that connect directly to the outdoor wireless access point, and require field termination of the plug after the cable passes through the gland.
- Cables routed through weatherproof conduit can be connected to an IP66/67 NEMA rated enclosure. From there, ruggedised patch cords or plug terminated links connect to protected ports on the outdoor wireless access point.
- Deploy high-performance connections to make the transition from OSP cable to indoor CPR/UKCA rated cable. These transition connections need to be able to handle large diameter OSP cables on one side and indoor cable (Category 6A 23AWG) on the other.

When it comes to selecting the right type of ruggedised cable and connectivity for more demanding outdoor environments, network professionals should consider both copper and fibre components. Fibre cabling, for example, provides greater

bandwidth over longer distances and is also completely immune to electromagnetic interference, making it ideal for deployment in noisy environments that can adversely impact performance of copper cabling systems.

OUT AND ABOUT

Whilst end users are in the process of upgrading corporate office spaces to higher-speed Wi-Fi, wireless networks are rapidly extending outside of this 'protected' environment. When stepping outside of the building it is important that the same principles for selecting cabling and components are enforced to ensure optimum network performance, reliability and manageability. ■



MIKE BOISSEAU

Mike Boisseau is Siemon's Copper Business Unit leader. He joined the company in 2006 and has held various roles within the product management group, supporting most major product lines during his 17 years with the company. Over the last 10+ years, Mike has led Siemon's Copper Business Unit and more recently took on leading the Global Project Pricing team.

Siemon

The ability to deliver DC power to IP based devices over twisted pair copper cabling, using remote powering technologies like power over Ethernet (PoE) and power over HDBaseT (POH), has made a significant impact on today's network infrastructure deployments. Today, more than 100 million PoE enabled ports are shipping annually, which isn't a surprise considering the benefits that remote powering delivers, such as faster deployment, 75 per cent less cost than an AC power run, and the ability to receive centralised back-up power – just to name a few.

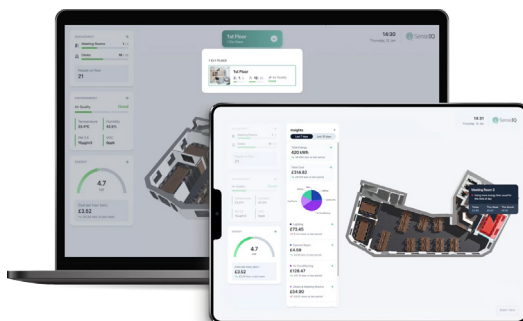


Siemon's high-performance copper solutions provide industry leading performance with the easiest installation practices. Featuring Siemon's innovative PowerGUARD technology, our next generation solutions allow users to achieve best in class PoE support, overcoming common challenges faced by other solutions. They easily meet the latest ISO/IEC 14763-2 standard, as well as simplifying support for remote powering (RP) classes and the associated installation practices.

CLICK HERE to discover more.
www.siemon.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.

The 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.**
lmgiq.com

HellermannTyton

HellermannTyton has a connectivity solution for every phase of your network infrastructure – from cable entry into the building and distribution across the building, to the data outlet at the desk.

From the moment fibre optic cable enters the building, HellermannTyton's products come into their own. The S5 MDU enclosure will distribute any incoming fibre to the comms room or to multiple zones in the building. From the comms room, HellermannTyton has a number of copper and fibre solutions that can then be used to connect offices,



active equipment and hardware to the outside world.

HellermannTyton manufactures a wide range of innovative solutions that are designed to provide connectivity to different zones within a building. Whether it's the zone termination box, an

under the floor cable distribution box, a work area pod or a pre-terminated 'to the desk' solution, HellermannTyton has a product that can meet the network infrastructure demands of any intelligent building.

For more information [CLICK HERE.](http://www.htdata.co.uk)
www.htdata.co.uk

MISSED AN ISSUE?

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Seeing things in a c

Mike Hook of LMG examines the need for smart retrofit in existing buildings

▶ After several years of shocks and norm shattering market trends, the commercial real estate market is about to encounter another major challenge as regulators around the world focus on addressing the problem of inefficient building stock. One of the markets where this new regulatory drive is most advanced is the UK. The Minimum Energy Efficiency Standards (MEES) legislation dictates that all commercial buildings will need to comply with much stricter environmental and efficiency codes by 1st April 2030.

GREEN THINKING

The regulations are, of course, welcome from an environmental point of view. However, they also represent a huge challenge for property owners and managers. While new build projects can more easily 'bake in' compliance, the situation for existing building stock is

much more complicated – and the clock is ticking.

Just take London as a case study for what MEES compliance means in practice. Over 80 per cent of London's commercial properties are projected to require significant modernisation to meet the new standards. If that doesn't sound daunting, then let me put the scale of the task another way – achieving full compliance will entail upgrading around 15 million square feet of office space every year from now until 2030. And to bring that into further

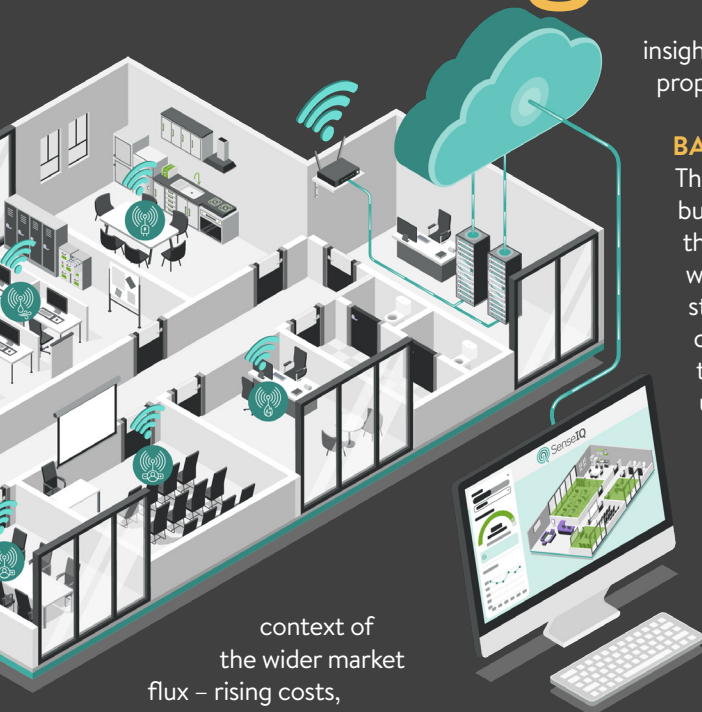
clarity, consider that new build projects in the city only represented a total of 3.75 million square feet in 2022.

NON-NEGOTIABLE

These figures might make it easy to see these new regulations as an intolerable burden for building owners and landlords. However, in the



different light



insight with which to manage their properties.

BARRIERS TO SUCCESS

The benefits of bringing the built environment into line with the latest sustainability, health, wellness and performance standards are huge. But, of course, achieving those aims through a programme of upgrades and retrofitting is no small task. Aside from the scale of the work required, typical construction, procurement and tendering processes are not really designed with smart technology deployments in mind.

The requirements for successful smart tech deployments are introduced far too late in the industry standard eight stage RIBA Plan of Work. Traditional tendering tends to focus on dealing with building technology systems and subsystems in isolation from each other. This compartmentalised, rather than holistic, approach to building technology leads, inevitably, to disconnects between the landlord, the consultant, the contractor and the provider of the smart technology services.

And this heightens the risk that that technology systems will be over or under specified and will not integrate well. Unfortunately, once integration challenges are encountered late in the process it is often prohibitively expensive to procure alternatives – which results in smart objectives being dropped or

context of the wider market flux – rising costs, shrinking demand for workspace and historically high occupant expectations – MEES compliance represents as much of an opportunity as it does a problem.

The fact is that existing commercial building stock needs to be smarter, with or without the requirements of MEES. The new regulations merely help highlight that buildings that are not smart and not underpinned by a flexible technology core are most probably doomed. As such, the work that MEES mandates, done properly, can be used to achieve so much more than merely meeting a new compliance standard.

This is an unprecedented opportunity to overhaul existing building stock, achieve major operational cost savings, improve services, and give landlords access to never-seen-before levels of data and

‘Just take London as a case study for what MEES compliance means in practice. Over 80 per cent of London’s commercial properties are projected to require significant modernisation to meet the new standards.’

adding unnecessary complexity, whereas proprietary systems come with high price tags and vendor lock-in.

A NEW WAY FORWARD

Fortunately, there is a

significantly scaled back. Overcoming these barriers is not just about adopting the latest technologies – it’s about rethinking and reshaping traditional processes and mindsets.

CONSIDERING THE OPTIONS

To truly optimise smart infrastructure in a retrofit project, the requirements of the technology need to be considered together with the needs of the building’s owners and potential tenants. And that must take place at the earliest stages of design – ideally before stage three of the RIBA Plan of Work. More specifically, we also need to look at the technology that is being deployed to achieve the desired outcomes for MEES or more broadly.

There are several methods to achieve the goals of a smart retrofit project. Building owners and designers could look to create an open, generic MQTT based smart backbone throughout the building. Alternatively, you could deploy a proprietary, end-to-end engineered, vertically integrated smart system architecture that is offered by a number of global vendors.

While both approaches can deliver the optimised ‘smarts’ that building owners and landlords need to achieve compliance with standards like MEES, there are also downsides. MQTT backbones are not the easiest to design and deploy, and can quickly become expensive by

third option – one that enables quick and easy deployment and delivers guaranteed outcomes at a predictable and affordable cost. The true potential for smart transformation lies in ‘retrofit light’.

A retrofit light approach starts with a low cost, rapid deployment of a (probably wireless) internet of things (IoT) multi-sensor network that combines hardware and software to deliver meaningful data and analytics almost instantly. With the sensor network in place, all that is required to deliver the required functionality of a MEES compliant smart retrofit is a simple smart software overlay or ‘wrap’ to augment the landlord’s existing building management system (BMS) – without the need to overhaul the entire BMS infrastructure. Just as importantly, the retrofit light approach is open by design. Rather than locking you into one vendor’s



solutions, retrofit light opens a whole ecosystem of pre-verified technologies and systems.

This combination of factors means that retrofit light can truly deliver on all the required outcomes from a smart retrofit solution – including MEES compliance. Most impressively, the ‘light touch’ nature of the approach means it can be done with the tenant in-situ – so there is no need for the landlord to lose revenue to get the work done.

TIME AND MONEY

Given the time pressure for building owners to achieve MEES compliance, retrofit light offers a unique combination of advantages for building owners – true flexibility, speed of deployment and affordability. By focusing on open, standards based,

pre-verified solutions, retrofit light also underwrites risk by guaranteeing desired outcomes with minimum disruption. With the commercial real estate market in an extended period of flux, it’s time to accept this new reality and embrace new methods like retrofit light. By raising the bar for the built environment, retrofit light can pave the way to a new era for commercial real estate – making a clean break with the past and embracing a higher standard. ■



MIKE HOOK

Mike Hook is joint owner and board director at LMG. Over his career he has acquired a unique combination of technical and business skills that enable him to convert technological innovation into valuable business outcomes. Hook works closely with property developers, owners, occupants and general contractors around the world to ensure they get full value from their investments through the intelligent use of smart building and ICT technology.



University of Lincoln modernises its edge environments with Schneider Electric

Schneider Electric has delivered an edge data centre modernisation project for the University of Lincoln in collaboration with RMD UK. The university operates a centralised data centre, where users of the campus are dependent upon software as a service (SaaS) applications for most tasks. This makes uptime and reliable access to cloud services a critical requirement for all users of the network throughout its 25 buildings.

The university's city centre campus buildings are not equipped with any standby power generating capabilities. Consequently, it depends heavily on APC uninterruptible power supplies (UPS) to build resilience into the network. Currently,

there are 110 Schneider Electric APC Smart-UPS SRT units deployed across the

university's distributed edge facilities, which provide power protection and continuity in the event of disruption to the mains power supply.

Other important measures include the installation of APC NetBotz environmental monitoring devices, as well as Schneider Electric's EcoStruxure IT Expert and Data Centre Expert data centre infrastructure management (DCIM)

software. The software provides the University of Lincoln with full visibility of its distributed IT equipment across the campus, enabling it to centrally manage and monitor all elements of its data centre physical infrastructure.



GCRE adds Mavin Powercube to South Wales site

The Global Centre of Rail Excellence (GCRE) is using a Mavin Powercube at its 700-hectare rail innovation site, which is currently under construction in South Wales. The GCRE is a major new rail testing facility that is supported by both the Welsh

and UK governments. GCRE will become Europe's premier site for rail research, testing and certification of rolling stock, infrastructure and cutting-edge new energy technologies.

The partnership with Mavin includes a custom designed and built Powercube

– a multi-unit containerised modular data centre, signal equipment room and an interconnecting access and staging unit, that will support the extensive testing



operations carried out at the GCRE site. The multi-purpose Powercube will help GCRE support clients with high-quality data analysis as they undertake testing and research on the site's two rail tracks.

His Majesty's Treasury appoints Keysource to maintain and operate OSCAR II

His Majesty's Treasury (HMT) has appointed Keysource to play a vital role in the successful operation of its Online System for Central Accounting and Reporting (OSCAR II). OSCAR II is a cross-government system, which contains a detailed analysis of departmental spending.

Under the terms of the contract, which was awarded following a competitive tender, Keysource will be responsible for maintaining and operating the hosted environment, ensuring the availability, performance and security of the OSCAR II system. This will include developing enhancements to drive optimisation, security and vulnerability management, as well as performance analysis.



In addition, Keysource will also manage the service desk and be responsible for delivering user support and service management on behalf of HMT, acting as the single point of contact for all end users and OSCAR II suppliers. Access and incident management and trend analysis also form part of the remit, alongside a commitment to continuous service improvement and innovation.

PROJECTS & CONTRACTS IN BRIEF

maincubes has announced its latest data centre – FRA04. FRA04 is in the Rhine-Main Metropolitan Area, south of Frankfurt in Dietzenbach, and will provide approximately 12,500m² of white space and 40MW of IT capacity. maincubes has acquired the site with a committed power of 60MW, making FRA04 its largest data centre development to date.

Portus Data Centers is planning the further expansion of the IPHH Internet Port Hamburg data centre business acquired by Arcus European Infrastructure Fund 3 SCSp (AEIF3) on behalf of Portus late last year. With two existing facilities in the east of Hamburg currently offering 2.4MW of sellable IT power capacity, Portus now plans to construct a new data centre with approximately 14MW of IT power.

Vertiv is extending its collaboration agreement with Telefónica. Under the agreement, Telefónica expects to save around 45GWh per annum within three years. Vertiv will provide a turnkey solution to enable energy savings across different areas of Telefónica's network core sites in Spain.

Virtus Data Centres has announced plans for a new state-of-the-art data centre campus that will be built on a recently acquired 50-acre freehold plot in Saunderton, Buckinghamshire.

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, 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.

Furthermore, 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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Allied Telesis

Meeting the rapidly changing demands put on networks by applications such as artificial intelligence, 5G backhaul and edge computing is challenging. The new Allied Telesis x530-28GSX full fibre switch enables the addition of highly resilient bandwidth using copper or optical fibre at either 1Gb/s or 10Gb/s, and provides over 200 fibre ports within a small, stacked footprint.

The x530-28GSX full fibre switch is ideal for large sites such as campuses, FTTx deployments, utilities, metro networks, and dense fibre only networks such as defence and critical national

infrastructure. Coupling it with Allied Telesis' Active Fiber Monitoring technology helps to reduce the chances of a cyberattack on the attached passive infrastructure.

The x530-28GSX is a 24-port 100/1000X SFP stackable switch with four SFP+ ports and two fixed power supplies. It can aggregate a 24x1 gigabit fibre link to a 4x10 gigabit fibre link and up to eight units can be stacked using Allied Telesis' Virtual Chassis Stacking (VCStack) to build a 192 gigabit fibre aggregator.

For more information **CLICK HERE.**
www.alliedtelesis.com



An advertisement for Inside_Networks. The main visual is a tablet displaying a technical article titled 'Zone Cabling for Intelligent Buildings' by Hollermann/Hyton. The article includes diagrams of network cabling and a QR code. To the right of the tablet, there is a purple call-to-action box with the text 'GET YOURSELF SEEN' in large yellow letters, followed by 'BY THE TIME YOU READ THIS YOUR COMPETITORS' ADVERTISEMENTS WILL HAVE BEEN SEEN BY OVER 23,000 READERS OF INSIDE_NETWORKS.' and 'IF YOU WOULD LIKE TO PROMOTE YOUR PRODUCTS AND SERVICES AND MAXIMISE THE POTENTIAL OF YOUR ONLINE ACTIVITIES, CLICK HERE.' in white and yellow text.

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The price is right?

Mark Callaway of Noveus Energy asks if you are paying too much for your energy



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▶ I am sorry to be the bearer of bad news – let's treat this as an opportunity – but despite the so-called energy crisis being over, data centre operators and owners are still facing a huge challenge, with many being charged more than double the normal cost for their next electricity contract. In this article I will look at the reasons why and also what companies can do to bring these costs down.

MONEY TALKS

The greatest contributor to the electricity cost increase over the last few years has been higher wholesale prices, which reached record levels in 2022. Whilst it has since dropped significantly, the wholesale cost is still higher than it was four years ago.

In addition, the UK power price has been driven up by higher European gas prices because we need gas to produce 40 per

‘Despite the so-called energy crisis being over, data centre operators and owners are still facing a huge challenge, with many being charged more than double the normal cost for their next electricity contract.’

cent of our electricity – even though it’s only 40 per cent, gas sets the price of UK power. Gas prices remain inflated because the UK and Europe have lost their cheap supplies from Russian pipelines, exacerbated by the war in Ukraine. On the plus side, these are fully transparent, but they are also non-negotiable.

That said, they are the place you can influence most. You can’t negotiate these costs but you can choose to spread them and benefit from future purchasing. All you

need is some good, trustworthy advice so you can make an informed decision. For example, smaller customers should discuss energy prices with their energy advisor and pick the best time to fix rather than waiting until their contract is about to end. For larger customers, who likely started buying in the wholesale market 20 years ago, this is the time to start to really manage energy price volatility by questioning the static approach of the past and adopting a more dynamic approach.



NEGOTIABLE COSTS

Other contributors to the electricity cost increase are the least transparent. These include things like the supplier's margin, cost risk premium and credit risk premium. These are never disclosed but we know that they are rising because we can subtract all the costs that we know about, and what's left in the customer's quotation is the supplier's margin.

There are several reasons for this rise. For example, some large suppliers such as Scottish Power and British Gas have exited the industrial and commercial market, so there is less competition. Other suppliers are refusing to quote if they have concerns about the credit worthiness of the customer and/or their sector.

As a result, suppliers are sending fewer quotes to customers' or brokers' tenders compared with four years ago. Finally, when suppliers offer fixed prices for, say, one or two years they try to predict what those costs might be and guess the customer's exact volume. As these costs become less predictable in 2022, suppliers have increased their risk premia within their price.

PROFIT CENTRE

Where organisations use a broker, in far too many cases their commissions are not disclosed, meaning then the broker may be tempted to keep the same percentage commission, despite the rising prices, resulting in a pence per kWh increase. They may even increase the percentage commission to maximise their profits.

When it comes to these negotiable charges, the easiest way to reduce your costs is to ask your energy broker to disclose their fees or commission before they act for you, and then negotiate them if you are not happy. Never give them

authority to sign supply contracts on your behalf, as this opens the door to cost being artificially inflated and fees being hidden. Confirm their actual commission with the energy supplier, as not every supplier shows commission in the supply contract.

Keep an eye on the cost of renewable energy being offered by suppliers, which traditionally costs a tiny amount more than brown energy. As demand for green electricity has increased faster than the supply of green power, the generators have been able to attract a premium for the green certificates. For customers, this can mean paying as much as 1p/kWh extra for renewable electricity. Clearly there are other considerations about the decision around renewable energy such as environmental, social and governance (ESG) commitments and carbon reduction targets.

SHAPE UP

Shape costs that are incurred by suppliers to buy the exact number of extra kWh that the customer needs at the peak times of the day have increased. Often this peak power must be bought from a shrinking number of old fossil fuel stations that generate when customers' demand peaks.

Another contributor to the electricity cost increase is the network and balancing charges levied by the National Grid and the local network companies. Network charges are adjusted for inflation and the cost of network expansion. Furthermore, electricity demand has fallen by 20 per cent since the peak in 2005, which means the networks' costs must be recovered from fewer kWh, pushing up prices.

THINK TWICE

Two specific changes occurred on 1st April 2023, when OFGEM said customers would

have to:

- Pay 100 per cent of National Grid's balancing bill. In the past the cost was shared equally with the generators. This change came on top of a huge increase in the total cost of balancing, as National Grid paid fossil fuel stations to keep the lights on in the hours when wind and solar power weren't available.
- Pay banded National Grid transmission charges instead of the traditional triad charges. This change means standing charges rise although, overall, some customers will pay more and others will pay less than they did in 2022.

The good news is that potentially there is a quick win here that you can discuss with your energy consultant about whether you are paying for more electricity capacity than you need. If so, you can reduce your per kVA charge immediately, however, you can only reduce your banded charge in exceptional circumstances. So you may have to wait until April 2026 to see a lower banded charge.

SERVICE PROVIDER

To reduce your costs your energy consultant should advise you on timing, competitively tender your business to drive down the negotiable charges and reduce your network charges if possible. They should charge you a fair and transparent fee for these services. ■



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Mark Callaway is account management director at Noveus Energy. An expert in electricity and gas market economics and risk management, he has hands-on experience of procurement, supply and new business strategy in the UK and continental markets.

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