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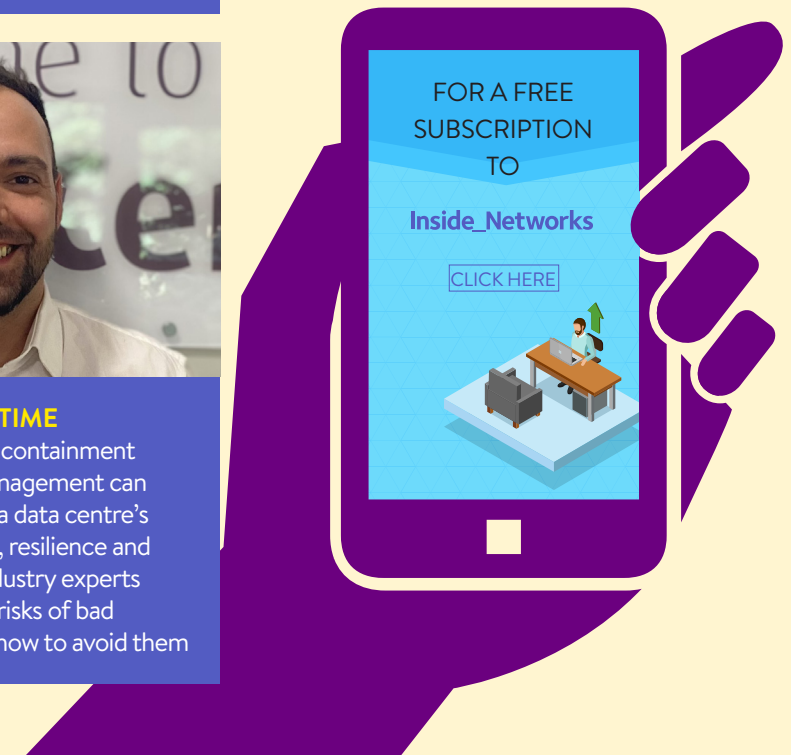

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For those with a background in network infrastructure cabling, containment and cable management systems, the misconception of them as simply passive, commodity items has long been source of intense frustration. Put simply, the consequences of getting the specification and installation of them wrong are immense.

Poor planning, vague specifications or failing to consider future growth often result in containment systems that are too small, cable routes that become congested or incompatible components being used together. During installation, common issues include exceeding cable bend radius, overfilling trays, poor cable segregation, inadequate labelling and untidy cable management. These shortcuts may save time initially but often create hidden problems that become increasingly difficult and expensive to correct.

Taking the time to specify and install systems correctly from the outset helps avoid costly downtime and ensures a data centre remains adaptable for future technological demands. For this month's Question Time Inside_Networks has assembled a panel of industry experts to share their insights and offer practical advice on how the pitfalls can be avoided.

On the subject of cabling, this issue also includes a special feature about optical fibre systems, bringing together expert perspectives from across the industry. Michael Akinla of Panduit explores fibre architectures designed for today's high density data centres, while Christophe Hinet of Molex Connected Enterprise Solutions discusses fibre polarity and why correct implementation makes systems more predictable, scalable and easier to manage. Meanwhile, Steve Cowles of AEM Networks highlights how app driven workflows are improving quality and boosting productivity in fibre testing.

With the recent spell of exceptionally high temperatures across Europe and beyond, it feels especially timely that this issue also features a focus on cooling and climate management. Matthew Baynes of Schneider Electric examines the high stakes economics of liquid cooling for AI infrastructure. Building on this, as AI workloads continue to push traditional thermal limits further than ever before, Jon Barker of Chatsworth Products (CPI) considers when the right moment is to transition to liquid cooling.

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

Rob Shepherd
Editor

molex

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Enterprise data centers rarely remain static. Phased refreshes, equipment changes, and shifting business requirements can gradually make the physical layer harder to understand, service, and trust.

This practical guide from the experts at Molex Connected Enterprise Solutions explores how leveraging modular cabling and repeatable design blocks in conjunction with clear change and documentation processes can simplify deployment, improve serviceability, and support long-term performance.

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BSRIA reports 21 per cent rise in structured cabling market value in 2025 with data centre segment leading growth

BSRIA has released its latest analysis of the global structured cabling sector. The Structured Cabling Worldwide 2026 report, covering 34 countries, points to a market driven by data centre investment.

The global structured cabling market grew 21 per cent in 2025 to $9.08bn, adding $1.3bn in a single year and building on almost 11 per cent growth in 2024. The data centre segment was the main driver of that growth, increasing by 54 per cent in 2025, as AI infrastructure investment continues to push cabling demand higher. Data centres now account for more than 41 per cent of all cabling installed, almost double the 21 per cent share held in the 2015-2018 period.


Lone Hansen

The US delivered the strongest growth of any market, with sales up 44 per cent year-on-year and the country accounting for 89 per cent of the total global value increase. The US also holds 69 per cent of the global data centre cabling market, 14 times the size of second placed China. Germany, the UK, Australia and India follow as the next largest data centre markets.

While hyperscalers were the largest contributor to US growth, all data centre segments grew. Some of the US figures reflect products shipped from American hyperscalers into Canada, Latin America and Europe, so the headline numbers slightly overstate domestic installation. Even allowing for that, the gap between the US and the rest of the world has widened.

Cabling demand is splitting into two tracks. Data centre work is dominated by large scale projects, high in value and concentrated in a handful of suppliers.

The LAN market is the backbone of most commercial buildings, providing connectivity and power to desks, Wi-Fi and security systems. LAN sales grew two per cent in 2024 and five per cent in 2025 as the sector recovered from the supply chain disruption that followed Covid-19.

Regional LAN performance varied. The Americas hold 45 per cent of the LAN market and grew nine per cent in 2025, driven by the US and Canada. Asia Pacific contracted by 1.9 per cent, held back by a seven per cent decline in China linked to a 17 per cent fall in non-residential construction that hit offices and manufacturing in particular.

Lone Hansen, manager IT cabling, BACS and associated technologies at BSRIA, said, 'The shape of this market has changed in a short space of time. Data centres are where most of the value growth is and the US is pulling further ahead because of investment in AI infrastructure across all data centre segments. The LAN side of the market is doing the essential work of connecting offices, powering desks, supporting wireless LAN and keeping security systems running. That demand is steady rather than spectacular.'

She added, 'Copper has held up better than people expected. LAN cabling is essential for connectivity and power to desks, Wi-Fi and security systems and Category 6A has now overtaken Category 6 in global sales. Material cost rises in the second half of 2025 pushed prices up, which has shifted the commercial conversation as much as the technical one.'

CBRE says global data centre supply can't keep up with demand

According to CBRE Data Center Solutions' latest Global Data Center Trends report, the data centre market is expanding as demand from AI uses outpaces available space capacity. This is pushing vacancy rates toward historic lows despite a wave of new supply.


Pat Lynch

Global supply reached 16GW in Q1 2026 across the 16 largest data centre markets, up 25 per cent over the past year. Even with supply growth in all major regions, average vacancy fell to 6.7 per cent from 8.3 per cent a year earlier, indicating tightening market conditions worldwide.

'Across the globe, demand is outpacing even aggressive new supply increases, which means companies can no longer assume capacity will be available when they need it,' said Pat Lynch, executive managing director at CBRE Data Center Solutions. 'Occupiers are having to secure space earlier, take what's available from a capacity standpoint and prioritise markets with dependable power to support long-term growth.'

EUDCA welcomes European Commission's Cloud and AI Development Act to strengthen digital infrastructure capacity

The European Data Centre Association (EUDCA) has welcomed the publication of the proposed Cloud and AI Development Act (CADA) as part of the European Commission's Tech Sovereignty Package. The Act represents an important step towards addressing Europe's growing need for compute capacity and strengthening the enabling conditions for data centre investment across the European Union (EU).


Michael Winterson

Michael Winterson, secretary general of EUDCA, commented, 'The Cloud and AI Development Act marks an important step for Europe's digital infrastructure ambitions. Our industry stands ready to support the growth of Europe's compute capacity and is committed to contributing to the development of sustainable and resilient data centre capacity in Europe.'

He added, 'This initiative reflects several of the key enabling conditions the EUDCA has long advocated for including more efficient permitting, access to resources and clearer strategic direction. We look forward to engaging with policymakers and member states to support effective implementation.'

89 per cent of Britons know little about data centres despite depending on them for everyday life

Most people in the UK say they know little or nothing about data centres, with research by SEC Newgate showing this knowledge gap is widespread. 89 per cent of adults are unfamiliar with data centres and 14 per cent have never heard of them.


Venessa Moffat

The research is based on a nationally representative survey of more than 1,500 members of the public, alongside a separate survey of almost 500 councillors who sit on local authority planning committees. Despite limited understanding, the research shows public attitudes towards data centres are still being formed and can shift quickly when people are given basic, neutral information.

When respondents were provided with information explaining what data centres do, how they operate and why they are needed, attitudes shifted markedly. Positive sentiment rose from 35 per cent to 61 per cent, support for building new data centres increased from 54 per cent to 73 per cent and nearly 79 per cent backed the government's decision to classify data centres as critical national infrastructure.

The research also reveals that data centres have become closely linked in the public mind to wider concerns about AI. Three quarters of respondents believe data centres are expanding because of excessive demand from AI. Those who feel most negative about data centres are also far more likely to be deeply concerned about the growth of AI itself, which suggests that data centres are being viewed through the lens of wider anxieties about AI.

While there is widespread recognition that the UK needs data centres to support economic growth, digital services and data security, this support is often conditional. 60 per cent of people say they would accept more data centres being built in their local area because they are essential to the UK's future growth, however, 40 per cent say they would not.

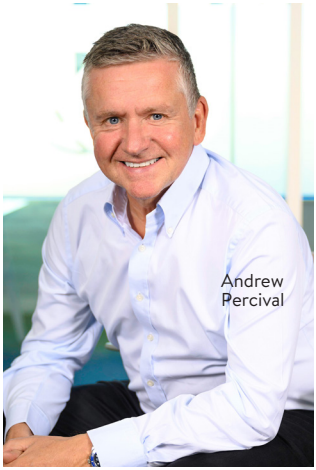
Concerns about energy use, water demand, security risks and alignment with the UK's net-zero commitments feature strongly in public attitudes and are particularly pronounced among younger adults and environmentally conscious voters. 67 per cent of the public believe data centres use too much power, while 55 per cent also express concern about pressure on water resources. Younger age groups, despite being among the heaviest users of digital services, report higher levels of concern about environmental impact.

Many people also question the value of large facilities that generate relatively few local jobs once operational, highlighting the tension between national digital needs and local community impacts. As a result, support for data centres is often conditional rather than absolute.

Venessa Moffat, managing director at the Data Centre Alliance (DCA), said, 'One of the most striking findings of this research is that unfamiliarity with data centres extends beyond local communities to those making planning decisions. What is encouraging, however, is that attitudes become significantly more positive when people are engaged early, given clear information and can see how developments will deliver meaningful local benefits.'

Excel Networking Solutions extends its UK market leadership position

Excel Networking Solutions has reinforced its position at the forefront of the UK network infrastructure market following the findings from the BSRIA UK Structured Cabling Report 2026. The report identifies Excel as capturing well over half of total cabling demand in the UK and highlights the brand as the strongest force in general enterprise deployments.


Andrew Percival

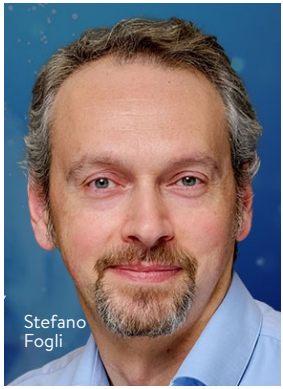
Excel now accounts for 22 per cent of the total UK structured cabling market, commands a 29 per cent share of the copper cabling market, represents 37 per cent of all copper cable sold, captures 23 per cent of Category 6A sales and holds a 17 per cent share of copper component sales. This highlights its consistent leadership and broad market reach across the structured cabling sector.

The BSRIA report shows that while the UK structured cabling market continues to grow, the real momentum is being driven by evolving technologies and application demands. In 2025, the market grew by approximately 4.5 per cent, with particularly strong performance in optical fibre and data centre infrastructure.

Andrew Percival, managing director at Mayflex, commented, 'We are proud to see Excel recognised as a leading force within the market, particularly in enterprise deployments where consistency, performance and trust are critical. Our success is built on longstanding relationships with our partners and customers, supported by a commitment to delivering reliable, high quality infrastructure solutions.'

Fibre Council Europe unveils refocused strategic vision

The Fibre Council Europe has reset its strategic priorities, renewed the organisation's leadership and confirmed a restructured committee landscape. It has also appointed Stefano Fogli, director technology and solutions at Adtran, as its new president.

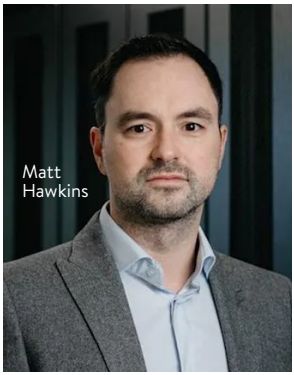

Stefano Fogli

The Fibre Council Europe is expanding its remit to reflect emerging priorities across the wider connectivity ecosystem including residential access, the migration of networks to optical fibre, data centre connectivity and passive optical LAN (POLAN). This evolution reinforces its ambition to extend its expertise and advocacy beyond traditional deployment, while remaining anchored in its core mission of accelerating fibre adoption across Europe.

Fogli said, 'Bringing fibre to all European citizens and businesses remains our core mission. We are also looking beyond access networks, as fibre connectivity is also key for data centres, enterprises and businesses, and many other applications.'

UK organisations concerned infrastructure limits are holding back AI potential

Research from CUDO Compute has revealed growing concern among UK organisations that the pace of AI investment is accelerating faster than the infrastructure needed to support it. It found that 36 per cent say the greatest impact on their organisation's total AI compute cost is long-term power or infrastructure contracts.



Meanwhile, 42 per cent of UK organisations believe high energy and infrastructure costs are contributing to concerns about an AI bubble, compared with 35 per cent in both the US and Europe. While 33 per cent say media hype and unrealistic expectations are part of the problem, the UK response suggests infrastructure readiness is becoming a far bigger issue than perception alone. A similar number, 32 per cent, say they expect power and energy availability to be a more important factor than talent or regulation when deciding where to locate future AI workloads.

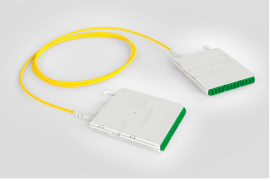
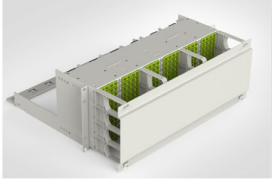
Matt Hawkins, CEO at CUDO Compute, said, 'AI investment is still accelerating, but the conversation is starting to change. Organisations are no longer just questioning whether AI will deliver returns or if it's viable – it's embedded and isn't going anywhere. They are questioning whether the infrastructure exists to support the scale and speed of investment currently happening across the market.'

NEWS IN BRIEF

Tesla wants to sell modular AI data centre hardware, according to a new trademark application for a product called Megapod. The filing describes a complete, self-contained computing system for AI workloads. Tesla filed the Megapod trademark with the US Patent and Trademark Office and it's an intent to use application, meaning Tesla is claiming the name for a product it hasn't launched yet.

Following the publication of the Strategic Roadmap for Digitalisation and Artificial Intelligence (AI) in the Energy Sector, the European Data Centre Association (EUDCA) has signed a landmark declaration of intent. Alongside leading energy organisations, grid operators and industry associations, the EUDCA supports this framework for closer cooperation between data centres, energy stakeholders and local authorities across Europe. The EUDCA has also appointed five new members to its board of directors. Eulalia Flo and François Sterin have been named vice presidents, while Emma Fryer, Peter Domeney and Thierry Chamayou have joined as board members.

The Data Centre Alliance (DCA) and the Carbon Trust have formed a strategic partnership to support the sustainable growth of digital infrastructure and accelerate the transition to net-zero. Onnec has also joined the DCA, reinforcing its commitment to supporting the continued growth, resilience and innovation of the UK's data centre sector.



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It's time to treat commissionin

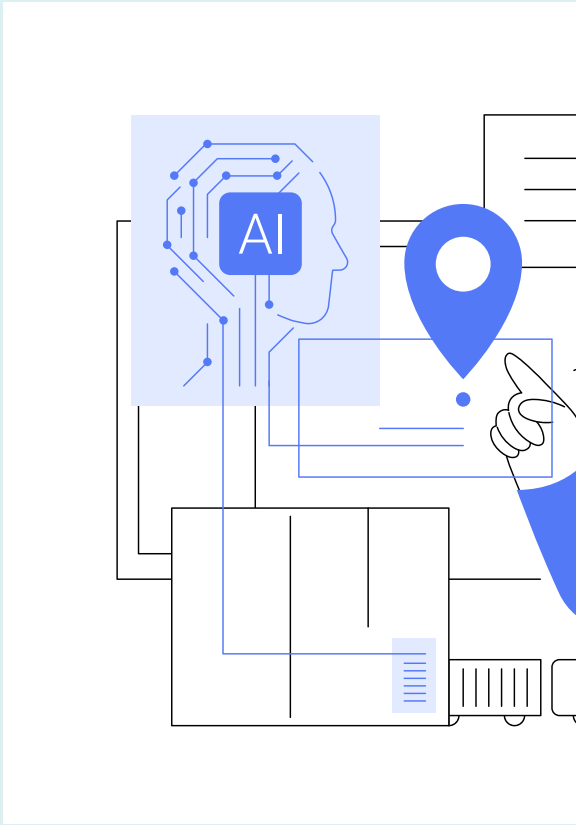
Hi Rob

The race to build AI-ready data centres is exposing a growing issue in commissioning. The issue is rooted in how it's valued, not how it's delivered.

Previously seen as a fixed discipline, commissioning has been reframed as a service to be procured, negotiated and compressed, reducing the value placed on it and the outcomes it can deliver. If commissioning is not treated as a discipline, it can't provide assurances to operators and the industry to secure our digital future. When treated as a service, commissioning is brought in late, constrained by cost and measured against programme, which reduces the flow of commissioning processes to meet the demands of the evolving market.

A service is something you buy. A discipline is something you develop. The distinction matters because it shapes the ways commissioning is resourced, valued and integrated into the overall delivery model of a project. For the industry to change its mindset on why commissioning is crucial to new facilities, operators must highlight after every project that the quality of commissioning has had a measurable impact on programme outcomes.

When commissioning is treated as a discipline, its role changes. It's embedded from the project's foundation, informing design decisions and building continuous assurance from concept through to operation. Resourcing reflects the complexity of the infrastructure and success is measured by the quality of assurance delivered. Commissioning does not just validate outcomes in this model, it shapes them.



Maintaining commissioning as a discipline requires consistency in how standards are applied. Frameworks and certifications set expectations but can only deliver value when they are enforced with consistency, which can take time and can lead to commercial pressures. In our digital landscape, where our market is defined by growing demands from AI and high performance computing and a limited talent pipeline, there is an idea to prioritise speed of deployment rather than resiliency.

g as a discipline not a service



But in the long-term, this embeds risk into the project from the beginning.

Where commissioning is embedded and applied with discipline, facilities perform as intended from the beginning. Defects are identified earlier in the project. Documentation is built progressively rather than retrospectively, making it more likely that discrepancies will be caught early, not to mention that the documentation (the map) conforms to reality (the territory).

Handover quality is also higher, while operational confidence is stronger. Where it is treated as a formality, problems surface late, handovers weaken and operators inherit problems with incomplete evidence that could have been rectified earlier on in the process. That's why commissioning is vital as a discipline, rather than a service.

The case for treating commissioning as a discipline isn't high minded idealism or a theoretical pipe dream. It's visible in every programme where the assurance framework is properly structured and adequately resourced. The evidence is in the handover packages, the commissioning timelines and the operational performance of the facilities delivered.

In an industry building infrastructure of this scale, complexity and importance, the role of commissioning becomes critical. It must be treated with corresponding seriousness and that starts and ends with recognising that it not a service line, but a discipline.

Louis Charlton
Global Commissioning

Editor's comment

The relentless pressure for AI-ready data centres is compressing timelines while increasing technical complexity and creating pressure for delivery teams. Commissioning is where systems are rigorously tested under real operating conditions, validated against the original design intent and formally certified as ready for reliable, live operation. As Louis makes clear, it should be treated as a discipline, as it influences design, strengthens quality control and supports ongoing validation.

Walk the walk and talk th

Hi Rob

As LMG celebrates its 40th anniversary, I've found myself reflecting on what the next 40 years might look like. When we discussed marking this milestone, we didn't want to simply celebrate our own achievements. We wanted to contribute to the future success of our industry by addressing one of the challenges it still faces.

Construction today is very different from the industry I entered. Technology is transforming the way we design, build and operate buildings, while collaboration, sustainability and user experience have become central.

Importantly, the culture of our industry has evolved too. Many organisations have worked hard to create more inclusive workplaces, broaden opportunities and challenge outdated perceptions. There is much to be proud of but there is still more to do.

While progress has been made, women still represent only around 15 per cent of the construction workforce. If our industry is to continue growing, innovating and tackling future skills shortages, we need to attract talent from the widest possible pool.



For me, this is not simply a recruitment challenge. It is about creating an industry that women and girls actively aspire to join. It's also about providing positive male role models and better pathways for our young men who are in danger of becoming a lost generation.

e talk

Those of us working within construction have seen first-hand how much the industry has changed, yet many people outside it still view construction through an outdated lens. Too often, perceptions fail to reflect the reality of a modern industry that offers exciting opportunities across technology, engineering, digital innovation, sustainability, project management and countless other disciplines.

If we want to attract the next generation, we must continue improving our culture while telling a far better story about the industry we've become. Culture is shaped not by policies alone but by the standards we set every day and the behaviours we are prepared to challenge.

That belief inspired the LMG Hard Hats & Open Minds Charity Walk. The event will take place in London in September and the 10km walk will bring together people from across the construction industry with a shared commitment to more positive cultural change. The walk is built around a simple message – Walk. Talk. Commit. Change.

We are encouraging people from across the industry, particularly men, to become visible allies, start conversations, challenge assumptions and help build a more inclusive future for construction. Ultimately, this initiative is not about criticising our industry – it is about recognising the progress we've made, acknowledging where further improvements are needed and demonstrating our collective commitment to an even better future.

Construction and the built environment are filled with talented, passionate people who care deeply about what they do. It creates the places where people live, work and connect, and it offers exciting and rewarding careers.

If we want construction to remain strong, innovative and sustainable, we must continue building not only better buildings but better cultures, while showing the wider world the positive changes already taking place. The foundations we lay today will shape the industry the next generation inherits.

If you would like to join the charity walk in September search for EventBrite for the Hard Hats and Open Minds Charity Walk and keep an eye on the LMG LinkedIn page.

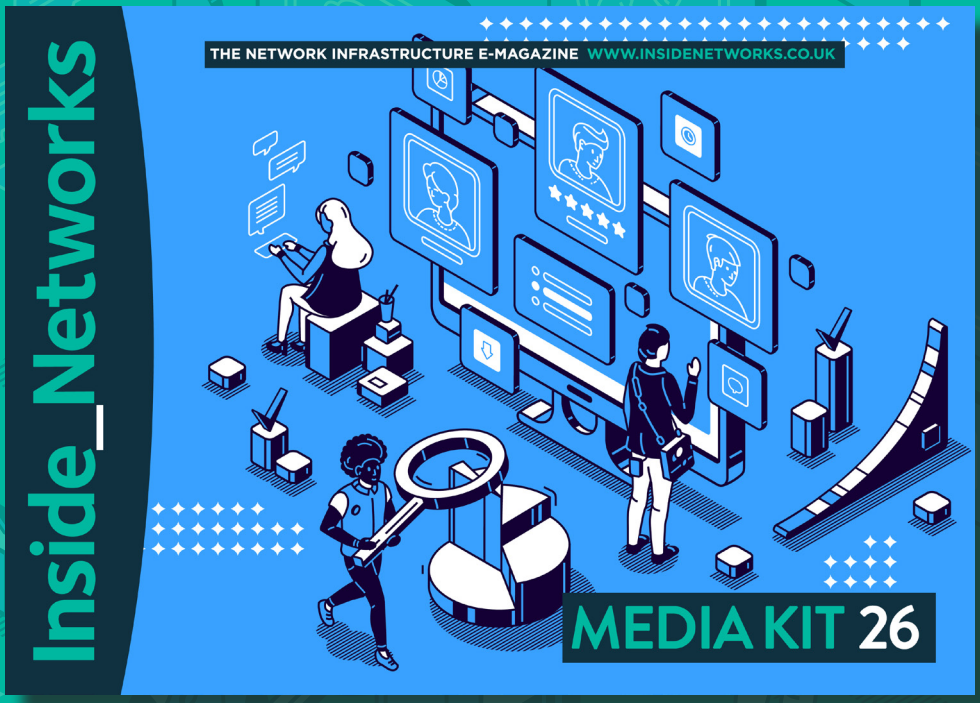
Mike Hook
LMG

Editor's comment

Congratulations to Mike and the rest of the LMG team on reaching 40 years in business. I've had the pleasure of watching the company grow for most of that time and they have worked on some amazing projects and pioneered the use of technology that makes the build environment so smart.

Mike's message about challenging perceptions and improving the image of the construction industry is a powerful one, as is his call for more women to join the workforce. If our industry is to keep growing, innovating and closing future skills gaps, we must draw talent from wherever it can be found. We need an industry that women want to be part of and one that gives young men the role models and opportunities they need to succeed.

All you need to know



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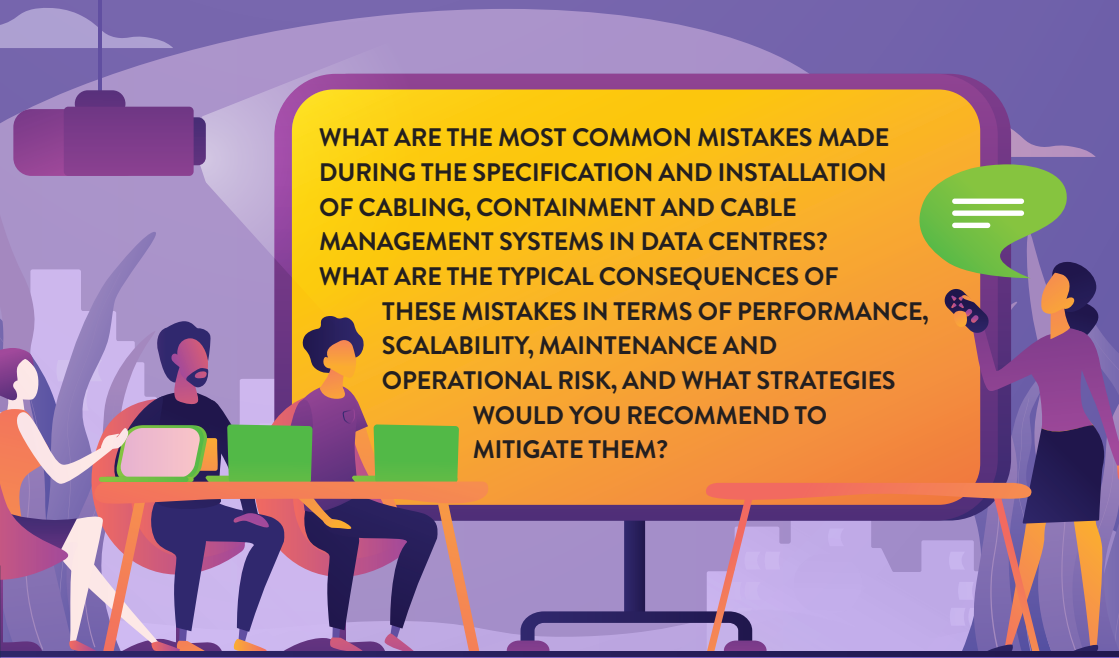
No room for error

Poorly specified or badly installed cabling, containment and cable management systems can undermine a data centre's performance, resilience and scalability. Inside_Networks has assembled a panel of industry experts to highlight the consequences of bad practices and explain how to avoid them

Many data centre problems begin with preventable mistakes in cabling, containment and cable management. Undersized trays, poor cable segregation and inadequate bend radius control create inefficiencies that are difficult and expensive to correct. At the same time, congested containment restricts airflow, increases cooling demand and complicates maintenance activity, while poor routing and unmanaged cable density can contribute to signal interference, faults and longer recovery times.

The risks increase as facilities expand and without scalable containment systems and cable management, future growth becomes disruptive and costly. Maintaining disciplined installation standards reduces operational risk, avoids expensive retrofits and negates unnecessary downtime later in the data centre lifecycle. Robust cabling infrastructure is not simply about organisation or appearance, it is essential to achieving optimum efficiency, resilience and long-term scalability.

Inside_Networks has brought together a panel of industry experts to give us their views on the most common mistakes made during the specification and installation of cabling, containment and cable management systems in data centres. Just as importantly, they suggest ways to avoid them.



CHRISTOPHE HINET

DIRECTOR OF TECHNICAL SUPPORT AT MOLEX CONNECTED ENTERPRISE SOLUTIONS

Across enterprise data centres the most frequent mistakes are made long before the first cable is installed. One common issue in the design phase is underspecifying the physical layer by designing for current port counts or speeds without considering higher optical fibre counts in the future, or changes in polarity requirements. This often leads to mixed polarity methods, incompatible connector types and pathways that cannot accommodate growth or moves, adds and changes (MACs) without causing significant disruption.



During installation, poor containment and cable management discipline is a recurring problem. Overfilled trays, tight bend radii, excessive bundling and ad hoc routing may work initially but undermine airflow, accessibility and signal integrity over time. In both copper and fibre systems, insufficient separation, inconsistent labelling and incomplete test documentation compound operational risks.

With a few exceptions, the consequences of these mistakes are rarely immediate. However, early mistakes can show up later as higher insertion loss, polarity errors during upgrades, power over Ethernet (PoE) heat related degradation or increased susceptibility to contamination.

Scalability also suffers when pathways and enclosures are already at capacity, necessitating expensive rip and replace projects. Maintenance tempo is slowed and made more challenging due to poor access and unclear administration, while the chances of operational problems increases as the risk of human error becomes more likely during routine changes or incident response.

Mitigation starts with a standards driven, lifecycle based design approach. Specify cabling, containment and management as a single, integrated system that is aligned to recognised standards, with clear polarity strategies and documented growth assumptions.

Design pathways and enclosures for spare capacity, not just initial fill. During installation, enforce bend radius control, bundle management, cleanliness, labelling and full test record retention. Finally, protect the investment through certified installation practices and procedures that tie design, components and documentation together over the long-term.

Getting it right first time is less about speed and more about disciplined specification, installation and lifecycle thinking.

‘DURING INSTALLATION, POOR CONTAINMENT AND CABLE MANAGEMENT DISCIPLINE IS A RECURRING PROBLEM. OVERFILLED TRAYS, TIGHT BEND RADII, EXCESSIVE BUNDLING AND AD HOC ROUTING MAY WORK INITIALLY BUT UNDERMINE AIRFLOW, ACCESSIBILITY AND SIGNAL INTEGRITY OVER TIME.’

NICOLAS ROUSSEL
TECHNICAL MANAGER AT SIEMON

Data centre cabling infrastructure is often viewed as a passive installation. However, cabling now presents its own critical challenges. Mistakes made during specification and installation can have major consequences for performance, scalability and operational resilience.



One of the most common issues is insufficient capacity planning, not only for containment systems but also for optical fibre port availability. Many facilities are designed around immediate requirements without considering future growth in fibre connectivity. The result is rapid exhaustion of patching capacity, congested pathways and costly upgrades that can disrupt live operations. Designing with spare capacity and modular scalability is therefore essential.

Another challenge is the transition from copper to fibre infrastructure. While copper was historically used for short reach connectivity, data centres are rapidly shifting toward fibre-centric architectures to support higher speeds, lower latency and increased bandwidth demands.

As optical architectures become more complex, fibre performance margins are also becoming increasingly critical. Deploying ultra-low loss fibre infrastructure is now an important long-term strategy to maximise channel performance, support additional connection points and simplify migration toward future high speed applications. Forward looking designs should therefore evaluate lifecycle value and scalability rather than focusing only on initial deployment costs.

High density environments also require careful consideration. Although ultra-high density fibre panels can maximise rack space utilisation, higher density does not automatically improve operational efficiency. Excessive density can complicate maintenance, airflow management and troubleshooting, while increasing the risk of accidental disconnections and human error. Balancing density with accessibility and maintainability remains essential, especially as new connector types emerge and long-term compatibility must be considered.

Data centres must also evaluate the use of direct attach copper (DAC) and active optical cables (AOC) versus traditional transceiver based structured cabling. DAC and AOC solutions can improve power efficiency, reduce latency and simplify maintenance in point to point deployments, while structured cabling offers flexibility for future upgrades and topology evolution.

Ultimately, successful data centre cabling design relies on scalable planning, standards based installation practices and a long-term operational perspective rather than simply achieving initial connectivity.

‘EXCESSIVE DENSITY CAN COMPLICATE MAINTENANCE, AIRFLOW MANAGEMENT AND TROUBLESHOOTING, WHILE INCREASING THE RISK OF ACCIDENTAL DISCONNECTIONS AND HUMAN ERROR.’

MICHAEL AKINLA

BUSINESS MANAGER NORTHERN EUROPE AT PANDUIT



The most damaging cabling mistakes in data centres usually begin at specification stage, when designers underestimate density, pathway fill, future bandwidth growth, rack dimensions, power distribution, cooling interfaces and the physical consequences of moves, adds and changes (MACs). In high density environments cabling is not a secondary installation activity – it is part of the performance architecture.

A common error is designing containment for day one requirements rather than lifecycle capacity. Overfilled pathways, poorly segregated power and data routes, unmanaged slack and insufficient bend radius control can degrade signal integrity, obstruct airflow and make future expansion difficult or impossible without disruptive rework.

Long point to point cabling can appear simple initially, but inaccurate length estimation often leaves excess cable coiled in overhead containment or above racks, consuming pathway capacity and increasing operational complexity. Conversely, underestimated lengths create immediate installation failure.

Tight cable ties, poorly supported optical fibre, inconsistent dressing, inadequate strain relief, mixed cable types and weak labelling can all introduce hidden faults. At higher data rates, small physical errors can produce measurable consequences including insertion loss, intermittent links, thermal stress, crosstalk, reduced cooling efficiency and avoidable troubleshooting time.

Poor documentation is equally serious. Without accurate records, maintenance teams are forced to trace live circuits manually, increasing the risk of accidental disconnection and extended downtime.

Performance can be impaired by signal degradation and thermal restriction, while scalability is limited when containment is full or topology cannot adapt. Maintenance becomes slower, riskier and more labour intensive. Operational resilience is weakened because undocumented or congested infrastructure turns routine change into a potential outage.

Mitigation starts with disciplined design. Capacity modelling should account for bandwidth, power, cooling, cabinet dimensions, floor loading and realistic growth. Pathways should be specified with spare capacity, clear segregation, bend radius control and accessible routes. Structured cabling with permanent links and short managed patching should be considered where it improves testability, repeatability and change control. Every installation should be certified, labelled and documented before handover.

Finally, change management must be treated as an engineering control, not an administrative afterthought. In data centres, well managed cabling is not tidiness – it is part of the resilience strategy.

‘IN DATA CENTRES, WELL MANAGED CABLING IS NOT TIDINESS – IT IS PART OF THE RESILIENCE STRATEGY.’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IAN MCKIERNAN

PRE-SALES TECHNICAL MANAGER AT ELEVATE

A well-engineered approach to data centre cabling, containment design and cable management is essential to long-term performance, efficiency and resilience. However, many facilities still encounter avoidable issues that restrict reliability and future growth.



The most common challenges include undersized pathways that limit expansion capacity, poor separation of power and data that introduces electromagnetic interference (EMI), overfilled containment that compresses cables and disrupts airflow, incorrect optical fibre handling that increases optical loss, and untidy rack level cable management that raises the risk of human error during patching or maintenance.

These issues often arise in fast growing environments, retrofits and multi-tenant data halls where rapid deployment cycles, evolving customer requirements and space constraints can compromise installation discipline.

The consequences are significant. They include reduced network performance, thermal hotspots, higher cooling costs, limited scalability to 100Gb/s, 400Gb/s and beyond, longer maintenance windows, slower incident resolution and increased operational risk across the facility.

To avoid these pitfalls, operators are increasingly adopting standards aligned design – EN 50173/50174, ISO/IEC 11801 and Construction Products Regulation (CPR) – deploying modular and scalable copper and fibre platforms such high density systems and enforcing consistent routing, segregation and labelling practices that simplify maintenance and reduce downtime. High density fibre architectures, structured containment layouts and disciplined rack presentation help maintain airflow, support higher port densities and ensure the infrastructure remains future ready for emerging technologies and bandwidth demands.

When combined with rigorous testing, digital documentation and clear as built records, these strategies protect uptime, reduce operational cost and provide a stable foundation for ongoing growth. Ultimately, getting cabling, cable management and containment right is not just a technical requirement — it is a strategic investment that delivers greater efficiency, faster deployment, improved resilience and long-term confidence in your data centre environment.

‘THE MOST COMMON CHALLENGES INCLUDE UNDERSIZED PATHWAYS THAT LIMIT EXPANSION CAPACITY, POOR SEPARATION OF POWER AND DATA THAT INTRODUCES EMI, OVERFILLED CONTAINMENT THAT COMPRESSES CABLES AND DISRUPTS AIRFLOW, INCORRECT FIBRE HANDLING THAT INCREASES OPTICAL LOSS, AND UNTIDY RACK LEVEL CABLE MANAGEMENT THAT RAISES THE RISK OF HUMAN ERROR DURING PATCHING OR MAINTENANCE.’

SAM SLOAN
PROJECT SALES DIRECTOR AT NETWORKS CENTRE

There are multiple considerations when specifying containment and cable management systems for a data centre. The most important is to select the correct containment type and size for the structured cabling system being deployed, both on the initial project and with consideration for future cable additions over the data centre's lease term.

We commonly see cable basket being installed when a raceway system would be more appropriate, and vice versa. Typically, raceway is optimal for cables with a diameter of 5mm and below, with basket recommended for use where larger cables are required. This element of specification requires alignment between the specification authority and the end user authority. In almost all cases these stakeholders are not within the same department and often not within the same organisation.



Another consideration is deployment time. The market presents a diverse range of manufacturers at all price points. It's easy to value engineer material price per metre, but additional features like pre-installed couplers, quick clamping mechanisms and simple ways of delivering bends, tees and height changes can save many hours of fabrication and engineering time. It's very important to consider the total installed cost when looking at savings.

Cable containment can be manufactured in many different finishes such as hot dip galvanised (HDG), pre-galvanised (PG) and electro-zinc plated (EZ). HDG is a hardwearing finish and suitable for use externally, PG is used internally and EZ deployed within the white space.

Each of these finishes come with their own strengths, weaknesses and price points. For example, EZ finishes can easily be powder coated for aesthetic purposes but are more difficult to bond together when earthing the system. Furthermore, a lower quality product can produce zinc whiskers, which can circulate within the white space and find their way into compute hardware.

Attention must be paid to the project timeline and delivery schedules. There's little use specifying a brilliant product for use internally in the white space, only to have it sitting outside the site exposed to the elements for months because the programme has slipped.

Overall, alignment between the stakeholder departments at end user, specifier and project management level is crucial for successful cable management and containment installations.

'ATTENTION MUST BE PAID TO THE PROJECT TIMELINE AND DELIVERY SCHEDULES. THERE'S LITTLE USE SPECIFYING A BRILLIANT PRODUCT FOR USE INTERNALLY IN THE WHITE SPACE, ONLY TO HAVE IT SITTING OUTSIDE THE SITE EXPOSED TO THE ELEMENTS FOR MONTHS BECAUSE THE PROGRAMME HAS SLIPPED.'

ANDREAS KLAUSER

PRODUCT MANAGER 19-INCH CABINETS & ENCLOSURES AT R&M



A common mistake in the specification and installation of data centre cabling, containment and cable management systems is designing only for immediate requirements, rather than allowing for future bandwidth, power and cooling demands. Data centres evolve quickly, so any infrastructure specified purely around current needs becomes a constraint when higher density servers, increased fibre counts, liquid cooling manifolds or additional power distribution are introduced.

Another frequent issue is the underestimating of physical space requirements inside and around racks. Limited space at the front of 19-inch profiles can restrict data cabling, insufficient space at the rear makes managing power distribution units (PDUs), power cables and future liquid cooling connections harder.

Poor rack selection, inadequate containment width and insufficient raised floor height can also create installation and maintenance challenges. For high density environments, 42U or 48U racks of around 800mm wide and 1200mm deep provide better access and cable routing flexibility. Front clearance of 150-200mm between the 19-inch profile and the door should be considered, along with suitable raised floor height for airflow and cabling.

Poor cable management can be an issue too. Mixing data and power cabling, not controlling cable overlength or blocking airflow with untidy bundles can reduce cooling efficiency and increase operational risk. This is vital because liquid cooled servers don't remove the need for air cooling, while airflow management remains essential for other equipment and residual heat loads.

This may all lead to reduced network performance, increased congestion risk, restricted scalability, higher cooling costs, more difficult maintenance and greater likelihood of accidental disconnection or downtime. In extreme cases, poor cabling and containment design can limit the facility's useful life.

Mitigation starts with planning for a migration path, not only the day one requirement. Designs should accommodate future bandwidth, power and cooling densities.

Use advanced connectivity such as MPO cabling and high density connectors where appropriate. Front and rear vertical cable managers, horizontal 19-inch cable management panels and dedicated side entry routes from the roof or floor should be installed. Power and data cabling should be segregated using vertical cable trays on each side of the rack. Finally, containment should be wide enough, typically at least 1200mm, to support safe access, efficient maintenance and equipment growth.

'MIXING DATA AND POWER CABLING, NOT CONTROLLING CABLE OVERLENGTH OR BLOCKING AIRFLOW WITH UNTIDY BUNDLES CAN REDUCE COOLING EFFICIENCY AND INCREASE OPERATIONAL RISK.'



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Treating racks as infr not furniture

As data centres evolve to support h operational environments, one infra

Often specified late in the design process and evaluated primarily on dimensions, load ratings and cost, racks have traditionally been viewed as passive enclosures. Yet in modern data centres the rack plays a far larger role, influencing power distribution, cooling performance, cable management, security and long-term maintainability.

The reality is that a rack can meet every dimensional requirement on a specification sheet and still become a limiting factor once equipment is installed.

'One of the biggest misconceptions we still see is the idea that a rack is simply somewhere to mount equipment,' explains Ian McKiernan, technical pre-sales manager at Elevate. 'In practice, the rack sits at the point where power, cooling, cabling and human interaction all come together. If those elements aren't properly considered, operational challenges inevitably follow.'

Looking beyond U space

For many years, rack selection has centred around physical capacity:

- How many U?
- What depth?
- What load rating?

While these measurements remain important, they only tell part of the story.

As rack densities continue to increase, consultants and operators are becoming increasingly focused on usable capacity rather than simply physical capacity. A rack may have available U space but:

- Can engineers still access equipment safely?
- Can airflow be maintained?
- Is there sufficient room for power distribution and cable management?
- Can moves, adds and changes be completed without impacting live services?

These practical considerations often determine the true limit of a rack long before its theoretical capacity has been reached.

The centre of power and cooling

Every watt delivered to IT equipment ultimately becomes heat. As power densities rise, greater demands are placed on cooling systems, airflow management and containment strategies. The rack is where these requirements converge.



If power ingress, cabling, airflow and equipment placement are not properly managed, cooling performance can suffer, equipment lifecycles may be reduced and maintenance activities become increasingly complex. This is why rack selection should never be considered separately from power and cooling discussions. The rack itself is a critical part of the overall infrastructure strategy.

astructure,

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higher densities, greater power demands and increasingly complex astructure component continues to be underestimated – the rack

Designing for equipment



A common mistake is selecting a rack based primarily on floorplan efficiency rather than equipment requirements. A layout may maximise row count and white space utilisation but if it restricts cable pathways, access clearances or future power requirements any initial saving can quickly be outweighed by operational limitations.

Effective specification starts with the equipment and operational model first, before validating how that solution fits within the available footprint.

Designing for day two

Most racks perform adequately on day one. The real challenge comes during years of equipment refreshes, capacity expansion, evolving cooling requirements and increasing cable density. A rack selected purely for its immediate requirements can quickly become an operational constraint when change is necessary.

This is why many designers are adopting a lifecycle perspective, focusing not only on installation but also on ongoing access, maintainability and future scalability. The distinction between a commodity rack and an infrastructure grade rack is not simply one of construction quality – it is about how effectively the rack supports the operational realities of a modern data centre throughout its lifecycle.

By considering power distribution, cooling performance, serviceability, access requirements and future growth from the outset, consultants and operators can reduce lifecycle risk and create environments that remain adaptable as technology evolves.

Ultimately, the question is no longer what a rack can hold. The more important question is what a rack enables.

Next step

To explore more, **CLICK HERE** to download Elevate's latest whitepaper, Treat Your Rack Like Prime Real Estate.

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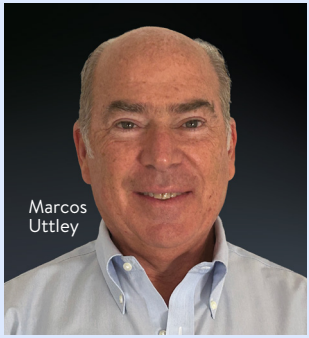
Black & White Engineering expands its European footprint into Spain

Black & White Engineering has expanded into Spain as it continues to grow across the data centre sector. The new office, based in Madrid, strengthens the consultancy's presence in the country and supports rising demand from data centre clients across Europe.


Marcos Uttley

Marcos Uttley, Black & White Engineering's regional director Europe, will lead the consultancy's growth. He brings senior leadership experience across engineering, real estate development, design consultancy and infrastructure services, having held roles across Spain, Portugal, Italy, UK, Germany and the US. His role includes strengthening client relationships and supporting growth across Europe.

Uttley said, 'Spain is an important market for data centre investment and gives us a strong base from which to support clients locally and across wider Europe. The Madrid office reflects our continued focus on building depth in key markets while drawing on the technical experience of our global team.'

Schneider Electric and AMD release first Helios platform reference design to accelerate AI factory deployment

Schneider Electric and AMD have developed and validated a reference design for the AMD Helios rackscale solution that provides a scalable blueprint for deploying high density AI environments faster and with reduced risk and complexity. The reference design marks a milestone between Schneider Electric and AMD and delivers upon the companies' joint focus to create an easier path to AI factory deployment.


Manish Kumar

Reference designs provide data centre architects and operators with tested, scalable designs proven to handle new power densities, thermal requirements and operational complexity. By modelling data centre physical infrastructure performance, these pre-validated blueprints help shorten the planning process by defining how power, cooling and IT infrastructure should be organised to build a reliable, scalable and AI ready data centre.

Manish Kumar, executive vice president secure power and data centres at Schneider Electric, said, 'Through our collaboration with AMD, we're delivering an engineering backed reference design that bridges the gap between advanced AI compute platforms, energy tech and real world data centre implementation. This will enable customers to deploy scalable, high density AI environments with greater confidence, efficiency and speed.'

Submer strengthens EMEA presence with Netceed distribution agreement

Submer has formed a strategic partnership with Netceed. Under the agreement, Netceed will act as a value added distributor across EMEA, strengthening Submer's presence throughout the region and bringing its full stack AI infrastructure solutions to its extensive network of telecommunications customers.


Manpreet Bath

This agreement will enable customers to accelerate the deployment of AI with integrated, scalable solutions. The two companies will work together to help telecoms operators and data centre providers simplify the transition from AI ambition to operational infrastructure, providing trusted expertise and regional support.

Manpreet Bath, vice president for commercial engagement at Submer, said, 'Netceed brings a powerful combination of extensive EMEA reach and a specialism in global telecommunications and data centre infrastructure. This partnership will enable us to scale across EMEA and so be accessible to telcos who are looking to launch new AI-driven services and sovereign data centres without reliance on centralised hyperscaler infrastructure.'

Björn Twiehaus appointed as new CEO of the Wago Group

Björn Twiehaus is set to take over as chief executive officer (CEO) of the Wago Group. He brings extensive international experience from the electronics and automotive supplier industry, and most recently served as CEO of the Marquardt Group.


Björn Twiehaus

Wago is one of the world's leading providers of electrical interconnection and automation technology, with 31 subsidiaries, nine production sites and a presence in more than 80 markets worldwide. With the appointment of Twiehaus, the company will continue this success story and further drive international growth, innovation and business development.

Twiehaus said, 'I look forward to shaping the next chapters of this journey together with around 9,000 colleagues worldwide and to continuing Wago's development with a strong customer focus and close alignment to our markets.'

Global Commissioning and PowerLoad align to simplify liquid cooling commissioning for data centre clients

Global Commissioning and PowerLoad are strengthening their collaborative relationship to provide clients with a more streamlined and trusted route to delivering liquid cooling solutions across the data centre market. The relationship combines PowerLoad's expertise in load bank technology and graphics processing unit (GPU) replication with Global Commissioning's specialist commissioning knowledge and experience in delivering advanced liquid cooling deployments.


Louis Charlton

Louis Charlton, group CEO at Global Commissioning, said, 'As the industry evolves, clients need confidence that solutions are not only technically sound but also practical to deliver. Liquid cooling presents significant opportunities but it also introduces new considerations for commissioning and operational readiness. By working alongside PowerLoad, we can provide clients with a clear path forward built on experience and proven delivery, utilising their knowledge in liquid cooling, AI GPU replication and attention to liquid quality to provide a complete service.'

Daniel Kline joins EkkoSense as its new CEO

EkkoSense has appointed Daniel Kline as its new chief executive officer (CEO). He succeeds Dean Boyle, who co-founded EkkoSense and has led the company since 2013. Boyle will stay involved at EkkoSense and will transition to a vice chairman role to focus on key strategic initiatives for the business.


Daniel Kline

Kline joins EkkoSense from Cloud Gateway and comes in at a critical moment in the company's global growth. He said, 'EkkoSense has an incredibly strong foundation, a hugely talented team and an unrivalled reputation for delivering quantifiable results for customers. I will be building on this success to accelerate growth and broaden penetration in key global markets. I am excited to get to know our customers and partners over the coming months.'

CHANNEL UPDATE IN BRIEF

Rackspace Technology has established its regional headquarters in Riyadh, reinforcing the company's long-term commitment to the Kingdom of Saudi Arabia and the broader Middle East region. The new regional headquarters will serve as a strategic hub for Rackspace Technology's operations and customer engagement efforts, supporting organisations across enterprise, government and regulated industries.

Portus Data Centers has strengthened its leadership team with the appointment of Thomas Tschirf as its new chief financial officer (CFO). Tschirf will be responsible for managing Portus Data Centers' financial strategy and supporting its continued growth trajectory, focusing on financing, controlling, reporting and scalable financial processes.

Shell Energy UK has signed a renewable electricity supply agreement with Kao Data. Since 2022, Shell Energy has supplied Kao Data with around 140GWh of electricity each year, matched with generation from UK-based renewable assets. From 2025, this has included initial output from Dogger Bank.

Eclipse Power has strengthened its team to help customers get complex projects connected more easily. The new team includes Hayley Burden, Laura Henry, Graeme Hutchison, Ben Croxford and Suzanna Lashford, who will support the group's plans for UK growth and expansion into Europe.

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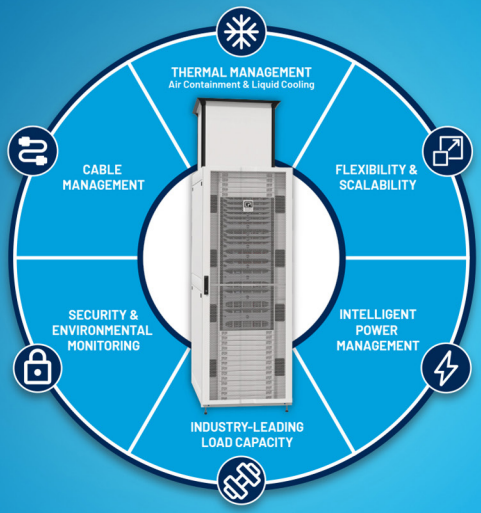
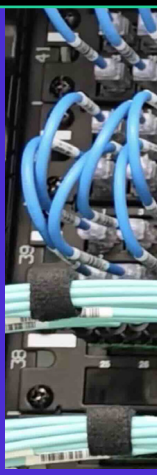


Speed of light

Michael Akinla of Panduit takes a look at optical fibre architectures for high density data centres



Data centre infrastructure is entering a new phase of intensity. Cloud, high performance computing and AI are changing the physical assumptions on which many data centres were designed.

DIRECTION OF TRAVEL

Training clusters, inference platforms and graphics processing unit (GPU) accelerated systems create dense east-west traffic flows which require deterministic low latency communication, and place far greater pressure on the cabling layer than conventional enterprise workloads. As a result, fibre cabling is moving from a background utility to a strategic design consideration.

The most visible change is bandwidth. Networks are now being designed for 400Gb/s, 800Gb/s and 1.6Tb/s today, with standards and product roadmaps moving toward 3.2Tb/s.

At the same time, the number of optical links required per rack is rising sharply. A GPU server may require multiple high speed connections into a fabric and AI clusters can contain thousands of accelerators operating as one logical system. Every additional lane, port and redundant path increases fibre count, connector density and the need for predictable optical performance.

ESSENTIAL SELECTION

It is no longer enough to ask whether a link can pass traffic on day one. Designers must consider how fibre is routed, connectors are accessed, bend radius is protected, polarity is managed and how moves, adds and changes are documented. In high compute environments, the physical layer must support both extreme performance and disciplined operations.

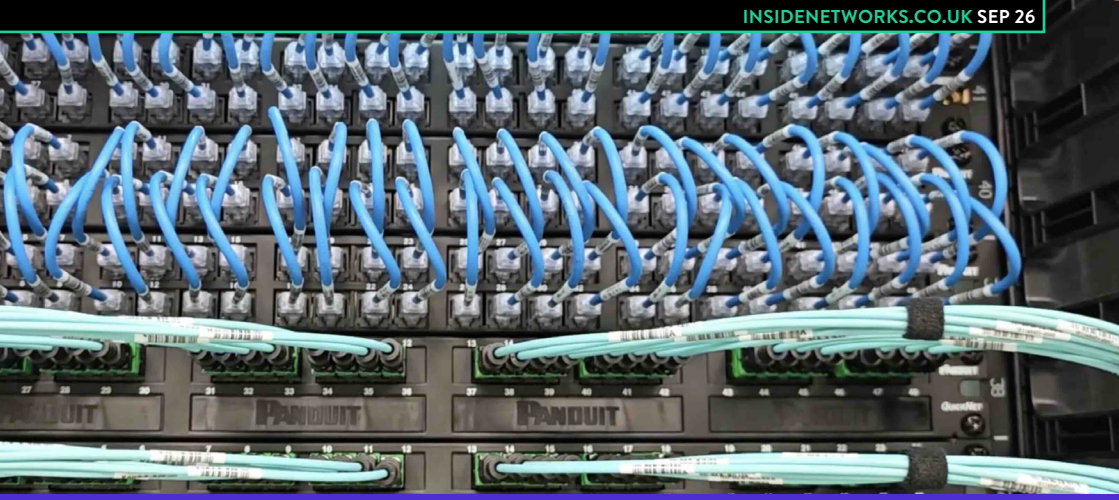
Parallel optics have become central to this shift. Traditional duplex architectures remain important but many short reach, high density data centre links now use multi-fibre parallel optics, while duplex wavelength division multiplexing (WDM) approaches remain important for other methods.

This increases capacity but also multiplies the number of fibres that must be installed, managed and tested. High count trunks, modular cassettes, dense patching fields and precision multi-fibre connectors are therefore becoming essential elements of AI-ready data centre design.

JOINED UP THINKING

The debate between point to point cabling and structured cabling is particularly important in this context. Point to point links can appear simple in smaller deployments but complexity grows quickly as GPU clusters scale. Long patch cords, interconnects and trunks must be accurately ordered, dressed and traced. Any excess length consumes pathway capacity, obstructs airflow and complicates troubleshooting.

In contrast, a structured fibre approach separates the permanent link from short equipment patching. High count trunks can



be installed, tested and documented as part of a planned backbone, while short patch leads connect servers and switches at the rack or cabinet level.

This approach supports repeatability. AI fabrics often require deterministic mapping between server ports/GPU interfaces and leaf or spine switches. A structured architecture using labelled panels and controlled pathways makes that mapping easier to design, audit and maintain. It also supports rapid hardware refresh.

> 'Fibre cabling is no longer simply a means of connecting equipment – it is an enabler of scale, resilience, sustainability and competitive compute performance.'

As computing accelerator platforms evolve, servers and switches may change on cycles far shorter than the expected life of the cabling plant. Preserving the backbone while changing only short patch connections reduces downtime, protects investment and simplifies operational planning.

NO COMPROMISE

Latency is another critical design consideration, but it must be understood in context. Within a tightly coupled AI pod, where link distances may be under 50m, light propagation delay through fibre is measured in hundreds of nanoseconds.

Other contributing factors, including forward error correction, buffering and queuing, may dominate the overall latency budget. This means well designed structured connectivity, with controlled insertion loss and high quality connector interfaces, need not compromise performance when deployed within the optical channel budget.

Across larger distances, however, propagation delay becomes a more important constraint. As AI infrastructure expands beyond a single hall or campus, operators are exploring 'scale across' architectures that link data centres across metro or regional footprints.

The reasons are practical – power, cooling water, land availability and resilience cannot always be concentrated in one location. Distributing compute across multiple sites can reduce single site risk and open access to more suitable power and cooling resources. The challenge is that coherent AI operation becomes harder as distance and latency increase.

EMERGING DEVELOPMENTS

This is where new fibre types are attracting attention. Hollow core fibre replaces the solid glass core of conventional fibre with an air filled guiding region. Because light travels faster in air than in silica, hollow core fibre can materially reduce propagation latency.

There is also less light interaction with glass, which reduces nonlinearities and dispersion, enabling higher power transmissions and greater bandwidths. For scale across AI networks, this could allow data centres to be placed farther apart while remaining within latency targets, creating new flexibility in site selection and network architecture.



Hollow core fibre is not yet a universal replacement for conventional singlemode fibre. Manufacturing scale, cost, connectors, splicing, inspection and interoperability still require careful development. Interfaces between hollow core and standard fibre are technically sensitive because insertion loss, reflections and multipath interference must be controlled.

A fully hollow core end-to-end channel is not yet practical, so interconnection with conventional singlemode fibre remains an important design consideration. Nevertheless, for latency sensitive inter data centre connectivity, hollow core fibre represents one of the most significant physical layer innovations now emerging.

OPPORTUNITY KNOCKS

Multicore fibre offers a different opportunity. Rather than reducing latency, it addresses density and bandwidth. By placing multiple optical cores inside a single fibre cladding, multicore designs can increase spatial capacity without proportionally increasing cable size.

For data centres, four core designs are of particular interest because they can retain familiar outer dimensions while increasing the number of channels available through a single fibre path. This may help reduce trunk bulk, simplify cable management and support higher data rates across campus scale links.

The appeal of multicore fibre is strongest where bandwidth demand and pathway congestion intersect. As lane speeds rise, some optical reaches become more difficult to support using existing duplex approaches. Multi-fibre solutions can overcome reach or bandwidth limits, but they increase cable count.

PATH TO ENLIGHTENMENT

Multicore fibre could help preserve pathway capacity by enabling more channels in a compact form. However, the technology introduces new considerations including crosstalk between cores, bend sensitivity and inspection criteria, as well as compatible transceivers, fan-in/fan-out (FIFO) devices, connector standards and new polarity conventions. These will need

industry alignment before widespread deployment.

For most data centres, the immediate opportunity is not to choose one future fibre type over another but to design an infrastructure that can adapt. That means specifying low loss fibre channels, maintaining disciplined connector cleanliness, protecting bend radius, using modular high density patching, preserving spare pathway capacity and documenting every connection accurately.

It also means treating containment, airflow and cabling as one system. In high power AI racks, poorly managed fibre can restrict airflow, complicate maintenance and increase operational risk.

PORT OF CALL

The role of documentation should not be underestimated. Thousands of ports, patch cords and transceiver connections cannot be managed reliably with ad hoc spreadsheets or informal labelling.

Automated mapping, barcode based identification and accurate asset records reduce human error and shorten maintenance times. As data centres become more dynamic, the ability to know exactly what is connected, where it runs and how it supports the logical network becomes a core operational capability.

The next generation of fibre infrastructure will therefore be defined by both optical performance and operational intelligence. Conventional multimode and singlemode systems will continue to support a large proportion of enterprise, cloud and data centre connectivity. At the same time, parallel optics, smaller form factor connectors, ultra-high density panels, multicore fibre and hollow core fibre will create new options for specific density, bandwidth and latency challenges.

BE PREPARED

High compute workloads are forcing the physical layer to evolve. Fibre cabling is no longer simply a means of connecting equipment – it is an enabler of scale, resilience, sustainability and competitive compute performance. Data centres that plan around modularity, density, low loss and future fibre innovation will be better placed to support the next decade of AI and high performance digital infrastructure. ■



MICHAEL AKINLA

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

Sending the right signals

Christophe Hinet of Molex Connected Enterprise Solutions explains the subject of optical fibre polarity and why getting it right makes systems more predictable, scalable and easier to operat

For consultants and installers working in enterprise data centres and large commercial environments, fibre polarity is rarely the headline topic on a project. Pathways, densities, power, cooling and schedules tend to dominate early discussions, while polarity is often assumed to be something that can be 'patched out' during commissioning.

TRANSMIT TO RECEIVE

In practice, polarity is one of the most frequent causes of post-installation issues, delayed handovers and costly site revisits. More importantly, polarity decisions made at design stage can lock an enterprise into, or out, of future upgrade paths. For those responsible for specifying, installing and documenting structured cabling systems, polarity is not a minor detail – it is a design critical choice with long-term consequences.

From an installer's perspective, fibre polarity seems straightforward – transmit must connect to receive. Yet many real world failures stem from mixed polarity assumptions across drawings, components and patching practices. As enterprise environments migrate from simple duplex links to parallel optics, the margin for error shrinks. A single polarity mistake at 40Gb/s or 100Gb/s can affect multiple fibre lanes simultaneously, making troubleshooting more complex and time consuming. What might once have been a quick patch cord swap can now involve tracing MPO trunks across multiple distribution areas.

For consultants, the risk is different but just as real. Inconsistent polarity strategies across a design can undermine the original intent of a structured cabling system, limiting reuse of trunks and complicating future upgrades, often years after project completion.



TWO'S COMPANY

Duplex fibre remains common in enterprise deployments, particularly for access and storage networks. Standards define two recognised methods for maintaining correct duplex polarity, both of which work when applied consistently.

• Consecutive fibre positioning.
This keeps fibres in straight numerical order end to end. Polarity is achieved by reversing the orientation of duplex adaptors at opposite ends of the link. One end is oriented A B, the other B A. Fibres are never crossed inside the cable, simplifying termination and testing, while ensuring Tx always meets Rx.

• Reverse pair positioning.
This maintains adaptor orientation at both ends and crosses fibre pairs inside the cable or patch cord. Fibre 1 connects to fibre 2, fibre 3 to fibre 4, and so on. This is typically implemented using A to B duplex patch cords.

From an installation standpoint, neither method is inherently better. Problems arise when both methods appear in the same system without clear documentation, often due to component substitutions or late stage design changes.

ALL FOR ONE

The introduction of parallel optics fundamentally changes polarity management. MPO and MTP connectors consolidate multiple fibres into a single interface, increasing density and reducing installation time, but also increasing polarity complexity. For installers, the key concept to understand is connector orientation:

- Key up MPO connectors present fibres in ascending order (position 1 to 12).
- Key down MPO connectors reverse that order (12 to 1).

This single rule underpins all MPO polarity methods. Remembering it allows field teams to quickly sanity check connections and identify mismatches before links go live.

> 'Polarity is one of the most frequent causes of post-installation issues, delayed handovers and costly site revisits. More importantly, polarity decisions made at design stage can lock an enterprise into, or out, of future upgrade paths.'

TYPE CAST

One of the most common sources of confusion on-site is the difference between MPO adaptor type and MPO trunk polarity type. They are not the same thing.

- Type A adaptors mate connectors key up to key down, maintaining fibre position alignment. These adaptors are compatible with both multimode and singlemode links and are mandatory for singlemode APC systems, where angled end faces must align correctly.

- Type B adaptors mate connectors key up to key up, reversing the fibre array. While useful in certain multimode scenarios, they are not compatible with singlemode APC links and should never be substituted without explicit design approval.

From a consultant's perspective, adaptor type must be explicitly defined



in the specification. From an installer's perspective, substituting 'what's available' can introduce polarity errors that are invisible until commissioning, or worse, until a future upgrade.

DESIGN INTENT MATTERS

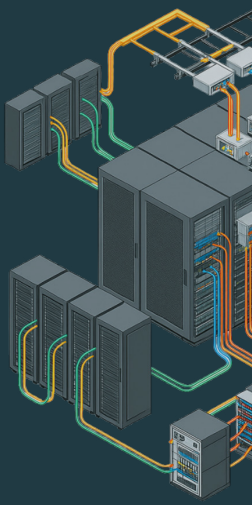
MPO trunks are available in three wiring configurations, each with different implications for installation and future upgrades.

- Type A trunks are straight through, with no internal fibre reversal. Polarity is managed externally, typically using cassettes or patch cords. This approach is widely used in structured cabling designs because it supports both duplex and parallel optics, and offers maximum flexibility for future migrations.

- Type B trunks reverse the entire fibre array inside the cable. This naturally aligns transmit and receive lanes for parallel optics and is often used for direct MPO to MPO connections. For installers, this simplifies patching but requires careful coordination with adaptor types and cassette designs.
- Type C trunks cross fibres in pairs. While they can work well for pure duplex environments, they do not support parallel optics applications and offer no upgrade path to higher speeds. For most modern enterprise projects, consultants should treat Type C as a legacy option rather than a forward looking design choice.

SIMPLY DOES IT

Recent standards updates introduced Method U1, which is designed to simplify array based duplex deployments. U1 uses Type B MPO trunks, Type A adaptors and standard A to B LC patch cords at both ends.



For installers, the appeal is obvious – no special patch cords and fewer opportunities for human error. For consultants, U1 reduces operational complexity in environments that will remain duplex only.

The limitation is equally important as U1 does not support parallel optics. It should

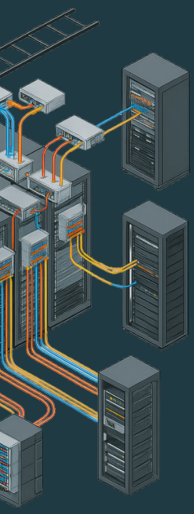
therefore be specified only where future migration to 40Gb/s or higher is not anticipated.

NOW AND THEN

From a lifecycle perspective, polarity errors may appear on day one. But they may also surface years later during moves, adds and changes or speed upgrades, often when the original project team is long gone.

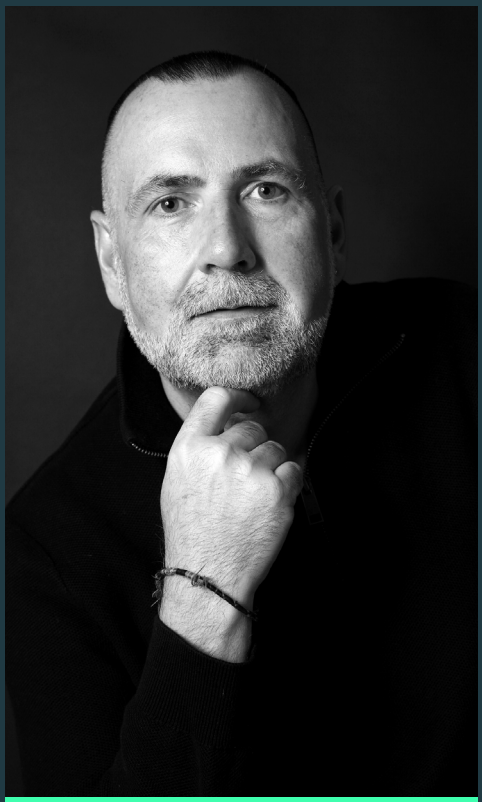
For consultants, this reinforces the need for clear polarity strategies, consistent component selection and unambiguous drawings. For installers, it highlights the importance of disciplined labelling, accurate 'as built' documentation and adherence to the specified polarity method.

In many enterprise environments, warranty eligibility and long-term support depend on strict compliance with standards and documented installation practices. Polarity shortcuts taken to 'get the link up' can compromise that protection.



FINAL TAKEAWAY

When consultants define a clear polarity strategy and installers execute it consistently, fibre systems become predictable, scalable and easier to operate over their full lifecycle. In enterprise networks the goal is not just to pass today's tests but to ensure tomorrow's upgrades do not require ripping and replacing perfectly good infrastructure. Getting polarity right first time is one of the simplest ways to achieve that. In fibre networks, light always follows the path it is given and polarity is what ensures that path leads exactly where it should. ■



CHRISTOPHE HINET

Christophe Hinet is director of technical support at Molex Connected Enterprise Solutions, leading global technical support and cross functional collaboration. With 33 years in structured cabling, he bridges technical, commercial and strategic insight, advocates proactive pre-sales, drives customer centric solutions and champions innovation through practical digital tools worldwide for enterprise building and data centre customers. A recognised contributor to the industry, he holds the BICSI RCDD credential.

Excel Networking Solutions



Excel's optical fibre patch panels are designed to do more than provide reliable connectivity – they offer a flexible solution for a wide range of network environments. Supporting both multimode and singlemode applications, the range has been developed with durability, efficiency and ease of installation in mind.

With up to 96 fibres housed within a compact 1U footprint, the panels help maximise rack space. Features including a sliding tray, multiple rear cable entry points, knockouts and colour coded adaptors help make installation, termination, splicing and maintenance faster and simpler.

Manufactured using a strong yet lightweight construction from a combination of powder coated steel and high density polycarbonate, the panels offer reduced weight and up to 36 per cent lower embedded carbon versus full metal alternatives.

Available from stock for next day UK mainland delivery, **CLICK HERE** to see the full range available.

www.excel-networking.com

Siemon



Siemon's LightStack and LightStack 8 ultra-high density optical fibre plug and play system delivers superior density, port access and cable management in a sleek, modern platform. This makes it ideal for today's advanced data centre or enterprise networking environments.

The black LightStack enclosure and connectivity range is the Base-12 format, while the grey LightStack 8 enclosure and connectivity range is the Base-8 format. Both configurations support singlemode and multimode fibre.

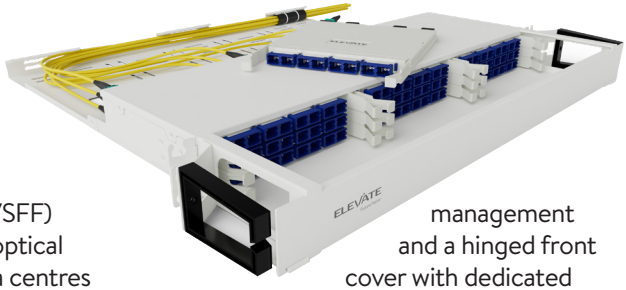
Siemon's innovative solution supports up to 144 fibres per rack unit in a 1U enclosure and enables easy access and management of connectivity from the front or rear. It offers various mounting options and high capacity management clips that are designed to support the maximum capacity of cables as well as simple access. It also includes a range of plug and play transition modules and pass through adaptor plates designed to deliver a level of performance exceeding today's standards.

To find out more **CLICK HERE.**

www.siemon.com

Elevate

Elevate VSFF – high density fibre connectivity for tomorrow's networks



Elevate's very small form factor (VSFF) solution delivers next generation optical fibre connectivity for modern data centres and enterprise networks.

Built on SENKO's advanced SN and SN-MT connector technology, it combines exceptional optical performance with an ultra-compact footprint, enabling higher fibre density without compromising reliability. Supporting up to 3,456 fibres within a single 1U panel, Elevate VSFF maximises valuable rack space while providing the low loss performance required for high speed, mission critical applications.

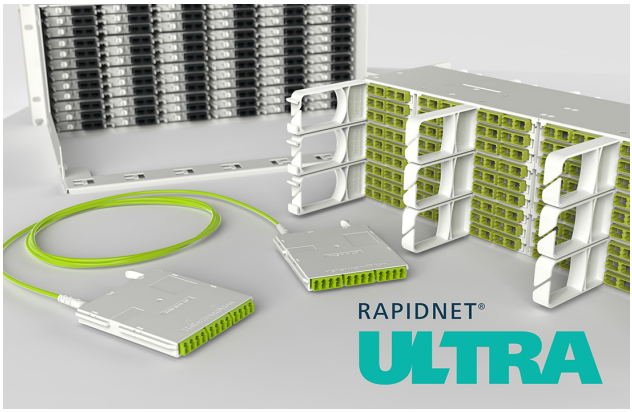
Designed for fast, efficient deployment, the solution features integrated front cable management and a hinged front cover with dedicated labelling space, ensuring organised installations and simplified maintenance. Compatibility with both SN and SN-MT connectivity provides a flexible migration path as network architectures evolve, making it ideal for hyperscale, high performance and enterprise environments.

With modular, scalable design and outstanding space efficiency, Elevate VSFF offers a future ready foundation that grows with increasing bandwidth and infrastructure demands.

CLICK HERE to discover more.
elevate.excel-networking.com



HellermannTyton



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

HellermannTyton's RapidNet ULTRA takes the existing data centre optical fibre solution beyond today's requirement, offering an even greater fibre density while accommodating very small form factor (VSFF) connectivity. RapidNet ULTRA supports tomorrow's requirements for high bandwidth, advanced network architectures and Ultra Ethernet.

With a range of cassette formats and fibre assemblies, RapidNet ULTRA delivers high performance and fibre capacity to meet the demands of the modern day data centre. To find out more **CLICK HERE.**

www.htdata.co.uk

AEM Networks



AEM Network's FiBLU is the industry's first true app-native singlemode and multimode optical fibre certification platform. By shifting intelligence from fixed hardware to smartphone software, it transforms fibre testing into a connected, real-time operational workflow.

For customers, this means immediate visibility into every test, instant cloud synchronisation and zero reporting backlog. Project managers gain live oversight, issues are identified while technicians remain on-site and costly rework is dramatically reduced. Commissioning cycles accelerate, acceptance delays shrink and billing accuracy improves.

Because FiBLU's intelligence resides in software, new features, analytics and standards updates are delivered through app upgrades rather than hardware replacement. Organisations therefore protect capital investment, extend asset lifespan and achieve lower total cost of ownership. The result is faster deployments, greater operational control, reduced project risk and infrastructure performance that is future proofed globally.

CLICK HERE to find out more.

www.aem-test.com

Panduit

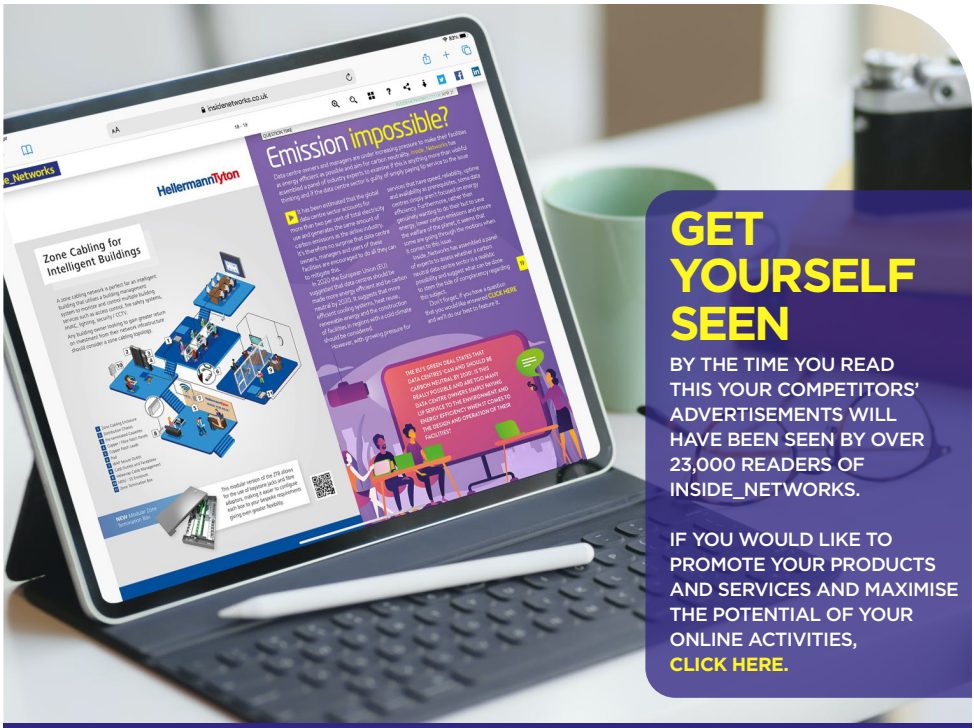


The FlexCore optical distribution frame (ODF) from Panduit offers a versatile and secure front access cabling system that also provides improved protection for critical optical fibre connections.

With standard locking doors and optional locks on each enclosure, the FlexCore ODF solution enables multi-tiered security – an important addition for multiple client access. The system manages up to 3,168 fibres per frame and provides multiple configurations using just three modular building blocks. This allows for design customisation and scalability, while optimising both product availability and system density.

Compared to typical data centre cabinets, the FlexCore ODF can reduce floorspace in a data centre by 50 per cent. In addition, with side panels and doors with locks, the FlexCore ODF solution allows the system to be completely enclosed and secure.

CLICK HERE for more information.
www.panduit.com



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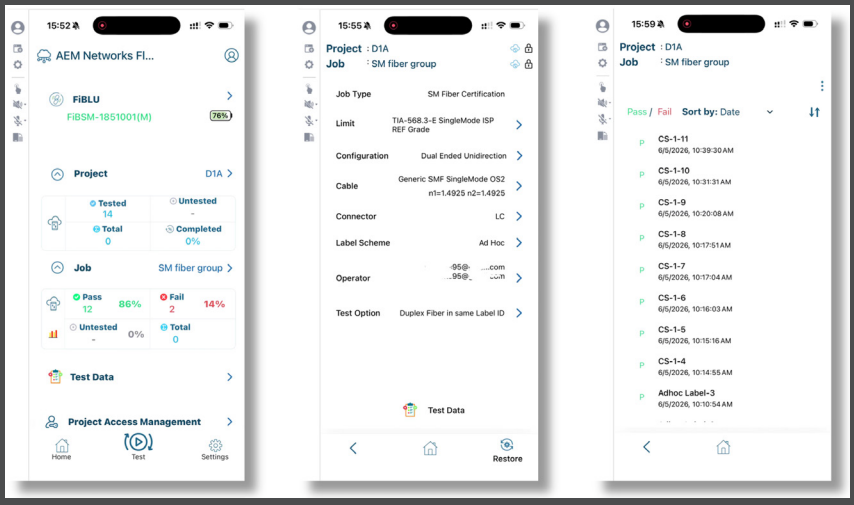
Turning data into action

Steve Cowles of AEM Networks looks at how app driven workflows improve quality and productivity in optical fibre testing

As networks become more software defined and operations more distributed, testing tools must follow the same trajectory. App driven platforms enable continuous improvement, remote collaboration and deeper integration with project and asset management systems.

SHIFT WORK

App driven fibre certification testing represents this shift – moving fibre certification away from static, hardware bound testers toward a connected, upgradable and data driven model. It aligns fibre testing with modern digital workflows, ensuring organisations can scale, adapt and optimise their networks without repeated reinvestment in test equipment.



The key to efficiency begins with the project set-up in the tester app on a mobile device such as a smartphone or tablet. The owner/manager sets up all project/job details then assigns the field technicians who will perform the actual testing. The project will then show on the app the technician has on their phone or tablet, with all settings as the manager created. The manager can lock the project so nobody in the field can modify settings, removing one possible area of testing error.

When testing begins in the field, the owner/manager can view results in real time in the app, as all test results are immediately synchronised with the cloud. This offers immediate visibility to the testing status and quality, as well as providing a valuable tool for collaboration between the field and management if questions or problems arise. Oftentimes, the managers and senior technicians will have the experience to provide troubleshooting insight when a technician in the field is having a problem and the



resolution time can be greatly reduced using this app based approach.

EFFICIENCY DRIVE

Another benefit is the reduction in handling of test results and the related reporting delays. For example, if a technician must bring the tester or a USB drive with results back to the office and they are a four hour drive from the office at the job site, there will be some delay and reduction in overall efficiency. With the app driven approach, the results are already available for the project manager to review and submit to the customer, if necessary, so no need to wait for the technician to return with that information.

Should the customer or other stakeholder, such as a specifier, need to see results to track progress, those key people can view the information in the app as well on their smartphone or tablet. This can be a real timesaver and reduce the number of back and forth phone calls or emails about project status.

> 'App driven platforms enable continuous improvement, remote collaboration and deeper integration with project and asset management systems.'

The sharing of fibre certification data for review or audit becomes much simpler with the app based approach too. Now results can be immediately shared with management, specifiers and fibre cabling system manufacturers, who may need to review the test results for warranty approval of the installation. Reviewing results and analytics for a particular job therefore becomes more efficient.

FEATURES AND BENEFITS

The app based approach enables faster processing, continuous software upgrades and a more intuitive user experience

without hardware dependency. Software and firmware updates are communicated immediately when they are available, providing the user with the option to update before proceeding to testing, so they can be assured of always having the latest features and functionality.

Another great benefit of this approach is the removal of the LCD display from the test equipment. This allows not only a more compact size of the physical testing devices but results in a more robust testing platform with no concern about damaging a display on the test equipment. For example, should one technician damage or lose their phone or tablet, the manager can quickly assign another technician to the project and they can use their phone or tablet and testing can resume in minutes. This also results in the actual test devices costing less than conventional field testers.

Battery life is always one of the big challenges in field test equipment, and with fibre light sources consuming power it is always top of mind. Field technicians are always looking for ways to conserve battery power. The LCD display on test equipment accounts for the highest power consumption and the removal of this display from the equation results in the ability of the fibre testing manufacturer to use a battery with a smaller footprint, while providing double or triple the battery life of conventional fibre field testers.

SUCCESS STORY

When it comes to the deployment of an app driven fibre certification tester in the field, technicians will still need to follow the exact same process and best practices as they would with conventional fibre test equipment in order to achieve successful testing:

- Ensure fibre test equipment is in good working order and has sufficient battery charge for the day of testing.
- Make certain the smart device app is the latest version and firmware is up to date on all testers to be used.
- Inspect all fibre test reference cords to ensure they are in good condition and that connector end faces are not dirty or damaged. To do this use a fibre inspection scope. This should be done prior to connecting to the test equipment. Inspect first and if it is clean, leave it. If it is dirty then clean it and inspect again.
- Perform a proper set reference procedure as described in the standards and in the user manual.
- During the testing process, use a fibre



inspection scope to examine the fibre to be tested before connecting the test reference cords in order to avoid cross-contamination. Contaminated fibre connector end faces are the most common cause of test failure in the field. Again, inspect, clean if needed and inspect again. A few minutes spent ensuring clean connectors will save several minutes of frustration dealing with failed tests.

When it comes time to submit final test reports, this can typically be done directly from the app or integrated into the same test results management software used for copper and other test results performed using conventional test equipment from the same manufacturer. In this way a single test report combines all results into one document or file.



WHAT'S NOT TO LIKE?

An app driven fibre certification testing solution offers substantial benefits by reducing testing costs through more affordable equipment and lower labour requirements. It simplifies project set-up, enabling faster deployment and efficient workflows, while improved collaboration between field teams and management enhances communication, coordination and decision making. Real time cloud synchronisation ensures that test results are immediately available to all stakeholders, allowing quicker review and resolution of issues. Finally, integration with existing test results management software streamlines processes, improving efficiency, visibility and project delivery. ■



STEVE COWLES

Steve Cowles has been involved in the voice and data industry for 40 years, the last 27 focused on test equipment applications for copper and fibre certification, Wi-Fi, PoE, Ethernet and DSL. He has been a BICSI member for over 30 years and holds the RCDD and NTS credentials. Cowles spent the last seven years at AEM Networks as the product line manager and manager of technical services. He very recently semi-retired and continues to provide training and technical consulting services to AEM Networks.

Purchasing decisions

In this month's Knowledge Bank, where tech is demystified, Carrie Goetz explains the procurement process, the players involved and how to benefit as a seller and a purchaser

There is no equipment or function in or around data centres that doesn't involve a purchase. If you are new to corporate purchases, an understanding of procurement processes saves a lot of headaches and allows you to take advantage of the process. Let's dive in.

SIZE MATTERS

Depending on the size of the organisation, project and purchasing levels, procurement may be as simple as picking up the phone and placing an order. While easier, it is rarely the norm. It is certainly not the norm for larger ticket items.

When a company decides they need a big ticket item, they generally write a request for information (RFI) or request for proposal/request for quote (RFP/RFQ). Alternatively, sometimes vendors are asked to provide budgetary numbers or rough order of magnitude (ROM) figures outside of a formal quoting process to serve as monetary placeholders.

RFIs are a great way to learn about technology, the highlights of a given product/system, features that were previously unknown etc. Both RFIs and RFP/RFQs often incorporate demos and vendor interviews. While the RFI process benefits the purchasing company, for many vendors it is viewed as a hassle and, as such, they can refuse to participate. It is important to make sure that if you are asking for RFI participation, that your project is worthy of the time commitment on the vendor's part.

DOCUMENTARY EVIDENCE

RFP/RFQ documents sometimes incorporate the RFI components for a more expedient approach. While procurement methods and processes vary, the quotation process will require respondent company information, financial statements, inventory commitments, workforce staffing plans, a list of subcontractors and any variety of other information. In some cases, distributers and integrators will respond on behalf of, or in conjunction with, manufacturers.

Distributors and integrator partners have





relationships with manufacturers to sell and install their products. Behind the scenes, there are generally incentives provided by the manufacturer for recommending certain products or entire product lines.

These incentives can include project rebates, year-end bonuses, advertising supplements, free training etc, for hitting sales targets. In these cases, the distributor/integrator will recommend those lines for internally sound business reasons. However, the procuring companies may not understand those relationships or how to reap similar benefits. RFP/RFQ documents can suss out these potential benefits for end user use.

Often training, support, warranty, trade-ins and other considerations pass through to the procuring company. If the purchaser benefits, then the steering of business towards specified products is beneficial, even if more costly up-front. Their team becomes part of your team, by extension. If, however, as an end user, there is no advantage to that uplift, costs deserve enhanced scrutiny. This is particularly true with commodity type products. The consuming public is becoming more adept at price/feature shopping.

EXCLUSION ZONE

Another component of bid documents is product specifications. Manufacturers provide bid specifications that may include competition exclusionary language. Patented features are often on that list and, sometimes, other subtle features. But do you really need those features? When product features are used to exclude other vendors, it is important for the purchaser to understand which parameters of a product are non-negotiable 'must haves' and which are preference or unnecessarily competition limiting.

Limiting specification factors can be as simple as a patented colour designation, for example. Is the shade of a colour enough to specify a vendor to the exclusion of all others, or will one shade off suffice? When evaluating features, will that feature make a product run faster, jump higher, last longer or solve a problem? If the answer is no and there is no tangible business reason, then it is not in a company's best interest to specify such in bid documents.

To encourage options, some procurement documents include an 'or equal' option to get around single source solutions. However, if a particular feature is listed and known to belong to a single manufacturer to the exclusion of others, there is no factual equal. In this case, even otherwise suitable substitutions get excluded from responses. The perception is that the manufacturer with that known feature is favoured. If you plan to entertain options, make it known that 'the company will provide additional consideration to cost savings options'.

THINK SMART

Brokers and distributors help identify systems that you otherwise wouldn't know existed. Use their intelligence as a workforce multiplier. Understanding how to get the best system to serve you well for the longest period, while knowing how to structure procurement exercises to gain knowledge and company benefit, is a career boosting move. Treat company money like it was your own and learn in the process. ■

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Why Your Choice Of Network Technology Will Be Key During The Global Fibre Shortage is white paper from **Altnets.**
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For data centre developers, the path to grid connection can be a complex and challenging one. Powering Great Britain's Data Centre Ambitions is a report by **Roadnight Taylor** that explains how to navigate complex connection processes.
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How To Prevent The 'Invisible' Failures In The Physical Layer is a practical guide from **Molex Connected Enterprise Solutions.**
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Does Not Compute – What The UK Public Really Thinks About Data Centres is a report from **SEC Newgate** that reveals a major knowledge gap around data centres.
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CBRE has published its Global Data Center Trends 2026 report, which found that data centre inventory surged year over year in Q1 2026 across all major regions.
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How Cabling Choices Are Defining Power Efficiency In AI Data Centers is a blog by Ryan Harris of **Siemon.**
CLICK HERE to read it.

Financial times

Matthew Baynes of Schneider Electric examines the high stakes economics of liquid cooling for AI infrastructure

Nearly 60 per cent of data centre operators are expected to adopt liquid cooling within the next five years as AI-driven economics reshape infrastructure investment priorities. Yet the shift to liquid cooling is a high stakes economic pivot that will define the competitive landscape of infrastructure for the next decade. Success in the AI era depends on understanding the full financial picture of liquid cooling, starting with upfront capital expenditure (CapEx) and planning strategically for long-term operational and performance benefits.



THE CHILLER PARADOX

The first critical cooling element to consider is a facility's heat rejection system. Because water holds 3,000 times more heat by volume than air, liquid cooling can capture heat at significantly higher temperatures and this creates a critical design crossroads. Do you leverage an existing low temperature chiller plant for a hybrid environment or invest in a dedicated high temperature system specifically for liquid cooled loads?

While a shared chiller avoids immediate CapEx, it anchors the entire facility to the inefficient, frigid temperatures required by legacy air cooled gear. In contrast, investing in dedicated high temperature chillers unlocks massive economiser hours, where the system runs without energy intensive compressors, turning a capital expense into a massive engine for operational savings.

The real leverage lies in the technology cooling system (TCS) fluid temperature. Boosting the TCS by 20°C can slash energy consumption by 30-40 per cent. But operators must beware of a potential efficiency trap. Running at the absolute limit maximises savings but evaporates your thermal safety buffer. In the volatile world of AI workloads, overshooting these

temperatures means expensive graphics processing units (GPUs) will throttle or shut down, creating a catastrophic downtime risk that far outweighs energy savings.

SCALING FOR THE AI POD

As deployments scale, the choice of coolant distribution units (CDUs) becomes a defining factor in both thermal performance and financial health. It also represents a meaningful portion of overall infrastructure investment.

Modern data centre leaders must navigate the divide between liquid to liquid (L to L) and liquid to air (L to A) CDUs, as each approach carries different implications for efficiency, scalability and infrastructure investment. For new builds, L to L CDUs are widely considered the gold standard because they transfer heat directly into the facility water loop, enabling higher cooling efficiency and better support for dense AI and high performance computing workloads. These systems are typically better suited for hyperscale and long-term growth strategies, particularly as rack power densities continue to rise.



Another important consideration is how the CDU is mounted. While rack mounted CDUs can provide localised control and reduce pumping requirements in smaller deployments, they become more difficult to manage at scale. Maintaining dozens of individual rack level pumps can create added operational complexity compared to the efficiency and simplified maintenance of a centralised floor mounted CDU in large AI environments.

STRANDED CAPACITY

Liquid cooling demands a physical, rigid coupling between the CDU and the server, which is a far cry from the loose coupling of traditional air cooling. This creates a dangerous risk for capacity planning – stranded capital.

If an operator overprovisions main piping for low density racks, they waste capital on oversized infrastructure. If they provision for hyper density and then deploy lower density gear, they strand manifold capacity. To dodge this financial minefield, forward thinking operators are adopting modular, pod based designs or creating density specific zones that allow for surgical, scalable infrastructure investment.

> 'The transition to liquid cooling is the unavoidable technical evolution for the AI era, but the decision is fundamentally economic.'

HIDDEN RISKS

Beyond the power bill, hidden maintenance risks can derail a business case. For instance, the TCS loop can quickly become difficult to manage without proper water treatment and monitoring. If not carefully maintained, it can often seem like a chemistry experiment, developing issues related to fouling, scaling and microbial growth, which can reduce cooling efficiency, damage equipment and potentially lead to broader system failures.

The most lethal threat is corrosion, including galvanic and microbiologically induced corrosion. Mixing incompatible metals, like copper cold plates with aluminium piping, triggers an ionic

exchange that erodes components and clogs microscopic channels. Likewise, microbiologically induced corrosion can cause corrosion and clogging. This is more than a maintenance issue – it's a total IT hardware loss risk.

What's more, with standards for liquid cooling components still evolving, chief technology officers (CTOs) must proactively segregate vendor ecosystems into uniform TCS loops to avoid the 'finger pointing' warranty disputes that follow a leak or component failure. For example, if a leak occurs inside a liquid cooled server, or if degraded coolant damages a cold plate, it can result in a costly dispute over whether the server vendor, the CDU vendor or the installation contractor is responsible for the damages. Segregating IT equipment from different vendors into separate, uniform TCS loops is a highly recommended practice.



SECRET WEAPON

While many fear the 'liquid cooling premium', a full lifecycle analysis tells a different story. At standard densities, the cost of liquid cooling components is often fully offset by the elimination of expensive air cooled chillers and computer room air handlers (CRAHs). But when you push into high density territory, liquid cooling shifts from cost neutral to a massive financial advantage.

The magic happens through compaction. By concentrating more compute capacity into fewer racks and less floorspace, operators can lower costs tied to building construction, lighting, fire suppression and power distribution, while also improving overall infrastructure efficiency.

For instance, compressing your compute power into a 20kW/rack liquid cooled footprint yields a 10 per cent total facility CapEx saving compared to 10kW/rack air cooling. At 40kW/rack, that saving jumps to 14 per cent. By drastically shrinking the physical footprint, the costs related to building shells, lighting, fire suppression and power distribution decreases.

The benefits extend beyond cooling to the power chain itself. By replacing power hungry server fans with efficient micropumps, the overall IT load drops, allowing for an estimated $0.14 per watt savings on uninterruptible power supply (UPS) and switchgear sizing. In the liquid cooled data centre, smaller is better and less costly too.

SUSTAINABILITY DIVIDEND

Liquid cooling is essential in a resource constrained world. These systems can slash total cooling energy by up to 60 per cent and offer a lifeline in water stressed regions. Traditional air cooling consumes a staggering 43 litres of water per minute for

every 1MW of capacity, while liquid cooling, utilising warmer water and dry coolers, can achieve elite Power Usage Effectiveness (PUE) ratings without draining local water supplies.

Because liquid cooling allows the use of warmer water temperatures, it can effectively utilise dry coolers with economisers, generating massive energy savings without the need for water intensive adiabatic evaporation. Moreover, the higher grade waste heat produced by liquid cooling is transforming what was once a liability into a valuable asset.

Rather than venting excess heat into the atmosphere, facilities can repurpose or sell it for district heating and industrial applications, creating new revenue opportunities while advancing carbon reduction goals. As adoption increases, market analysts project the global data centre heat reuse to district heating market will grow from $7.4bn in 2025 to $21.6bn by 2034.

LIQUID ASSET

The transition to liquid cooling is the unavoidable technical evolution for the AI era, but the decision is fundamentally economic. Success requires balancing upfront CapEx for dedicated cooling plants against generational operational expenditure (OpEx) savings from energy and water efficiencies. Leaders must leverage IT compaction for significant CapEx reductions while actively mitigating hidden risks like corrosion and warranty disputes. As data centre operators look to lead in the AI era, the real advantage comes when liquid cooling is treated not as an upgrade but as a financial strategy, unlocking a more efficient, higher density and future ready foundation for growth. ■

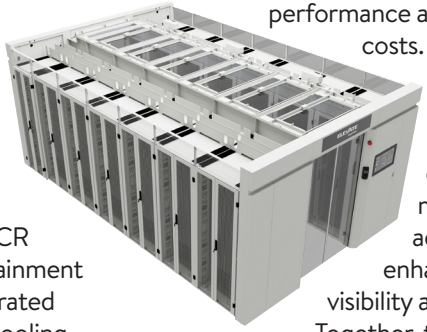


MATTHEW BAYNES

Matthew Baynes is vice president for Schneider Electric's Secure Power and Data Centre Division in the UK and Ireland. With over 20 years' experience across the data centre, IT and critical power industries, Baynes works closely with Schneider Electric's customer and partner ecosystems to support the design, build and operation of next generation AI infrastructure. He has also contributed to major industry bodies, councils and trade associations, including techUK and the European Data Centre Association (EUDCA), helping shape policy and encouraging sustainability initiatives alongside long-term industry development.

Elevate

Elevate racks and aisle containment – built for efficient, high performance data centres



As data centre power densities continue to increase, effective airflow management is critical to maintaining performance and reducing energy consumption. Elevate's DCR Rack and Cold Aisle Containment solution provides an integrated platform that maximises cooling efficiency while supporting the demands of modern IT environments.

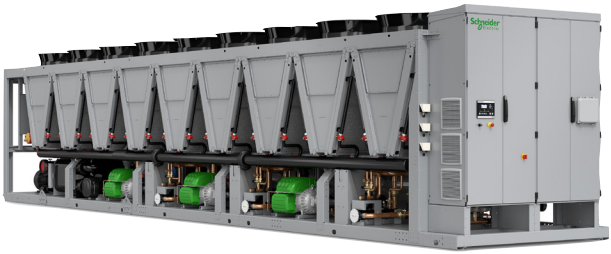
The DCR Rack features up to 80 per cent perforated doors for enhanced airflow, a robust 2,000kg load capacity, integrated cable management and flexible sizing options. This creates a strong foundation for high density deployments.

Complementing the rack, the Cold Aisle Containment system isolates conditioned air from exhaust heat, improving thermal performance and reducing cooling costs. Its modular design accommodates a range of rack heights and aisle widths, while optional intelligent monitoring and advanced access control enhance operational visibility and security.

Together, the Elevate DCR Rack and Cold Aisle Containment solution delivers a scalable, future ready infrastructure that optimises space, energy efficiency and long-term data centre performance.

CLICK HERE to discover more.
elevate.excel-networking.com

Schneider Electric



Schneider Electric's Uniflair XCA is a new series of air cooled and free cooling chillers designed to meet the rapidly evolving demands of AI-driven, high density liquid cooled data centres.

The Uniflair XCAC (air cooled) and Uniflair XCAF (free cooling) series integrate oil free centrifugal compressors with magnetic bearing technology and built-in variable speed drives. This forms a fully optimised cooling platform engineered to deliver remarkable energy performance and operational stability across diverse thermal loads and ambient conditions.

The XCA line features six sizes of oil free centrifugal chillers ranging from 1,200kW to 2,500kW units that deliver excellent thermal performance and use low global warming potential (GWP) refrigerants to significantly reduce environmental impact. Their wide operating range accommodates elevated water temperatures, making the chillers particularly suited for AI-optimised data centres and advanced liquid cooling infrastructures.

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

Advanced Datacentre Systems



COMPLETE VISIBILITY - BETTER DECISIONS
GREATER CONFIDENCE

Smarter climate management and cooling performance requires accurate, real-time insight – not assumptions.

The dual powered iSensor Controller from Advanced Datacentre Systems provides continuous environmental monitoring across data centre racks, rooms and critical zones. Supporting up to 24 temperature and humidity sensors, it helps operators identify hotspots, airflow imbalances and changing conditions before they threaten equipment reliability or uptime.

Customisable thresholds trigger immediate email or SNMP alerts, enabling teams to respond quickly while avoiding unnecessary overcooling. Optional particle, CO2 and volt free contact sensors extend visibility across the wider data centre environment.

For complete operational oversight, iSensor integrates seamlessly with Sensorium DCIM. This vendor neutral platform brings environmental, power and infrastructure data together within clear dashboards, floorplans, alarms and historical trend reports across both modern and legacy infrastructure environments.

Together, they help data centre teams optimise cooling, reduce energy waste and make informed climate management decisions with confidence.

CLICK HERE to discover a smarter approach to environmental monitoring or **CLICK HERE** to send an email and discuss further.

www.advanceddatacentre.com

Comms Centre

Keeping data centres cool – Legrand's cooling portfolio



Not ready to switch over to liquid cooling (direct to chip or immersion) but need to support heat loads up to 200kW? Legrand can support these levels using the cooling solutions detailed below:

- Minkels Cold Aisle Containment comes rack supported (tied to the cabinets) or freestanding (self-supporting frame). Freestanding is ideal for retrofits and pay-as-you-grow colocation models.
- Modulan Hot Aisle Containment acts like a single chimney for an aisle of racks where the hot air is usually routed back to the cooling units via a structural suspended ceiling, such as Tate Duo.
- USystems ColdLogik In-Row Air Handling Units (AHUs) are located alongside the racks (300mm or 600mm wide), delivering cooling precisely where it's needed for a very efficient set-up.
- USystems ColdLogik RDHx mounts in place of a rack's existing rear door to remove the heat and push cold air back into the open room.

CLICK HERE to find out more, call 01634 291191 or to send an email **CLICK HERE.**

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Fluid dynamics

As AI workloads drive unprecedented rack densities and power demands, Jon Barker of Chatsworth Products (CPI) explores when the time is right to make the move to liquid cooling

AI is transforming data centre infrastructure. As organisations deploy increasingly powerful graphics processing unit (GPU) clusters and high density compute environments, cooling has become one of the most important considerations in infrastructure planning. This shift has brought liquid cooling into the spotlight.

QUESTIONS AND ANSWERS

Once viewed as a niche solution reserved for specialist high performance computing environments, liquid cooling is now being evaluated by enterprises, colocation providers and cloud operators looking to support the next generation of AI workloads. The question many organisations are asking is simple – when do you need liquid cooling?

The answer is more complex than a single rack density threshold. While many organisations begin assessing liquid cooling when rack densities approach 30kW per cabinet, the decision ultimately depends on workload requirements, cooling capacity, future growth plans and operational efficiency objectives.

What is clear, however, is that cooling strategy has become a critical component of AI infrastructure planning. For many organisations, that may include liquid cooling, while others can continue to scale effectively with well-designed air or hybrid cooling approaches.

DRIVING INTEREST

Traditional enterprise applications typically distribute workloads across multiple servers and cabinets, creating relatively predictable thermal loads. AI environments operate differently. Modern GPU based systems concentrate enormous amounts of processing power into a small physical footprint. These systems often run at high utilisation levels for extended periods, generating significantly more heat.

> ‘For many organisations, liquid cooling represents a strategic investment in future growth rather than a reaction to existing problems.’

As AI deployments grow, rack densities continue to rise. What was once considered a high density environment at 15-20kW per rack is increasingly being replaced by deployments exceeding 30kW, 40kW or even 50kW per cabinet. At these levels, removing heat using air alone becomes increasingly challenging.

Air cooling relies on moving large volumes of conditioned air through servers and cabinets to absorb and

remove heat. As thermal loads increase, more airflow is required, creating greater demands on fans, cooling units and facility infrastructure. Because liquids are far more effective at transferring heat than air, they can capture and remove thermal energy directly from high temperature components such as central processing units (CPUs) and GPUs. This enables significantly greater cooling efficiency while supporting much higher compute densities.



A DIFFERENT APPROACH

Liquid cooling is not a single technology. Several different approaches are being adopted across the industry, each designed to address specific performance and deployment requirements.

Direct to chip cooling has emerged as one of the most widely adopted solutions for AI infrastructure. In these systems, cooling liquid circulates through cold plates attached directly to processors and accelerators, removing heat at its source before it enters the surrounding environment. This approach allows organisations to continue using many aspects of traditional data centre design while dramatically increasing rack density capabilities.

Rear door heat exchangers (RDHx) provide another option. These systems use liquid cooled doors mounted on the back of cabinets to remove heat from exhaust air before it enters the data hall. This can be an effective solution for organisations seeking higher densities without completely redesigning existing infrastructure.

Each technology offers distinct advantages but all share the same objective – removing heat more efficiently than air cooling alone. However, in many environments, the most practical approach is not choosing between air and liquid cooling but combining them. Hybrid strategies use liquid cooling for the highest heat components while continuing to rely on optimised airflow and cabinet design to manage remaining thermal loads, allowing organisations to increase density without completely redesigning existing facilities.

DENSITY THRESHOLD

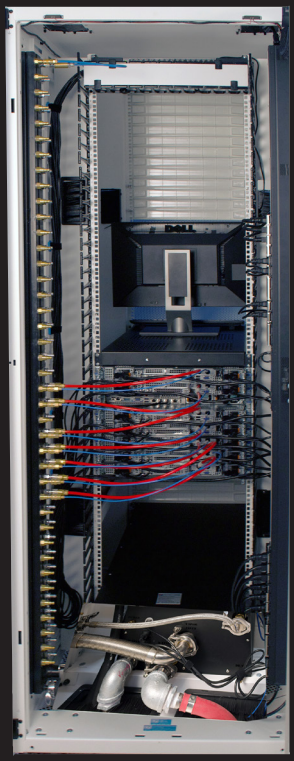
One of the most common misconceptions surrounding liquid cooling is that a specific rack density automatically requires it. In reality, there is no universal threshold.

A well designed facility with effective airflow management, optimised cabinet design, containment and passive cooling strategies can often support cabinet densities approaching or exceeding 30kW before liquid cooling becomes necessary. It is also important to recognise that containment amplifies existing airflow conditions rather than correcting them.

Organisations often achieve the best thermal performance by addressing cabinet level airflow issues before deploying containment, ensuring that hot and cold air are managed as efficiently as possible.

However, many operators begin seriously evaluating liquid cooling when rack densities approach 30kW per cabinet. At this point, cooling strategy often becomes a major planning consideration rather than a routine operational concern.

As densities rise into the 40-50kW range and beyond, liquid cooling becomes increasingly attractive. The practical limitations of airflow management, fan performance and facility cooling capacity become more apparent, making liquid cooling a more scalable and efficient option. Rather than viewing these figures as hard rules, organisations should treat them as planning milestones that signal the need for a broader cooling strategy assessment.



ONE STEP BEYOND

While higher rack densities often drive adoption, the benefits of liquid cooling extend beyond thermal performance. Energy efficiency is one of the most significant advantages.

Because liquid transfers heat more effectively than air, it can often operate with lower energy consumption. This can reduce overall facility power requirements and improve Power Usage Effectiveness (PUE), helping organisations meet sustainability targets while controlling operating costs. Liquid cooling can also unlock stranded capacity, as improving cooling efficiency allows operators to unlock additional compute capacity without expanding the physical footprint or adding new white space.

Many data centres have available floorspace and electrical capacity but are unable to deploy additional equipment because cooling resources have been exhausted. By increasing cooling efficiency, liquid cooling enables organisations to utilise more of their existing infrastructure investment.

Operational stability is another important consideration. AI workloads often place sustained thermal stress on infrastructure. By maintaining more consistent temperatures and reducing reliance on extreme airflow volumes, liquid cooling can help improve system reliability and performance consistency.

WARNING SIGNS

Organisations should avoid waiting until cooling becomes a critical constraint before exploring liquid cooling options, and several indicators can signal that a transition may be approaching. Persistent hot spots within specific cabinets or rows can indicate that airflow based cooling is nearing its practical limits. Similarly, increasing fan speeds, rising energy consumption and uneven temperature distribution throughout the facility can all suggest growing thermal challenges.

Another common warning sign is when cooling capacity becomes the primary obstacle to expansion. If additional AI infrastructure cannot be deployed despite available floorspace and power, cooling limitations may already be restricting growth.

Future hardware roadmaps should also factor into cooling decisions. If planned GPU platforms or AI accelerators will introduce significantly higher thermal loads than current infrastructure was designed to support, evaluating liquid or hybrid cooling options before deployment can help avoid costly retrofits and minimise disruption.

Perhaps the most important consideration is future demand. AI adoption is accelerating rapidly and infrastructure planning cycles often span several years. Organisations that evaluate liquid cooling proactively are generally better positioned to scale efficiently as requirements evolve.

PLANNING FOR THE FUTURE

The conversation around liquid cooling is no longer about whether air cooling still works – in many environments it continues to perform effectively. The real question is whether current cooling strategies can support the next generation of AI workloads without creating operational constraints, inefficiencies or scalability challenges.

For many organisations, liquid cooling represents a strategic investment in future growth rather than a reaction to existing problems. As AI deployments continue to increase in density and complexity, cooling infrastructure will play an increasingly important role in determining how quickly and efficiently organisations can scale. By evaluating liquid cooling early and understanding the available technologies, organisations can make informed decisions.

GROWING CONCERN

In the era of AI, cooling has become a critical enabler of compute performance, infrastructure scalability and business growth. Rather than asking whether liquid cooling will eventually be required, organisations should evaluate how cabinet design, airflow management, containment and liquid technologies can work together to support both current workloads and future growth. The right answer depends on the application, infrastructure and long-term strategy. ■



JON BARKER

Jon Barker, CPI's technical manager for Europe, has over 25 years in the engineering industry, with over 18 years specialising in data centre infrastructure. He serves as a technical contact, accountable for resolving pre- and post-sales technical support questions and issues. Barker also provides support to CPI's sales team by delivering product and technology based presentations to customers, channel partners and industry event audiences.

Northumbria Healthcare NHS Foundation Trust delivers outstanding patient care with Schneider Electric

Schneider Electric has completed a major infrastructure modernisation project for Northumbria Healthcare NHS Foundation Trust to ensure resilient, 'always on' availability for the critical systems underpinning patient care. The IT infrastructure supports essential applications including electronic patient records, clinical systems, administration, access control and CCTV.



Ensuring uptime across multiple sites is critical to maintaining operational services and supporting patient care. However, legacy uninterruptible power supply (UPS) systems of varying ages from different manufacturers created challenges around maintenance, monitoring and service continuity.

Northumbria Healthcare NHS Foundation Trust has deployed Schneider Electric's EcoStruxure platform and UPS solutions across multiple sites, enabling centralised monitoring and improved operational visibility. The project also delivers a five year service and maintenance agreement, helping Northumbria Healthcare NHS Foundation Trust to proactively monitor, maintain and modernise its UPS infrastructure across sites.

Nebius chooses Kao Data's Harlow campus for major AI infrastructure deployment

Kao Data has announced an AI infrastructure deployment with Nebius at its Harlow data centre campus. The 22MW 10-year agreement will support AI innovation within the UK's world leading academic and research communities, and the roll-out of the government's AI Opportunities Action Plan



Nebius is one of the fastest growing global leaders in AI cloud computing. Its innovative Nebius AI Cloud platform and managed inference service, Nebius Token Factory, will be hosted within Kao Data's Harlow campus, which is one of the UK's most advanced computing environments, specifically engineered for AI.

Crucially, with Kao Data's Harlow campus powered by 100 per cent renewable energy and its KLON-03 facility using the latest advancements in direct to chip liquid cooling to minimise water usage, the data centre campus will ensure Nebius's UK infrastructure is aligned with the company's approach to sustainable AI.

Legrand provides digital infrastructure for new AI data centre at Yerevan State University



Legrand has delivered the digital infrastructure for a new AI data centre at Yerevan State University, the Republic of Armenia's largest and leading university. The facility is home to a supercomputer equipped with 64 NVIDIA H100 graphics processing units (GPUs) and is designed to strengthen Armenia's national capabilities in AI and high performance computing.

Legrand was selected to deliver a fully integrated data centre infrastructure solution. The data centre was installed within existing university buildings, presenting significant challenges including limited space, low ceiling heights and complex routing requirements. The project required careful coordination to integrate power protection, power distribution, cooling, racks and intelligent monitoring systems without compromising performance or reliability.

Pulsant completes £2mn UK data centre investment programme



Pulsant has completed a £2mn investment programme across its network of sites. Delivered over the last two years, the rollout has improved the day to day, on-site experience for clients, visitors and staff, modernising facilities and refreshing interiors. Refurbishments have been completed at Pulsant sites in Croydon, Edinburgh, Maidenhead, Manchester, Milton Keynes, Newcastle, Reading and Rotherham.

The Data Centre Experience programme was piloted at Croydon in early 2024 when Pulsant worked closely with clients, through a series of user groups, to better understand how its data centres are used in practice. They highlighted a need for more welcoming, efficient and collaborative spaces to help IT teams and technicians work more productively when on-site.

Clients and contractors have noticed big improvements, singling out site security, board and breakout rooms, rest areas and even complementary drinks in post-upgrade feedback to the company. Further upgrades are in progress at Pulsant's recently acquired Birmingham and Fareham sites, reflecting its ongoing focus on service improvement.

Pure Data Centres appoints Glencar for next phase of its 90MW Brent Cross campus build-out

Pure Data Centres has appointed Glencar to deliver the final build phase of its Brent Cross (LON01) campus in North London – extending it by a further 23,186m² and bringing the total campus capacity to 90MW. The new facility, known as LON01 (B2), builds on the existing 20MW (B1) which is already operational and leased. Completion of B2 is scheduled for Q2 2029.



Glencar's scope covers delivery of the West Cold Shell, including piling and foundations, structural frame and connections to the adjacent East Cold Shell, concrete and slab works, stair cores and all envelope and roofing works. The project will be delivered within a live operational campus and Glencar will coordinate delivery alongside ongoing works, managing logistics and sequencing across multiple active construction zones.

LON01 (B2) will be home for one of the world's largest living walls, spanning approximately 7,400m² of the building façade and incorporating over 750,000 individual plants. The wall will support biodiversity, reduce noise and improve air quality adjacent to the Brent Reservoir, a site of special scientific interest, and the North Circular Road, which is one of the UK's lowest quality air zones.

Virtus Data Centres announces expansion with the addition of LONDON19

Virtus Data Centres has announced the next phase of its expansion at the heart of Europe's largest data centre hub with the development of LONDON19. Located within the Slough Trading Estate, LONDON19 will deliver 32.5MW of IT load and will add significant new capacity.



Planning permission has already been secured via the Slough Trading Estate Simplified Planning Zone (SPZ). SEGRO will develop the powered shell, with construction expected to commence shortly after design approval.

The development will include a roof level plant deck and is expected to achieve a BREEAM Excellent rating. Upon completion, LONDON19 will further expand Virtus' UK data centre estate, which currently comprises over 300MW of operational and committed capacity.

Schneider Electric progresses phased delivery of over $290mn in AI infrastructure solutions at TeraWulf's Lake Mariner Campus



Schneider Electric, together with Motivair by Schneider Electric, has announced the successful phased delivery of more than $290mn of AI infrastructure solutions for TeraWulf's Lake Mariner data centre campus in New York. The partnership underscores the three companies' shared commitment to enabling accelerated, scalable and reliable compute capacity for the AI era.

The project demonstrates how integrated power, cooling and digital intelligence can bring new capacity online at the pace that AI demands. Upon full buildout, TeraWulf's Lake Mariner campus is projected to support up to 750MW of power demand, leveraging the legacy industrial site and existing power infrastructure.

The project required Schneider Electric and Motivair to meet demanding construction and operational timelines, as TeraWulf sought to transform the site into a series of purpose built, AI data centres within a 12 month timeframe. By combining technical design, engineering expertise, advanced energy infrastructure, innovative cooling technologies and supportive software and services from Schneider Electric, the partnership assists TeraWulf in meeting increasing demand for AI-ready data centres while optimising energy and operational performance.

PROJECTS & CONTRACTS IN BRIEF

ABB has upgraded the critical power infrastructure at the Smithsonian Institution's iconic Arts and Industries Building in Washington DC, as it prepares to welcome visitors during the nation's 250th anniversary celebrations. The electrical modernisation is part of a larger revitalisation effort to enhance safety, reliability and preservation for both staff and visitors during this historic milestone.

AVK has confirmed plans for its first standalone UK manufacturing facility located in Haydock. Representing an initial investment of £3mn, it is expected to create a significant number of skilled jobs in its first year, spanning apprenticeships, graduate positions and technical roles, supported by a new partnership with St Helens College to build a long-term local talent pipeline. Around three quarters of roles will be skilled technical and operational positions including electrical and mechanical installation engineers, plant movement operatives and warehousing staff.

Deep Green has partnered with Women's Empowerment Through Art (WETA) Community Services CIC to fund a year-long swimming and water safety programme for women from communities and backgrounds at greater risk of drowning. Funded through Deep Green's Community Hours programme, the initiative will provide swimming lessons and water confidence training for 12 women over a 12 month period.

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Delivering the goods

Joe Desormeaux of DataScope Systems examines the critical role of integrated construction software and how it is improving real time visibility, coordination and decision making while enabling safer, more efficient project delivery at scale



With AI, cloud expansion and digital infrastructure demands continuing to surge, the pressure to bring new data centres online quickly has never been greater. However, rapid deployment is increasingly constrained by labour shortages, supply chain complexity and stricter regulatory requirements – all of which introduce risk at the construction stage.

SETTING THE SCENE

Rising numbers of businesses are transitioning to hybrid cloud based systems and utilising the significant technological advancements seen in recent years, meaning AI and digital adoption is increasing at a remarkable rate. The surge in AI applications and the need to comply with strict safety and security regulations is reinforcing the importance of increased storage and processing power. As a result, data centre demand has never been higher.

While the much needed digital transformation of the construction industry has been on the horizon for many years, the heightened demand for data centres is increasing the pressure on an industry already facing tightening regulations, ongoing skills shortages and rising material costs. Data centre projects are encountering significant delays. A recent survey carried out by DatacenterDynamics revealed that 82 per cent of UK data centre operators had postponed builds or expansions because of inadequate optical fibre connectivity.

‘In busy environments such as data centre construction sites, fragmented systems can create operational inefficiencies. Locating misplaced health and safety documentation, for example, can result in administrative delays and reduced productivity for site teams.’

ARE YOU BEING SERVED?

While some of the major hubs are well served, this is not always the case for other regions that may lack the core fibre infrastructure required to support large scale dataflows. However, this is just one of the many challenges facing data centre construction today. Access to reliable, high capacity grid power remains one of the most significant hurdles. With demand reaching unprecedented levels, pressure on the UK’s grid connection process has led to consequential delays for major infrastructure projects.

This has been exacerbated by the UK’s planning system struggling to keep pace with the technical complexity and scale of modern data centre developments. In many cases, data centres are not clearly defined within existing planning use classes. Consequently, they often must compete with commercial, industrial or housing developments, leading to more complex and longer review cycles.

The skills shortage affecting the wider construction industry is also hampering data centre delivery. The specialised trades required for these projects are in short supply, particularly heating, ventilation and air conditioning (HVAC) technicians, and mechanical and electrical (M&E) engineers with data centre experience.

MANAGEMENT DECISION

Across the sector, contractors are increasingly recognising that traditional site management approaches are struggling to keep pace with the complexity of modern infrastructure delivery. As projects become larger, more regulated and more interconnected, the need for real time coordination and reliable data is becoming a critical operational requirement.

While technology adoption is increasing across the built environment, the continued use of single purpose systems is contributing to complex and often fragmented technology environments. The



result is reduced flexibility and operational resilience compared with connected, integrated systems.

In busy environments such as data centre construction sites, fragmented systems can create operational inefficiencies. Locating misplaced health and safety documentation, for example, can result in administrative delays and reduced productivity for site teams. The loss or mismanagement of critical information can also increase the risk of failing to meet regulatory requirements and compliance obligations.

Reliance on disconnected systems that operate in isolation can reduce the likelihood of site managers maintaining a trusted, continuous 'golden thread' of information throughout the project lifecycle. The lack of integrated safety data can also introduce risk. Potential hazards identified in one system may not be communicated quickly or clearly to workers using another system, increasing the likelihood of missed warnings and a less controlled working environment.

SAFETY FIRST

Data centre construction sites are often located in constrained environments and can be highly congested. This is particularly the case when multiple contractors, subcontractors and specialist trades are working in close proximity.

Digital site management technology enables workers to identify and report risks and hazards directly from the field while maintaining access to critical safety information in real time. By empowering senior project directors and site managers to monitor safety performance more effectively, real time hazard reporting can help reduce the likelihood of incidents and support a more proactive safety culture across the site.



In a sample of more than 170 construction projects, digital daily briefing platforms were associated with accident reductions of up to 40 per cent. This highlights the potential operational and safety benefits of improved communication and visibility.

BOOSTING PRODUCTIVITY

Heightened data centre demand, connectivity constraints and planning delays are increasing the importance of improving productivity and minimising wasted time across construction projects. Integrated site

‘Evidence from construction projects using digital daily briefing tools indicates measurable improvements in coordination including reductions in rework, downtime and scheduling conflicts.’

management platforms can support faster decision making and automate administrative processes, enabling teams to allocate resources more effectively and reduce delays associated with manual reporting and fragmented workflows.

Evidence from construction projects using digital daily briefing tools indicates measurable improvements in coordination including reductions in rework, downtime and scheduling conflicts. By utilising integrated site management platforms, site managers and senior project directors are able to access reliable, real time information and generate clear, actionable insights.

REGULATORY COMPLIANCE

Visibility supports faster and more informed decision making, helping project teams reduce risk, optimise scheduling and identify potential conflicts before they escalate into costly delays. Daily activity briefings supported by digital coordination tools can help project teams identify overlapping work activities, prioritise critical tasks and maintain alignment across multiple trades operating on-site.

Digital site management platforms can also support regulatory compliance by providing structured documentation, real time progress reporting and clear audit trails across the project lifecycle. The use of live dashboards and automated alerts for inspections, training requirements and safety checks enables project teams to maintain visibility of compliance obligations and respond quickly to changing regulatory expectations.

OPPORTUNITY KNOCKS

With data centre deployment struggling to keep pace with rising demand, construction stakeholders are increasingly recognising the need to move beyond fragmented systems and adopt more integrated approaches to project delivery. Integrated site management software represents a practical opportunity to support faster data centre delivery, strengthen construction site safety and improve compliance performance across complex infrastructure projects. ■



JOE DESORMEAUX

Joe Desormeaux is vice president of mission critical at DataScope Systems. He provides data driven systems for planning, workforce and logistics, as well as quality, health, safety and environment (QHSE) management to an expanding global customer base of major projects, leading contractors and end users.

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