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Ticking all the boxes

CHALK HILL MEDIA

Colocation data centre providers always like to accentuate what makes them different – and in their view better – than the rest. It's a busy market out there with stiff competition, so this approach should come as no surprise. However, for the customer, wading through the marketing hype, Power Usage Effectiveness (PUE) ratings, uptime reports and sustainability credentials can be a minefield.

The fact is that no two data centres are the same, so assessing what's on offer can feel like a case of comparing apples and oranges. As difficult as the process may be it has to be done, so in order to help sort out the good, the bad and the ugly, Question Time's panel of experts have been asked to come up with the five key questions that an organisation should ask when selecting a colocation facility and explain why the answers are so important.

One of the areas identified is energy use and management and in this month's issue we have a special feature dedicated to this subject. John Booth of Carbon3IT explains why, in light of rising energy costs, the onus is on data centre owners and managers to reduce their energy consumption, while James Hart of BCS looks at why power is an ongoing challenge for data centres.

We also have a special feature dedicated to copper cabling standards, comprising two excellent articles. In the first, James Withey, liaison officer between IEEE 802.3 and ISO/IEC SC25 WG3, offers some helpful advice regarding how to keep up with the constantly evolving ecosystem of standards. In the second, I interview Valerie Maguire to find out more about her work in the development of cabling standards and some of the notable events she has witnessed.

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

Rob Shepherd
Editor

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Hire Ukrainian tech professionals to support the country urge IT bodies

Tech businesses in Ukraine are back to '90 per cent efficiency' and ready for new contracts and investment from the UK, according to IT associations in the two countries. IT Ukraine Association and BCS, The Chartered Institute for IT, have called on organisations around the world to give the country's tech consultancies serious consideration when tendering for contracts.

IT Ukraine Association and BCS say Ukraine computing specialists are open for business – and ready to fill the gap now that many western companies no longer work with Russian consultancies. IT

Konstantin Vasyuk

Ukraine Association added that the Russian cyberthreat was 'another myth which we have disproved again and again'. BCS has also offered any Ukrainian IT specialist membership without any cost, including use of space at its London office, networking and advice from its current members.

Konstantin Vasyuk, executive director at IT Ukraine Association, said, 'We are not asking for donations or charity – just for more trust in our ability to operate in the current situation. You see these awful pictures of destroyed buildings, but we have managed to save our business and our tech industry.'

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Construction's net zero ambitions are muddied by client apathy and cost constraints

NBS recently surveyed over 600 construction professionals about the sustainability of building projects in recent years. Considering the built environment is responsible for a quarter of the UK's carbon emissions, green achievements have gone backwards over the past decade, with only one in three construction professionals hitting eco-friendly targets on their projects, whereas 10 years ago it was around half.

One in five construction professionals never measure or report sustainability metrics on their projects. Related to this, more than half of respondents haven't worked on a net zero

Russell Haworth

project in the past year, and only four per cent have only worked on net zero projects.

Russell Haworth, CEO at NBS, said, 'Despite the climate emergency and the desire by people in construction to create greener buildings, there are key barriers to building more sustainably. The siloed and fragmented approach to construction projects is one issue and when this is coupled with a lack of client demand, inconsistent and unambitious government policy, along with data blind spots around construction product information, it's clear why we're not making greater progress.'

Kao Data launches pioneering STEM initiative for children to drive awareness of the data centre industry

Kao Data has launched the Kao Academy – a science, technology, engineering and mathematics (STEM) resource that is designed to engage children with the purpose and role of a data centre. Created in collaboration with Cambridge Science Centre, the Kao Academy will teach children aged 7-11 about the role of data centres, how they are designed, engineered and constructed, and explain both their importance and relevance to our everyday lives.

Delivered via an interactive website, the Kao Academy provides users with several dedicated resources including a

Adam Nethersole

live 'data crunching' game and a downloadable 'how to' pack, which children can download to build their own data centre. Participants can also download additional e-learning resources to learn and play.

'Data centres are instrumental to our way of life,' said Adam Nethersole, vice president at Kao Data. 'Despite this, general understanding and appreciation of data centres is surprisingly low. Through the Kao Academy our mission is to drive greater awareness of data centres and showcase the people who design, build and operate them.'

UTC Heathrow scoops prestigious education award

University Technical College (UTC) Heathrow was presented with the Education and Employment Project Award 2022 at the Datacloud Global Awards 2022. Launched in November 2021, the Digital Futures Programme saw a group of eight global digital infrastructure leaders collaborating to create the curriculum for 14-19 year olds. The result is the first education programme focused on digital infrastructure, with an objective of

introducing new talent to the industry.

Principal of UTC Heathrow, Wayne Edwards, said, 'I am very proud that UTC Heathrow and our Digital Futures Programme partners have received this award. The commitment from all the partners is clear in supporting the education of our students, to give them the right skills to succeed throughout the digital infrastructure industry. The Digital Futures Programme is great example of how education and industry are working together to address the skills gap in the digital infrastructure industry.'

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CityFibre recognised in The Times Top 50 Employers for Women for second year running

CityFibre has been recognised as one of The Times Top 50 Employers for Women in 2022. It is the second consecutive year CityFibre has received the award in recognition of actions taken to drive gender equality and empower women in the workplace.

Greg Mesch

The Times Top 50 Employers for Women is the UK's most highly profiled and well established listing of employers striving for gender equality. Run by Business in the Community (BITC) - The Prince's Responsible Business Network and The Times for more than a decade, the competitive process identifies companies which make gender equality part of the way they do business, working to embed it at all levels.

Greg Mesch, CEO at CityFibre, said, 'Creating and maintaining an inclusive and supportive culture is a central pillar in our strategy to help level up the UK's digital infrastructure. That's why we are thrilled to be recognised as a Top 50 Employer for Women for the second year running.'

More than half of CIOs and network engineers cite cybersecurity as the top risk in digital transformation

Network engineers and chief information officers (CIOs) think that cybersecurity issues represent the biggest risk for organisations that fail to put networks at the heart of digital transformation plans. According to research commissioned by Opengear, 53 per cent of network engineers and 52 per cent of CIOs polled in the US, UK, France, Germany and Australia rank cybersecurity among the list of their biggest risks.

Gary Marks

61 per cent of CIOs report an increase in cybersecurity attacks/breaches from 2020-21 compared to the preceding two years. For digital transformation of networking, 70 per cent of network engineers say security is the most important focus area, while 31 per cent say network security is their biggest priority.

'We have seen the importance of cybersecurity skyrocket for businesses as employees switch to working remotely and cybercriminals ramp up their activity,' said Gary Marks, president of Opengear. 'Forward thinking businesses understand the importance of investing more in security and ensuring it is woven more closely into the fabric of their networks and digital transformation efforts.'

Tech sector shows post-pandemic recovery with strong demand for skilled employees

The tech sector bounced back from the coronavirus pandemic bigger with a strong demand for skilled staff, according to figures released by BCS, The Chartered Institute for IT. It analysed figures from various sources including the Office for National Statistics and job sites.

Annette Allmark

Like many industries, the tech sector was hit by the economic downturn that followed the lockdown in spring 2020. The demand for IT specialists reached a low by the second quarter of 2020, then began to recover, according to BCS' new State of the Nation report on digital skills in the labour market.

According to the latest figures from the Department for Education, starts on digital apprenticeship routes in the first two quarters of the 2021-22 academic year were over 30 per cent higher than the equivalent period of 2020-21. Within this, advanced digital apprenticeships have seen an over 70 per cent increase, while higher digital apprenticeships have had a 10 per cent increase.

Annette Allmark, BCS head of apprenticeships, said, 'The speed of digital adoption and innovation has, unsurprisingly, put more emphasis on the need for digital skills, not only for those working directly in an IT and digital role but across the workforce as a whole. The pandemic has been a catalyst for change, and that change is here right now.'

Inside_Networks 2022 Charity Golf Day raises over £10,000 for Macmillan Cancer Support

The Inside_Networks 2022 Charity Golf Day raised over £10,000 for Macmillan Cancer Support. This impressive sum was the result of fantastic industry-wide support and a great day's golfing at the prestigious Hanbury Manor PGA Championship Course in Ware, Hertfordshire, which was followed by a three-course dinner, prize giving, auction and charity raffle.

With main sponsorship provided by LMG, Comtec, Excel Networking Solutions, Mills, ExcelRedstone, Computacenter and CNet Training, nearly 140 people turned out to make this year's event the best ever and it provided a welcome opportunity for all areas of the industry to network.

Inside_Networks
2022 CHARITY GOLF DAY 25TH MAY

Rob Shepherd, editor of Inside_Networks, said, 'Once again the industry put rivalries aside to raise a considerable sum of money for Macmillan Cancer Support. Raising over £10,000 for such a worthwhile cause highlights the generosity and kindness of those who attended. The event wouldn't have happened without such great support and I would like to extend my thanks to all the players and sponsors and, in particular, Andrew Stevens of CNet Training and Mark Cumberworth of Slice Golf and Events for their work in making the event such a success.'

A full review of the event will appear in the Aug 22 issue of Inside_Networks.

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NEWS IN BRIEF

Keysource has extended its consultancy offer to include detailed analysis on the sustainability and environmental impact of clients' IT hardware in their data centres. It follows a new partnership agreement with Interact, the specialist company that uses machine learning to deliver verifiable analysis of energy and carbon usage of IT hardware in data centres.

Bulk Data Centers has joined the German Datacenter Association (GDA).

Colt Technology Services and Equinix have announced the extension of their partnership by launching a new Colt point of presence (PoP) in Equinix's BX1 data centre in Bordeaux, with Colt using a diverse high optical fibre count to connect to termination points through Europe and beyond.

Steve Murray is the new president of the Electrical Contractors' Association (ECA). He has been an ECA council member since May 2014, having previously been a branch and regional chair for a number of years. Murray takes over the ECA presidency from David Lewis.

What's going wrong?

Hi Rob

As companies worldwide accelerate digital transformation initiatives and the capabilities in networking advance, the expectations and demands placed on the connectivity industry only grow. According to a MarketStudy Report, the market is projected to exceed $90bn by 2024 due to businesses seeking more network flexibility, new ways to modernise their networks and expansions to networking capabilities.

The industry could be perfectly positioned to embrace this growing responsibility but, unfortunately, is often held back by archaic, embedded and reasonably unchallenged attributes that have become synonymous with the sector such as service, accessibility and solution management. Such characteristics not only negatively impact the industry itself, but affect its customers more, as they are forced to accept these poor standards that ultimately impair their business function.

One problem that continues to pose challenges is the severe lack of service offered throughout the industry. I do not simply mean how helpful, interested, or knowledgeable company representatives are on the phone in moments of crisis but the lifecycle service as a whole.

In seeking a new connectivity product, a general lack of clarity, information and insight are provided to the customer. Ambiguity exists even amongst the buying decision factors – availability, specs and costs – let alone the features customers cannot consider themselves and must rely on the experts to steer.

Is the product the right fit for the organisation? Does it solve their digital transformation challenge? Is there something that would better suit their needs? What about cost efficiencies – is there a way to fulfil the customer needs that is more economical? Questions like these are rarely asked because there exists a passivity in settling for off the shelf products.

Poor service is visible beyond the product

design stage and encroaches into delivery and management. Extended lead times followed by slow moving implementation and lengthy set-up time scales make for a generally frustrating and bewildering customer journey.

Finally, management and maintenance of active services suffer from a lack of service. If and when connectivity is disrupted, it is the service provider's responsibility to proactively identify, communicate and solve the issue for the customer. In reality, clients experience disrupted services and immediately face a mountain to climb.

Time and resources lost spent identifying problems that should not be their responsibility result in loss of business opportunities and focus. As we have witnessed over the past two years, network adaptation and agility are critical business survival and growth. For those reliant on connectivity, poor latency, consistent network failure or murky and inappropriate services can guarantee loss or revenue,

reputation or worse.

We have, however, seen some developments in network service delivery caused by fierce competition in the wake of the coronavirus pandemic. Yet, as demand grows and requirements increasingly rest upon networks to be agile, lean and intelligent, it is simply not enough. Service should not be a response to disruptions in the market in any case. It should guide and be equal to the solution that is offered.

Conor Grant
01T

Editor's comment
It's difficult to argue with any of the points Conor makes here. The move towards digital transformation is changing the landscape dramatically but one thing that will remain consistent is the need for high quality service across all aspects of the procurement process. Those that fail to understand this are in for a rude awakening.

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Spoilt for choice

The data centre market is thriving and for users of these facilities there is no shortage of colocation service providers to choose from. Inside_Networks has assembled a panel of industry experts to each identify five key questions that an organisation should ask when selecting a colocation data centre
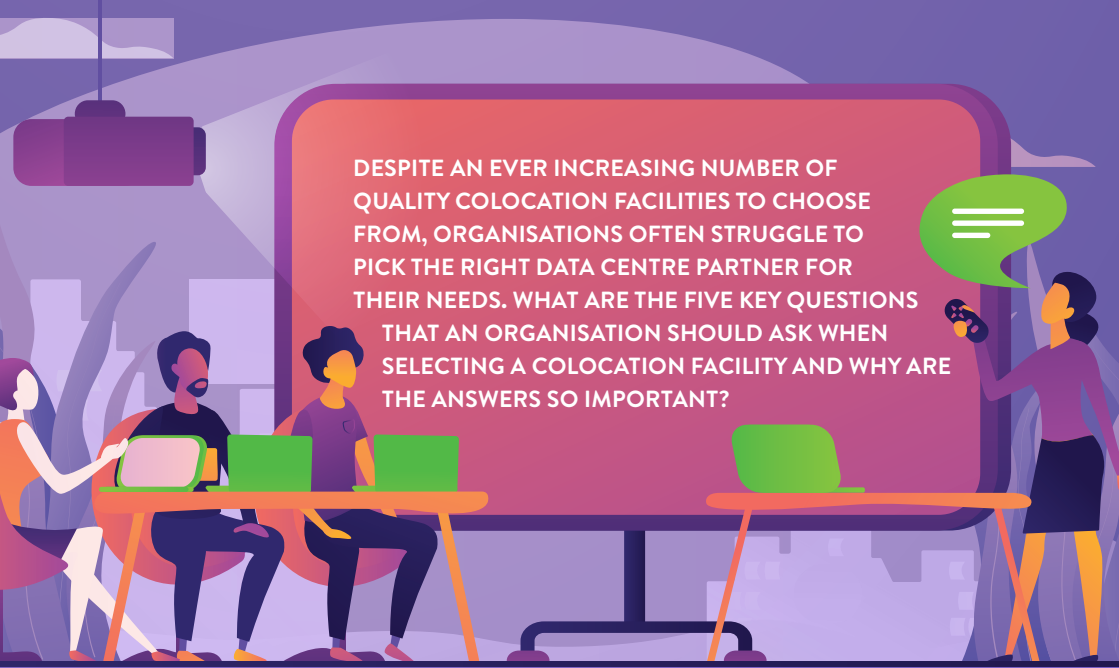
▶ The evolution of technology, along with the rapid growth in demand for data, has led to a massive increase in the number of colocation data centres across the world. In fact, the global data centre colocation market value is expected to reach $117.82bn by 2028, according to Grand View Research, and that's a lot of data centres.

While choice is a good thing, no two data centres are the same and there are significant differences in terms of what's on offer. Put simply, choosing a new home for your IT infrastructure isn't a simple decision and it's important to choose a service provider that operates to the highest standards and offers maximum levels of uptime, flexibility, scalability, reliability and technical support, along with a sustainable approach to what they do.

This process can be tricky, so Inside_Networks has assembled a panel of experts to each provide five questions that an organisation should ask when selecting a colocation facility. They also provide guidance that will help differentiate the good from the not so good.

Don't forget, if you have a question that you would like answered **CLICK HERE** and we'll do our best to feature it.

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DESPITE AN EVER INCREASING NUMBER OF QUALITY COLOCATION FACILITIES TO CHOOSE FROM, ORGANISATIONS OFTEN STRUGGLE TO PICK THE RIGHT DATA CENTRE PARTNER FOR THEIR NEEDS. WHAT ARE THE FIVE KEY QUESTIONS THAT AN ORGANISATION SHOULD ASK WHEN SELECTING A COLOCATION FACILITY AND WHY ARE THE ANSWERS SO IMPORTANT?

MARK ACTON
TECHNICAL CONSULTING DIRECTOR AT FUTURE-TECH

• What is the colocation facility designed to provide in terms of resilience and reliability?

This is not always evident, as some providers make claims that cannot be substantiated. An expert engineering based review of any potential sites is essential and remember that Uptime Institute Tier 3 determines the opportunity for concurrent maintenance, not site reliability.

• What is the maintenance history and the age/ condition of the critical infrastructure?

Would you buy a car without a service history or a check on the mileage? A data centre is no different. Critical infrastructure more than 15 years old and batteries that are more than seven years old are potentially problematic. Also, check the service records and incident logs to satisfy yourself that claims about uptime and availability are backed-up by evidence.

• Is there an active risk register?

If you are putting your business critical systems in a third-party colocation site, you are effectively buying an insurance policy. Has the provider considered all the risks your critical systems and services face, and is this continually updated and addressed?

• What service level agreements are they prepared to support and how are these worded?

For instance, compliance with ASHRAE TC9.9 environmental recommendations, as well as the relatively complex subject of power availability measurement. How and where are these measured and reported?

• What is the location and type of power available?

This is a significant area, particularly with the increasing focus on environmental, social and governance (ESG) issues, energy consumption and data sovereignty. These areas will be a matter of business requirements and corporate standards though, rather than the basic necessity for a data centre to maintain highly available 24x365 services. Energy consumption is still considered by many to be secondary to that primary requirement. The availability of 'green power' and cheap power are clearly important considerations but these are secondary to the first four items listed.

Do not be caught up in the rush for energy efficiency at the expense of service availability. Signs of adoption of energy efficiency best practices, such as the EU Code of Conduct on Data Centre Energy efficiency or EN50600-99-1 and 99-2, along with ISO 50000, are useful indicators in this respect though. Look out for these, or at the very least ask if your intended provider is aware of them.

> 'IF YOU ARE PUTTING YOUR BUSINESS CRITICAL SYSTEMS IN A THIRD-PARTY COLOCATION SITE, YOU ARE EFFECTIVELY BUYING AN INSURANCE POLICY.'

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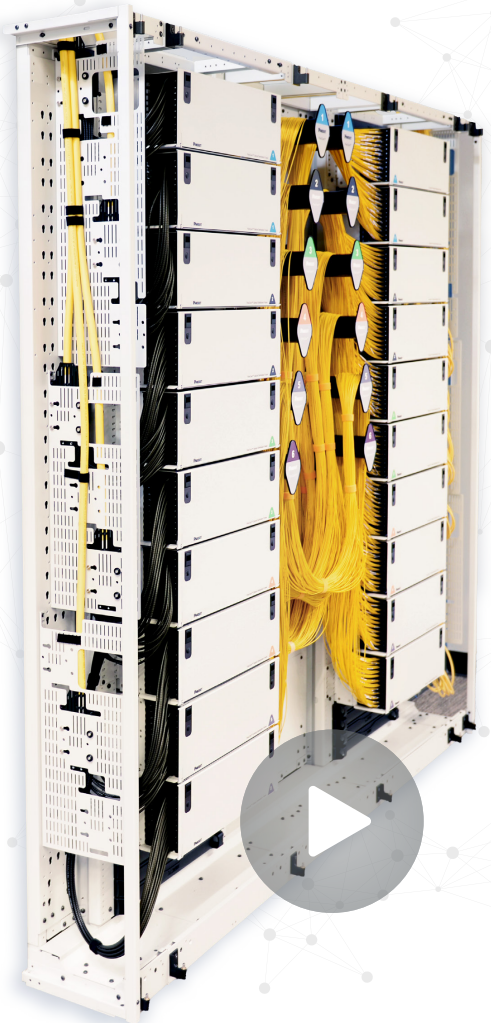
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  Design conditions and configuration specifics apply.

JOHN HALL
MANAGING DIRECTOR AT PROXIMITY DATA CENTRES

• **How can a colocation operator help enhance business efficiency, competitive advantage and customer experience?**
This is increasingly dependent on latency and, therefore, a data centre's location. The optimum location is essential in achieving faster response times by bringing operational data and key applications closer to employees, suppliers and customers.

A facility in close geographical proximity to the region/conurbation you are looking to service will offer much reduced latency and lower data transit costs compared to one based a couple of hundred miles away. An abundance of optical fibre connectivity to site is key and it should interconnect to the major network routes.

• **Is there full on-site support?**
You'll need transition and onboarding to help make the move as seamless as possible. Server migration services and a straightforward contract with a single set of service level agreements will be beneficial, especially if scope of services is tailored to suit regional demand. Having engineering expertise on hand to help configure and pre-test more complex environments and applications is also increasingly important.

• **What about the uptime record?**
The overall resilience of the critical infrastructure is all part of this. A facility designed to Uptime Institute Tier 3 offers greater assurance. However, not all facilities are equal, so it's still vital to check for documentary proof of uptime record, as well as the physical security, operational management, testing and disaster recovery regimes in place. Are recognised certifications such as BSI ISO 9001, 27001, PCI DSS in evidence and up to date?

• **What about the environment?**
The same goes for energy management best practice (ISO 14001) and environmental credentials, as use of 100 per cent renewably sourced power is now standard. Check the power purchase agreements and PUE rating. If the latter is more than 1.3 alarm bells should be ringing.

• **What about power?**
Get proof there's sufficient power to future proof your IT requirements over the next few years. Too many colocation facilities are being planned with little regard to power availability. There's a risk of them adding to the list of those already becoming power strapped in certain areas of the UK and Ireland.

> 'A FACILITY IN CLOSE GEOGRAPHICAL PROXIMITY TO THE REGION/CONURBATION YOU ARE LOOKING TO SERVICE WILL OFFER MUCH REDUCED LATENCY AND LOWER DATA TRANSIT COSTS COMPARED TO ONE BASED A COUPLE OF HUNDRED MILES AWAY.'

WILL SCOTT
SALES DIRECTOR AT TELEHOUSE EUROPE

With the right partner, colocation provides near perfect conditions for taking digital projects over the finish line. Here are the five key considerations:

• Connectivity
As organisations of all sectors, shapes and sizes rely on a complex ecosystem of partners to smoothly exchange data and deliver high quality services to end users, the level of connectivity that a colocation provider offers is crucial. A carrier dense colocation data centre that facilitates vital business interconnections, whether with major cloud service providers, internet service providers, application service providers or content delivery networks, will ultimately help an organisation create new business opportunities, open doors to new markets and enable growth on an unimaginable scale.

• Scalability
As businesses develop over time, they also need flexibility and scalability in their IT infrastructure to enable and support growth and future proof operations. Thus, alongside the freedom and opportunities to create strategic partnerships should be the ability to scale-up, expand rack footprint and benefit from greater bandwidth capacity.

• Security and compliance
Organisations should look to partner with a reputable colocation provider they can trust. As they house critical business systems, data centres must ensure that appropriate security accreditations, such as ISO 27001, and the highest levels of on-site security are in place, such as proximity access control systems or electronic access management.

• Trust
A trusted provider will offer a 24/7 support function and access to equipment at any time to facilitate critical repairs should the need arise, ensuring business continuity. Another crucial ingredient of trust is the financial stability of the colocation provider, as this provides organisations with peace of mind in the longer-term.

• Sustainability
Organisations should enquire about a colocation provider's green credentials. Sustainability and the commitment to net zero targets have increasingly become a dealbreaker for new business partnerships and end user decision making. Hence, it is key to explore whether a colocation provider uses renewable energy, is compliant with regulation and has adopted the appropriate international ISO standards in environmental and energy management to minimise the impact of their day to day operations and improve energy performance.

> 'AS BUSINESSES DEVELOP OVER TIME, THEY ALSO NEED FLEXIBILITY AND SCALABILITY IN THEIR IT INFRASTRUCTURE TO ENABLE AND SUPPORT GROWTH AND FUTURE PROOF OPERATIONS.'

ED ANSETT
FOUNDER AND CHAIRMAN AT I3 SOLUTIONS

Any simple search will outline the importance of location, connectivity, space, security and availability. All are important but the customer starting point should always focus on power. The most important questions to ask any prospective colocation data centre services provider should tell you everything you need to know about where the power resides.

Ask when the power chain was designed and whether it been modified since it was first commissioned? How old is the infrastructure? When was the uninterruptible power supply (UPS) installed? How often does it require maintenance? When is it due for refresh? What is the dedicated set-up for my data hall?

Equipment maintenance is disruptive and ageing equipment needs greater maintenance and is more prone to failure. Providers go to great lengths to describe uptime in particular terms but planned downtime for equipment maintenance and repair can be seriously disruptive.

Ask when was the last outage? How did the UPS perform? What type of energy storage is used? How long is the battery time? How often is it called on? During the last outage did the gensets start? How long did they run for? On average, how many hours do they run annually?

Does your chosen colocation provider measure its carbon footprint for every site? How is it being measured? What reports does it provide to customers? Does it issue annual sustainability reports? What power purchase agreements (PPAs) does it have in place? Has it signed the Carbon Neutral Data Centre Pact?

These are challenging times for all energy intensive businesses such as data centre providers. In energy efficiency and sustainability reporting terms colocation providers are coming under more scrutiny. In uncertain times it is vital to have candid energy conversations with your colocation provider before applying ink to a contract. The best colocation providers are committed to openness and transparency, and you can measure this by asking first about power.

> '**IN UNCERTAIN TIMES IT IS VITAL TO HAVE CANDID ENERGY CONVERSATIONS WITH YOUR COLOCATION PROVIDER BEFORE APPLYING ANY INK TO A CONTRACT. THE BEST COLOCATION PROVIDERS ARE COMMITTED TO OPENNESS AND TRANSPARENCY, AND YOU CAN MEASURE THIS BY ASKING FIRST ABOUT POWER.**'

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SPENCER LAMB
CHIEF COMMERCIAL OFFICER AT KAO DATA

Data centres have experienced a complete evolution in high performance design. However, customers can be left with a plethora of operators from which to choose. Outside the realms of industry accredited standards, such as being Uptime Institute accredited (or equivalent) or NVIDIA DGX-Ready certified, there are key questions any customer should ask of its operator.

Firstly, what's the facility's Power Usage Effectiveness (PUE) rating? With current energy prices experiencing extreme volatility this question has never been more crucial. The more energy efficient a data centre is, the lower your energy costs will be. A PUE of 1.2 or less demonstrates that for any critical environment the majority of energy is targeted to the servers, and not wasted cooling inefficient infrastructure.

Secondly, with supply chain and sustainability a key focus for end users, the next question any business must ask is if the energy is contracted from 100 per cent renewable sources? The use of renewable power has a strong correlation with an operator's sustainability credentials, in turn helping the customer to reduce its carbon footprint and improving its environmental, social and governance (ESG) credentials. This is increasingly important for customers and shareholders.

Thirdly, if you are working within the specialised fields of artificial intelligence and machine learning, is the facility engineered to support the bespoke requirements of high performance computing? Fourthly, can the technical team support users throughout a complex deployment process? Here it is essential that the operator truly understands the needs of the user application and can help them design and test the system prior to deployment, as one size does not fit all.

Use of digital twins will allow the user to build customised architectures, modelling them under various conditions to ensure that performance, efficiency and sustainability criteria are met prior to installation. Bespoke designs may also be required, including the ability to host small pods, technology cells or large technology suites.

Fifth and finally, is the data centre carrier neutral or Megaport enabled so users can choose their connectivity or use rapid on-ramps into the hyperscale clouds to enable hybrid computing? Low latency connectivity, dedicated dark fibre and superfast cloud connections are fundamental prerequisites for any business. This is essential for any operator hoping to exceed customers' requirements for data transport, processing and development.

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'A PUE OF 1.2 OR LESS DEMONSTRATES THAT FOR ANY CRITICAL ENVIRONMENT THE MAJORITY OF ENERGY IS TARGETED TO THE SERVERS, AND NOT WASTED COOLING INEFFICIENT INFRASTRUCTURE.'

DARREN WATKINS
MANAGING DIRECTOR AT VIRTUS DATA CENTRES

It has long been understood that data centres are the backbone of the digital economy. More recently, they have been further recognised for providing a crucial service in the face of unforeseen challenges. Organisations can't take any risks with their data centre partners, with whom they entrust this critical requirement. Finding providers that can be trusted to deliver robust, efficient and scalable facilities has never been more important. Here are five key questions organisations looking for a data centre partner should ask and the things to look out for.

• Does the provider deliver a reliable service?
Ensure that your partner can provide a flexible and scalable service with enough capacity for your digital requirements and the ability to adapt to continually changing needs.

• Is the provider responsible?
Ensure that your provider is committed to delivering a 'cradle to grave' sustainability strategy, where environmental ambitions are built into every step of the data centre – from design to construction to operational management. Check it is a trusted provider and look for proof and transparency such as third-party certifications and industry standards.

• Is the facility resilient?
Ensure that mitigating processes are in place in case things go wrong. Check the monitoring, reacting and operating procedures so that when disaster strikes your provider can act swiftly and effectively to overcome unforeseen circumstances. Only providers with years of experience can build robust processes, tried and tested in live scenarios, to ensure the best possible levels of service.

• Is the facility secure?
Physical security is critical to ensure your most valuable assets are safe from corporate espionage, terrorists, natural disasters and thieves. Maintaining service availability is paramount – providers must provide 100 per cent uptime, keep unauthorised people out of the facility and ensure that the precious data housed inside is protected.

• Where is the data centre located?
In theory, a data centre can be built anywhere with power and connectivity but, in reality, location has an impact on the quality of service. A good location means an optimised infrastructure and application environment. On the flipside, poor location can result in unstable connections and efficiency problems.

'MAINTAINING SERVICE AVAILABILITY IS PARAMOUNT – PROVIDERS MUST PROVIDE 100 PER CENT UPTIME, KEEP UNAUTHORISED PEOPLE OUT OF THE FACILITY AND ENSURE THAT THE PRECIOUS DATA HOUSED INSIDE IS PROTECTED.'

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AEM and Mayflex – delivering es
testing for all intelligent/smart b

When assessing the challenges of a typical internet of things (IoT) roll-out, the biggest hurdle usually isn't how to connect IoT devices to the local area network (LAN). Instead, getting power cheaply and reliably to the device is often a far more difficult problem.

Future growth
The use of power over Ethernet (PoE) in our buildings is set to grow enormously in the future, with applications such as smart PoE lighting, sensors that detect
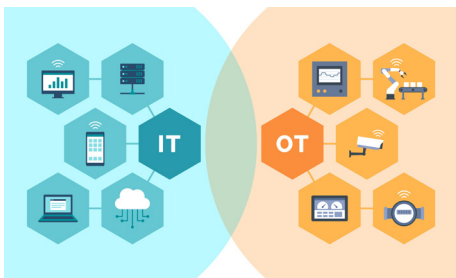
how a building is being used, IP cameras and building management systems, all becoming united and running over the same Ethernet network. The new Single Pair Ethernet (SPE) standards will further accelerate these systems, as this technology will dramatically reduce the cost of installation.

PoE has become a must have technology for virtually every enterprise and industrial IoT rollout. That said, PoE installations come with their own set of unique challenges.

Testing times
The big question is how do you know that your switch is supplying sufficient power to your device?

Most testers only test resistance unbalance, which just verifies that the cable will be suitable for PoE applications. This test does not tell you what the true power being delivered to your RJ-45 outlet from the switch is. Without this critical information, how can you be certain current and future PoE enabled devices will operate over your network? Why should you accept a general 'suitability' test when you can undertake a full PoE load test?
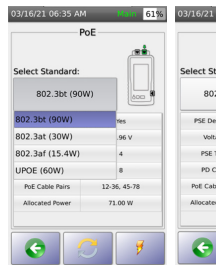
When looking at copper cabling for both Ethernet transport and PoE, placing an AEM TestPro CV100 in your contractor's hand is the best way to ensure that your cable infrastructure will work as intended. The AEM TestPro CV100 can fully certify new and existing cabling to meet the cable manufacturer's warranty standards.

The real deal
PoE load test validates the real power received at an end point device. Doing so ensures the cabling – and the install – have been properly completed and ready for production use. Tests not only verify that cabling can operate properly

ssential PoE
uildings

f award winning testers with multiple features and benefits.
usively through Mayflex in the UK

up to multi-gigabit speeds – but also that sustained PoE load validation tests have been performed up to 90W per cable.

To make sure you are equipped to take advantage of the many opportunities that smart/intelligent buildings can provide, you need to check whether your current tester can measure PoE usage under load at the outlet and determine the power being delivered.

Is your current tester ready to measure SPE, a now ratified standard coming to an IoT network near you soon? Can your tester generate reports showing PoE and SPE performance? If not, the AEM TestPro range can.

Finally, there will be a demand for real PoE load tests to be carried out in buildings, which will create another revenue stream for your business.

CLICK HERE to find out more about the AEM test and measurement products available from Mayflex.
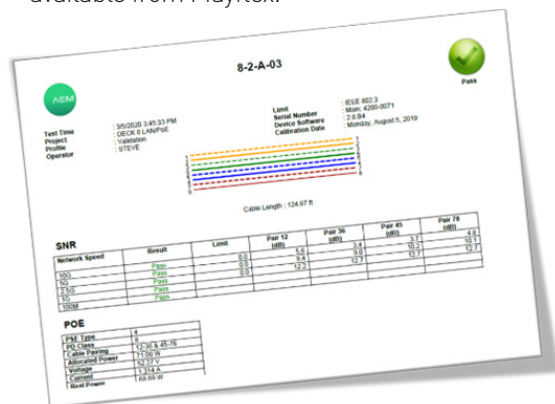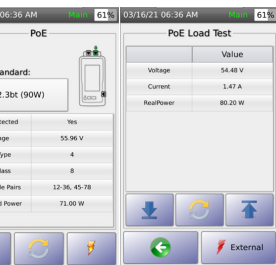
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For more information about Mayflex **CLICK HERE,** call our sales team on 0800 757565 or **CLICK HERE** to send an email.

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Centiel expands its Swiss manufacturing facility to support continued growth

▶ Swiss based uninterruptible power supply (UPS) manufacturer, Centiel SA, has announced plans to expand its manufacturing facility. This is in order to support continued growth in demand for Centiel's existing product family and to accommodate a new production line.

Centiel designs, manufactures and delivers industry leading power protection products for critical facilities worldwide. The company's range of class leading, energy efficient UPS systems offers the highest availability and reliability, developed by the innovators of the industry's first transformerless UPS and the world's first three-phase modular UPS. Centiel's network of channel partners and subsidiaries is also growing, providing class leading power protection products worldwide.

Filippo Marbach, founder of Centiel SA, said, 'The continued and rapid rise in data use has meant more data centres are being developed and they all need quality, critical power protection provision. We originally took over our current factory based in Lugano, Switzerland, in 2018. We have expanded and extended its capacity to meet increased global demand for our leading UPS products.'

Centiel has also increased its sales, technical support and operational teams over the past few years and therefore added to the office space to accommodate its larger team. The factory also incorporates Centiel SA's global headquarters, houses research and development (R&D), production, final test, sales and marketing, logistics and finance departments, in addition to carrying out quality control of all Centiel's UPS products.

Marbach concluded, 'It is an exciting time in the development of the Centiel brand across the globe and we look forward to continuing to lead the world in the development of critical power protection equipment for the data centre industry and beyond.'

To find out more **CLICK HERE.**
www.centiel.co.uk

Mayflex headquarters undergoes complete transformation

Mayflex has recently completed a transformation of its offices and meeting rooms, as staff return to a new hybrid way of working. Towards the end of last year, the decision was taken to completely refurbish the offices and meeting rooms at the head office to create a fresh and inviting place for staff to work from and bring customers and vendor partners into.

Tracey Calcutt, Mayflex's marketing manager, said, 'We now have a fresh space to allow for collaboration, creativity and the bringing together of different teams and people in one safe place. Our teams are working either two or three days a week in the office, which now has 60 hot desks, including several standing desks, which are bookable via an app.

The upstairs office space has numerous informal meeting areas where associates and teams can have discussions or meetings.'

Virtus Data Centres appoints Mike Golding as senior vice president of design and build

Virtus Data Centres has appointed Mike Golding as senior vice president of design and build. Reporting directly to CEO, Neil Cresswell, Golding will be a key member of the leadership team, responsible for all aspects of the design and construction of Virtus' data centres.

Having worked in the construction industry for over 30 years, 20 of which have been spent in the data centre industry, Golding brings a depth of experience that is hard to match in the sector. He has delivered over 750MW of capacity for lease providers and self-build programs of work during this time.

Mike Golding

Golding said, 'Virtus Data Centres has an unprecedented reputation in the industry and I am proud to be joining the team at such an exciting time of expansion. I am looking forward to leading the design and construction of the company's facilities both in the UK and new geographies. With an objective to always provide the best in data centre technology, we are in an ideal position to support our customers with the vast opportunity that digital infrastructure brings.'

Vertiv makes new appointments to its senior marketing team

Vertiv has appointed Rainer Stiller as chief marketing officer and Vicente Chiralt as vice president of marketing for the Europe, Middle East and Africa (EMEA) region.

Stiller joined Vertiv in 2017 as vice

Rainer Stiller

Vicente Chiralt

president of marketing for EMEA, and was later promoted to vice president global channel marketing. In his new role he will lead Vertiv's marketing organisation as it continues its vision of providing customers with a more innovative and personal digital marketing experience.

Chiralt has been promoted to his new position after four years with the company. He was previously senior director of the field and channel marketing teams for the region, leading the successful execution of demand generation, channel development and brand awareness programs.

'I plan to help Vertiv and our marketing team become even more creative, purposeful and analytically driven in our efforts to reach and engage with our customers,' said Stiller. Chiralt commented, 'We are at a unique moment for our industry, which plays a vital role in the digitisation process of society. I am pleased to take on this responsibility and work with my team to further boost our leadership position in this technological wave.'

CHANNEL UPDATE IN BRIEF

STL Sterlite Technologies and Dunasfern have agreed a new distribution partnership. STL's leading edge data transmission solutions in optical fibre and copper are now backed-up by local service and support from Dunasfern.

Juniper Networks has named the Nuvias Group as its EMEA Distribution Partner of the Year 2021.

NetApp has appointed Giovanna Sangiorgi as senior vice president of EMEA and LATAM. Her appointment is part of the ongoing evolution of NetApp's sales organisation to accelerate cloud led growth.

Ronald Monster has become chief executive officer at Asperitas. The strategic development within the management team follows a major milestone with a new investor.

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How on earth am I supp
to know all this stuff?

This is the question that many people ask when it comes to copper cabling standards. James Withey, liaison officer between IEEE 802.3 and ISO/IEC SC25 WG3, offers some helpful advice

▶ Copper cabling is alive and well, with standards on the horizon that will add important guidance for new technologies. But in the constantly evolving ecosystem of standards, where tracking all the new editions, revisions and amendments can be a daunting task, we all ask ourselves how we can find the latest information – and the answer may be a little easier than is often thought.

NEED TO KNOW
The truth is that no single person knows every aspect of copper standardisation to the last detail of every document because there are simply too many documents across too many areas of expertise. We all rely on each other to provide knowledge in our areas of experience to support the installation as a whole, and keep up with the standards that all link together to provide the premises owner with the cabling installation they need.

So the answer is not so much 'how do I get to know all this stuff?' as 'who knows some of this stuff, and where do I find them?'

STARTING POINT
The problem of where to find the right help has been recognised by the ISO/IEC. Work has begun on a project to

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osed provide guidance regarding the experience and capabilities of a broad range of stakeholders. It will cover the whole installation process.

While the title of ISO/IEC 14763-5 will be Sustainability, this document covers a great deal more than just the reduction and recycling of waste materials –although that is included too. It also provides guidance regarding cabling design selection criteria, packaging and transport, installation, operation and maintenance and, perhaps most importantly, guidance for the training objectives needed to demonstrate skillsets in these areas. In this way, it will help find the right people with the right skills to keep installations running on time and operating at their maximum potential.

SMOOTH OPERATOR
Staying with standards that help make sure installations run smoothly, it has been agreed to start work on an update to ISO/IEC 14762-2, the planning and installation document. The main focus for this update is to add requirements related to the emerging classes of single pair cabling.

This update will include changes to the remote powering classes needed to support the new currents from IEEE 10BASE-T1L Single Pair Ethernet. These new classes can power devices at a higher current than the currents that were considered for the 4-pair classes covered by the latest edition. This means correct identification of the remote powering class of the cabling continues to be an important consideration, even more so when looking to create a channel from a mix of multipair and single pair cabling.

Looking for those with a good knowledge of the base documents for generic cabling is another way to identify the support you may need. For 4-pair cabling there has been little change over the last few years and designers, installers and manufacturers familiar with ISO/IEC 11801 or the TIA 568 series of documents can help point you in the right direction. However, for single pair cabling there has been a lot of work in recent years, and new documents are beginning to emerge from the publishing departments of the standards organisations.

THE NEXT BIG ONE?
Development of the standards for single pair cabling has been the primary workload in standards committee meeting rooms for the last few years, and these documents are now starting to be published. One of the first key documents was for industrial premises, and last year saw the publication of ISO/IEC 11801-3 Amd.1, which covers configuration and specification of single pair cabling in factories and other hazardous environments.

TIA is also working on a similar document – TIA 568.7 – which should be published before early next year. For these kinds of installations, which historically have been dominated by fieldbus and, more recently, Industrial Ethernet, Single Pair Ethernet unites the reach and simplicity of the former with the features and network integration of the latter. It presents an attractive proposition that can be checked for compliance and may not need re-cabling, or can be supported by the new classes of generic cables.

FIRST CLASS
For other environments, TIA was the first to publish its main introduction to single pair cabling with publication of TIA 568.5. This new document includes the new

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Class SP1 that will work for applications like 10BASE-T1L for lengths up to 1000m and has subclasses for lengths of 400m, 250m and 100m.

'The truth is that no single person knows every aspect of copper standardisation to the last detail of every document because there are simply too many documents across too many areas of expertise.'

In all cases these use the new IEC 63171-1 connector, offering a much smaller form factor and hence higher density in the patch panel. This offers the same advantages for the industrial premises extending into building automation, smart building system sensors, heating, air conditioning and ventilation, and a whole range of other low data rate, long length applications. The TIA standard will also be backed-up by a field testing standard for single pair cabling, which is due to be published in the second quarter of this year.

The ISO/IEC version, ISO/IEC 11801-1 Amd.1, is also moving forward and presents an even wider offering. In addition to Class T1-A, similar to the TIA SP-1 class, it will provide specifications for two new 100m classes that will operate at a higher frequency that could be exploited by the next generation of application designers.

TAKING YOU HIGHER
Those who feel that 10Mb/s is not enough may be happy to learn that there has also been development in making a higher capacity version of Single Pair Ethernet, with IEEE approving a project for a version for 100Mb/s with a reach objective of 500m. This is still at an early stage and it may take several years to get a completed standard. During that time, it may be necessary to provide new content to

the ISO and TIA cabling standard to support this application, which is all part of the ongoing evolution of this new technology.

One other area that is being addressed by both TIA and ISO for Single Pair Ethernet is that of cable heating. ISO/IEC 29125 and 14763-2, and TIA TSB 184 are being updated to consider the thermal effects of running up to 2A on the pair. In some cases, where factors like low copper size or thermal rating further reduce the allowed bundle size, such current may not be supported in all conduit types. Where the cabling has been specially designed for single pair application this will not cause any issues, but the new standards will give guidance and restrictions for all cabling types, and your local friendly cabling supplier or installer will be able to help with the details.

NOT JUST COPPER
Some developments are not just related to copper. For example, the project to provide requirements for infrastructure security in ISO/IEC 24382 (and its American cousin TIA 5017-A) is as relevant to other media types as it is to copper.

This project addresses physical security practices to protect your network, with the objective of making it easier for the premises owner to keep their data safe. Building on the base level of security covered by ISO 14763-2, this document helps plan and implement a network where the cabling is not accessible to unauthorised access even from within the building, and covers all aspects from basic locks to the routing of pathways and spaces, as well as controlling access to

rooms, buildings and the perimeter. The document is based on a risk assessment approach and provides four levels of security – open, restricted, highly sensitive and critically sensitive – allowing the network owner to decide the level of protection they need at different parts of the installation.

WHO CAN I ASK?

One part of the answer is that all standards bodies have publicly available information and the outline of every project is recorded and documented for anyone to see – even if they are not members of the committee. However, wading through this content can sometimes be both time consuming and confusing, so we should keep in mind that we can always reach out to experts in those fields who are closer to the information.

Designers, installers, cable vendors and equipment suppliers are normally very receptive to receiving questions regarding how the latest standards affect their products or services, and many have websites filled with articles, white papers and blogs describing the latest developments and even contact details to ask further questions. These sites are a fantastic resource and an internet search for your favourite vendor with a 'standards update' will take you direct to the latest announcements and reviews.

HELPING HAND

Combining public information with the articles and editorials in Inside_Networks and other industry journals is a great way to find information about what is going on in standards. Extra help is always on hand to get you the information you need. ∎
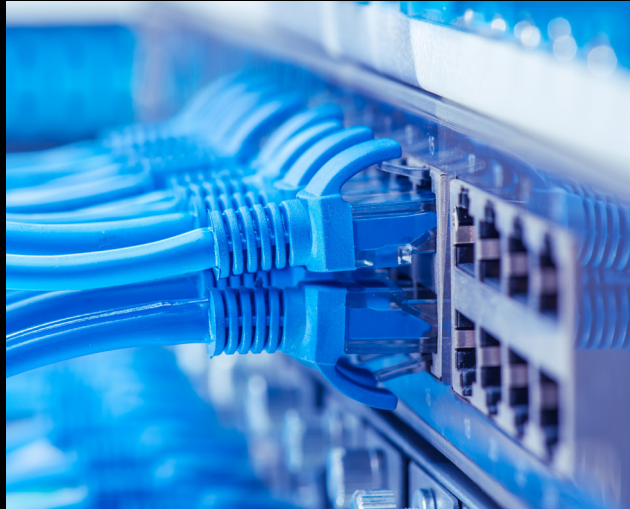
JAMES WITHEY

James Withey is a principal engineer at Fluke Networks. He has over 20 years of experience in the testing of cabling systems and he has been involved with most international standard bodies including TIA, ISO/IEC and IEEE. He is the liaison officer between IEEE 802.3 and ISO/IEC SC25 WG3.

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www.comtecdirect.co.uk

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HellermannTyton

Having said goodbye to Category 5e in 2020 and the Deca10 keystone jack earlier this year, HellermannTyton's Category 6A solution includes the new Cat6A jack, panels, cable and patch leads. The new jack is designed to be tool-less and does not require any specialist termination tools. The Cat6A panels come in both flat and flat angled versions.

HellermannTyton also has a comprehensive range of category panels and outlets, along with a selection of LC and Euro modules, faceplates and backboxes. Products are supplied in plastic free packaging where possible, so the company can do its bit for the environment and planet.

To find out more **CLICK HERE.**
www.htdata.co.uk

Excel Networking Solutions

Excel Networking Solutions offers one of the most comprehensive ranges of copper cabling solutions – supplied in 100 per cent plastic free packaging. Inclusive of Category 5e, 6, 6A, 7A and 8 copper cable classes, Excel's structured cabling products constitute an end to end solution where performance and ease of installation are prerequisites.

With multipacks of keystone jacks, customers can save up to 60 per cent off their preparation time. Each tray of 24 jacks is supplied in a simple 100 per cent recycled and recyclable cardboard tray, as opposed to individual single use plastic bags.

By choosing the Excel multipacks it's quicker to install, easier for engineers on-site, lowers installation costs, reduces the waste on-site and is 100 per cent recyclable. Watch this video for more information.

CLICK HERE for more details about Excel Networking Solutions' copper cabling products and **CLICK HERE** to view the dedicated Excel Copper Catalogue.
www.excel-networking.com

Corning Optical Communications

Corning Optical Communications offers a comprehensive range of products for all copper cable requirements. This includes Category 5e to Category 8 shielded copper cable solutions (U/FTP, F/FTP and S/FTP) and UTP cables from Category 5e to Category 6A.

From Category 6 upwards, Corning offers a number of B2ca products. These meet the highest standard of the Construction Products Regulation (CPR) for telecommunication cables intended for permanent installation inside of buildings and construction works.
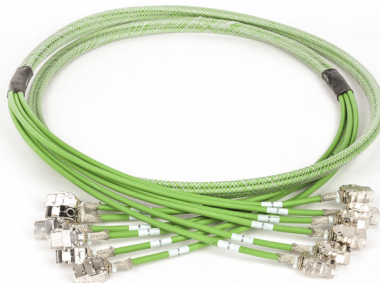
Corning has also recently expanded its range of pre-connectorised copper solutions to include the Everon Copper Datacom VOL footprint. Category 6 UTP trunks, using the V250U jack, are available now in 6x4 pairs. Category 6A VOL solutions, using the V500S and V500U jacks, are also now available in shielded and unshielded options. Trunk lengths of up to 10m can be ordered.

For more information contact your distribution partner or **CLICK HERE.**
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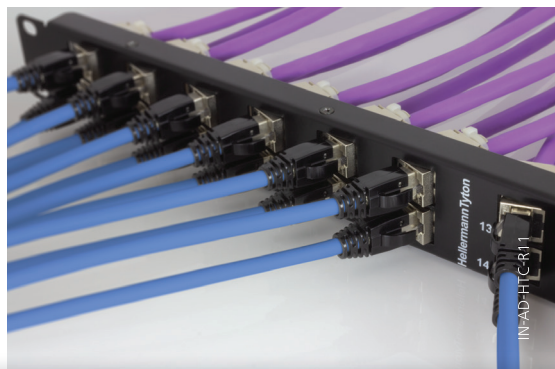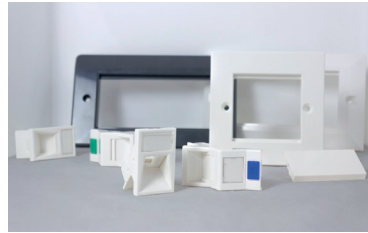
Game changer

Throughout her career Valerie Maguire has played a prominent role in the development of cabling standards. Rob Shepherd recently caught up with her to find out more about her work in this area and some of the notable events she has witnessed

▶ **RS: As someone who was involved in the creation of Ethernet and structured cabling as we now know it, what did you hope to achieve in those early days?**

VM: Three decades ago structured cabling was in its infancy. Ethernet developers realised success in pushing low speed data over existing plain old telephone service (POTS) cabling. However, competing technologies, such as DECnet and Token Ring, were also gaining traction as early options for local area networking. As an industry, we were aware that improving the bandwidth capabilities of the POTS media and identifying a generic standardised infrastructure would both be necessary to truly drive adoption of 4 pair cabling and Ethernet.

My contributions to these early activities included engineering solutions that raised the metric for 100 ohm balanced twisted pair

components from 'meets continuity requirements' to having to satisfy a wide range of signal strength, echo and noise parameters to support bandwidth needs. Advancements included introducing printed circuit boards with noise cancelling abilities into telecommunications outlets, and developing test and qualification methods to ensure consistent modular plug terminations on patch cords.

In those early days Moore's Law drove the evolution of copper cabling systems. So, while on the cutting edge of technology, we knew even in the mid-1990s that the 100MHz of bandwidth provided by Category 5 cabling wouldn't satisfy the 'need for speed' for very long. The unmitigated success of structured cabling rests squarely on the shoulders of early telecommunications pioneers such as John Siemon, Paul Kish and Masood Shariff, who developed and introduced the 100m, four connector topology into the first edition of TIA 568 back in 1991.

RS: Did you have any idea that your work would prove so instrumental in people's lives?

VM: I never doubted

that data networking systems would be fundamentally even more necessary for making personal and professional connections than the telephone. Like air and water, data networking technology needed to be ubiquitous and essential!

I think the true surprise was how much industry recognition contributing to the development of telecommunications standards would bring. All we were trying to accomplish was easy, reliable and fast access to data, and here we were appearing in magazines, on stages at conferences and in webinars. I would never have thought that the trusted voices of so many IT subject matter experts would resonate so loudly in the industry!

RS: Has network infrastructure technology developed in the way that you thought it would and what have been the biggest surprises along the way?

VM: Many of us probably never considered how clever the application of ringer and battery voltage on telephone cables was back in the day. In fact, it's notable that it took so long for DC voltages powering other devices to start coexisting with data signals on the same wire pairs. The emergence of the first power over Ethernet (PoE) protocol in 2003 really excited the networking world and contributed greatly to sustaining the telecommunications industry through the recession that held us in its grip from 2007 to 2009.

I'm still surprised that there's still so much resistance to shielded cabling. Category 8 is only available as a shielded solution, emerging Single Pair Ethernet (SPE) technologies benefit from a shielded conductor, Ethernet ports on IT equipment are shielded – and the list goes on. Shielded systems eliminate the need to engineer designs that cancel crosstalk and offer so much more performance headroom, along with other physical and mechanical benefits.

RS: How and why did you decide to dedicate so much of your career to standards development?

VM: Designers and specifiers following the requirements and best practices described in telecommunications standards can be assured of a networking ecosystem that's reliable, repeatable and interoperable. The consensus based process by which these standards are developed requires negotiation and collaboration between experts and stakeholders in the industry.

The benefits of contributing to standards development run the range from being able to work alongside world class transmission and subject matter experts to having the ability to influence how emerging application needs drive cabling innovations. Immersion in standards is an ideal way to gain insight into where the market is going, as well as what our competitors are doing.

It's important to recognise and appreciate that, even though we are individually called volunteers, the

'While I'm not convinced that copper media more advanced than Category 6A or Category 7A is on the horizon, I do believe that there may be an opportunity for higher throughput using the "quiet pairs" in existing 4-pair constructions.'

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community of standards contributors wouldn't exist without the support and financial backing that we receive from our corporate benefactors. I've always enjoyed the many facets of standards participation and considered myself extremely fortunate to have been able to contribute to the industry in such a meaningful way.

RS: Do people take enough notice of standards and would one set of global cabling standards make life easier for everyone?

VM: The industry and end user community used to be highly tuned into the standards because the information was new and compliance was required to ensure support of emerging technologies. Today, it seems that there is a high comfort level with the baseline requirements – standards only receive attention when something doesn't work as expected, or there are newsworthy updates such as the introduction of a minimum of two drops to each wireless access point that's being rolled out in the TIA premises standards.

While the initial thinking may be that one set of global telecommunications standards would simplify deployments, this may be a case of being careful about what one wishes for! It's important to realise that standards are developed via a consensus process that is different for the North American TIA standards association (one vote is assigned per member company) and the ISO/IEC international standards organisation (one vote is assigned per member country). Regional standards do ensure that requirements are optimised for the primary users of the documents.

RS: How do you see the world of copper cabling standards developing over the next few years and what would you like to see happen?

VM: I think there are lessons to be learned from looking at how the industry arrived at where we are today. As in the 1980s, we have a strong and robust infrastructure in place that's likely underutilised. I believe the developing SPE protocol has much to teach us regarding enhanced encoding and there are likely more sophisticated signalling protocols than pulse amplitude modulation that can better utilise available bandwidth. I also think there are opportunities for improvements in form factor and administration.

There is still a huge potential for convergence of traditionally separate and siloed applications on to the Ethernet platform. However, I think we, as an industry, can't forget the success of the generic structured cabling topology. The specification of application specific reaches and topologies for various protocols – think 10BASE-T1L and 100BASE-T1L SPE and Ethernet over multimode optical fibre – may be a risky step back towards proprietary implementations. Our customers have always appreciated and valued that one generic infrastructure will support multiple

> 'I believe the developing SPE protocol has much to teach us regarding enhanced encoding and there are likely more sophisticated signalling protocols than pulse amplitude modulation that can better utilise available bandwidth.'

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generations of active equipment and devices.

RS: What will be the next big development to affect the network infrastructure sector?

VM: At some point I feel that system designers will need to go back and look at the wiring of the RJ-45 modular plug. The 'split pair' (the pair terminated on pins 3-6) introduces significant transmission performance degradation that is a real challenge to address by cancellation circuits in modular plugs and outlets.

Traditionally, there has been reluctance to deviate from the T568A/T568B wiring schemes primarily for reasons of backward compatibility. But what if we use the lessons we're learning about SPE communication to create a new high speed 2-pair (transmission over the pairs terminated on pins 1-2 and 7-8) or 3-pair (transmission over the pairs termination on pins 1-2, 4-5, and 7-8) protocol?

A fully shielded cable would reduce internal and external noise coupling to virtually zero levels. And, perhaps, the pair terminated on pins 3-6 could be used exclusively for DC power or low speed control transmission? While our structured cabling ecosystem is popular, it has inherent deficiencies that are rooted in the past.

I really do think it's time for the industry to reconsider some of the design limitations that we've struggled with over the decades in light of the advancements we've made in recent years. While I'm not convinced that copper media more advanced than Category 6A or Category 7A is on the horizon, I do believe that there may be an opportunity for higher throughput using the 'quiet pairs' in existing 4-pair constructions.

RS: Is the issue of diversity in the sector being successfully addressed? What would you like to see change in this respect?

VM: Diversity, inclusion and equality are extremely important to the success of any organisation or industry. A diverse workforce means more opinions and perspectives on how to solve a problem and more opportunities to learn new ways of thinking and finding solutions. It's been my personal experience that the technology leaders and innovators in the IT industry products are extremely progressive and inclusive. Folks willing to roll up their sleeves and get their hands dirty have always been welcomed!

RS: Based on your experience what advice would you give someone entering the network infrastructure sector?

VM: I can't imagine how difficult it is to be a young person navigating entry into the corporate world today. In the early stages of my career, I remember anxiety about making ends meet and what might happen if I made a serious mistake, proposed something foolish or got stage fright.

After three decades of experience, I'd first advise what might feel impossible – try to worry less because life is short and things do tend to always work out for the best. Then, practically, make it a priority to find a career with a company where your co-workers and peers are talented and passionate about life and work. Never stop learning and don't be afraid to say, 'I don't know, can you explain that to me?'

Step up and challenge yourself to write that blog, put together a standards contribution, or submit a session abstract to a conference committee without being asked. And, finally, stay confident with these sage words passed along to me by John Siemon, 'If they're not talking about you, then you're not doing your job!' ■

Quick clicks

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

How Far Can You Go With Top-of-Rack? is the question posed in a blog by Ryan Harris of **Siemon. CLICK HERE** to find the answer.

The **Uptime Institute** has launched Digital Infrastructure Sustainability - A Manager's Guide – a landmark report series laying out guidance to propel data centre sustainability forward. **CLICK HERE** to read it.

Ethernet Alliance has produced The Voices Of Ethernet – a collection of spoken records with the people behind Ethernet's story, with engaging personal accounts of pivotal events and major milestones.
To visit the website **CLICK HERE.**

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FOR A FREE SUBSCRIPTION TO Inside_Networks CLICK HERE

The Terabit BiDi MSA For Data Centers is a blog from Earl Parsons of **CommScope.**
CLICK HERE to read it.

i3 Solutions and the EYPMCF GHG Abatement Group has published Embodied Carbon Considerations For Data Centers. It is available as a free download by **CLICKING HERE.**

The Open Source Journey – The Business Impact Of Open Source is an online presentation by **The Open Source Initiative. CLICK HERE** to watch it.

NetAlly has produced new poster that helps to quickly get to the root of a network problem. **CLICK HERE** to download a free copy of Network Troubleshooting Basics.

Supply and demand

Jim Hart of BCS looks at why power is the ongoing challenge for data centres

▶ The surge in demand for data centre services that we have witnessed over the past decade in the wake of the ongoing digital transformation of society poses a major power challenge. There is now a real requirement for participant companies to evolve their power strategies to accommodate this demand. This means ensuring a sufficiency of supply whilst meeting the needs posed by a political and social environment that is increasingly demanding that power must be from a cost effective but sustainable source.

OUR SURVEY SAYS...
In our latest survey, which catches the views of over 3,000 senior industry professionals across the UK and Europe, we asked them about their concerns about this dichotomy. Our respondents confirmed that the demand for power will not diminish moving forward, even considering technological enhancements that drive efficiencies of equipment. Over three-quarters of them reported that they expect their power consumption levels to rise over the next three years – a proportion that has moved marginally up since the last survey.

One impact of this is that as power costs rise across Europe, the demand for data centres that are power efficient will also rise, and almost three-quarters of our respondents believe that this will take

place over the next three years. Perhaps the only surprise here is that this proportion is not higher given recent news around energy price inflation and the expected long-term impact on businesses.

MAKING A MOVE
A commitment to move to sustainable energy is clear amongst our respondents. Over the course of the next decade some four-fifths of them expect to see at least 90 per cent of their data centre energy usage to be sourced from renewable forms, however, this is a marginal decline from the 83 per cent monitored in our previous survey. Just two per cent disagreed, a fall from five per cent in the Q2 report.

One feature of the energy market across Europe is the differing national and local sources of power that are delivered to the grid. This can reflect the natural resources available to a country, as well as long-term power generation strategies adopted by

governments over time.

For example, in the Nordic countries over two thirds of their power comes from renewable electricity generation. France's political desire to operate as a nuclear power led to its first operational nuclear power plant opening in 1962. Now nuclear power is responsible for some 70 per cent of total electricity production in that country. In the UK, nuclear is utilised to source around 21 per cent of the country's electricity, whilst gas/coal variably provide just over half. In Spain 61 per cent is generated from non-renewable sources (gas/coal and nuclear), whilst 18 per cent is from wind, 14 per cent hydropower and five per cent from solar.

POWER SOURCING

The ongoing and likely future increase in power consumption indicates that the industry needs to continue to innovate to keep up with demand for cost efficient power delivery within the context of a framework of corporate social responsibility. For the second successive survey we questioned our respondents on their current and future power sourcing strategies.

Given the disparate nature of sources of

power across European territories and the wider geographical spread of some of our respondents with multiple facilities across their portfolio, it is perhaps not surprising that we have noted that only around 10 per cent of our respondents secure their energy from a single source. Encouragingly, those that source energy solely from finite resources such as gas and coal totals less than five per cent of our respondents – a marginal decline on the seven per cent recorded in Q2.

In contrast, around 21 per cent of our respondents' data centre portfolio

'The impact of power runs across every aspect of the market, from informing decisions on data centre site selection through to the design and construction phases and the operation of such facilities.'

floorspace is sourced only from a mix of renewable sources including solar, hydroelectric/tidal, and wind farms/turbines – up from 18 per cent recorded last survey. It should be noted that just under half of our respondents utilise some degree of gas or coal power in their facilities, down from 53 per cent six months ago, whilst nuclear power is used as a source of power by around 30 per cent in at least part of their portfolio.

FORWARD THINKING

Looking to the future, survey participants were asked to assess the expected average share of sources of power across their data centre real estate in the next five years. The results suggested a firm commitment by a significant proportion of them to move towards renewable energy as a key cornerstone of their future power usage.

One important measure is noted in the expected future use of gas or coal power in our respondents' facilities. Currently, just under 50 per cent of respondents state they utilise energy generated from fossil based fuels – a proportion that declines to around 30 per cent over the next five years. In addition, nuclear power is expected to remain as a source of power by 30 per cent of respondents on at least part of their portfolio.

Whilst only around seven per cent – a proportion unchanged for the last survey – suggest that their facilities will be sourced from a single type of renewable power, almost all respondents expect to see a rise in the proportion of power from renewable sources that will service their data centre facilities.

CAUSE AND EFFECT

The fortunes of the data centre industry are inextricably linked to the ability to source and utilise power in the most efficient and cost effective manner. The impact of power runs across every aspect of the market, from informing decisions on data centre site selection through to the design and construction phases and the operation of such facilities. With forecast growth for digital services likely to remain substantial, the industry continues to respond to power issues created as a result, with the question of sustainability never so important as it is today. ∎

JIM HART

Jim Hart is chief executive officer at BCS. He has specialised in business critical facilities such as data centres, mission critical infrastructure and secure installations for the past 15 years, with a total of 30 years in the mechanical and electrical industry. He drives the strategic direction of BCS and helps deliver assured outcomes for its customers.
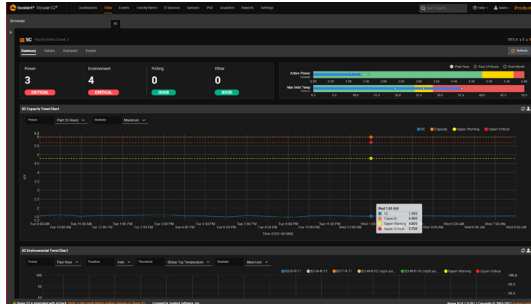
Sunbird Software

Sunbird Software's Power IQ now comes with new interactive charts that automatically roll-up and consolidate power and environment data at all levels of the data centre including rack, rows, room, floor and data centre levels. This makes it even easier to report and make decisions on power capacity and environment management.

New comparison analytics allow you to easily compare infrastructure elements. For example, you can chart the watts for all racks in one data centre over a 24-hour period to compare how much power racks are consuming and identify potential problems.

New environmental analytics trend temperature and humidity sensor data, enabling you to see how environmental conditions compare to warning and critical thresholds to help improve uptime and efficiency. You can also compare rack power distribution units (PDUs) outlet by outlet, see the load on each phase and see circuit breaker loads as they relate to capacity and thresholds.

CLICK HERE to schedule a demo.
www.sunbirddcim.com

CNet Training

With sustainability at the forefront of organisations across the world, CNet Training's Certified Data Centre Sustainability Professional (CDCSP) program reflects the latest sector needs and innovations.

Increased awareness of the urgency to implement and maintain a sustainable future, coupled with evolving legislation, means that data centre operators are under pressure to embrace sustainability strategies, improve their 'green' credentials and evidence improvement to stakeholders. On completion of the CDCSP program learners will be able to consider the requirements for compliance and have a full understanding of national and international regulations, codes and standards.

Successful completion also provides the learner with a Level 5 BTEC Award, official CDCSP certification, use of a postnominal title and a digital badge. The digital badge can be easily shared via social media and downloaded to verify knowledge, skills and certifications gained.

To find out more **CLICK HERE.**
www.cnet-training.com

Xpress Datacom Supplies

Available from Xpress Datacom Supplies, MPL Technology Solutions provides power, energy and environmental solutions for critical environments.

With the capacity to monitor and manage more than 15 billion kilowatt hours (kWh) of energy per annum, MPL's solutions drive efficiency, optimisation and resilience. Monitoring solutions can be deployed from building point of entry through to individual payload – enabling clients to monitor their entire estate via a single platform.

With ever increasing energy costs and a desire for carbon neutrality, being able to strategically plan energy management is of huge significance and benefit. Having a holistic view of an estate and all facilities that contribute to overall power and energy consumption puts energy management back in the hands of the client.

For more information on the solutions available call our sales team on 01480 400705, **CLICK HERE** to send an email or to visit the Xpress Datacom Supplies website **CLICK HERE.**
www.xpressdatacom.co.uk

Uptime Institute

Uptime Institute has announced another addition to its growing educational offerings with the launch of its new Accredited Sustainability Advisor (ASA) program. The ASA course is designed to deliver essential knowledge of sustainability concepts and the practical skills data centre professionals need to develop and implement a comprehensive, world class sustainability strategy.

More than 70 countries have established commitments to achieve net zero greenhouse gas by 2050. New regulations are proliferating worldwide, with hundreds of pieces of climate change and sustainability legislation, standards and requirements enacted over the past 10 years. As demand for senior level data centre professionals and IT/facility engineers with advanced sustainability expertise continues to rise, sustainability skillsets have never been more valuable or impactful.

The ASA course cuts through the mounting volume of information and opinion around sustainability programs and offers insight on global best practices. The launch of the new ASA course represents yet another step in Uptime Institute's expanding program to inform, guide and support sustainability advancements throughout the sector.

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

Paying the *price*

In light of rising energy costs, the onus is on data centre owners and managers to reduce energy consumption. John Booth of Carbon3IT explains why

▶ Back in 1973 I remember my father moaning to me about leaving the lights on – this was a reaction to the oil crisis due to members of the Organisation of Petroleum Exporting Countries (OPEC) restricting supplies because of the West's support of the Yom Kippur war between Egypt/Syria and Israel. By the end of the embargo, the price of oil had increased from $3 to nearly $12 per barrel. Even today I always turn off the lights when I leave the room!

HIGH TIMES

Move on nearly 50 years and energy prices have reached an all-time high, and some energy analysts have called it a 'perfect storm' – a cold winter in Europe put pressure on supplies, stored gas levels are much lower than in previous years, hot weather in Asia caused more gas to be used for air conditioning and, due to the war in Ukraine, European wholesale markets are not buying Russian oil and gas due to sanctions.

Back in the early 1970s coal and oil power plants accounted for 88 per cent of the electricity supplied to the UK market. Since then coal and oil fired power plants have been replaced with other options including nuclear, gas and renewables. At the time of writing – to be specific 18:43 on the 4/4/2022 – the generation mix for the UK can be seen in the following table.

COST ANALYSIS

Ultimately, the price of electricity sold in the UK depends on the wholesale cost of fuels. According to BEIS, the average cost of gas in the period July-Sep 2021 was 2.53p per kWh, and for the period Oct-Dec 2021 4.67p per

Demand
Generation Fuel
Gas
Nuclear
Wind
Pumped Storage
Hydro
Solar
Biomass
Coal
Oil
French Interconnector
Dutch Interconnector
Irish Interconnector
E-W Connector
NEMO Interconnector
Norway Interconnector

kWh – an 84 per cent increase.

The average cost of gas purchased by non-domestic consumers in the whole of 2021 was 3.073p per kWh, although the range was between 4.842p per kWh to 2.592p per kWh. Electricity ranged from 17.99p per kWh to 14.18p per kWh, with an average of 15.08p per kWh.

As can be seen in the above table, gas (at that particular time) accounted for 37 per cent of UK generation. It is by far the largest fuel used for electricity generation purposes – hence the reason why electricity prices have risen and why data centre operators are feeling the pain of energy cost rises.

37.17 GW	
Generation	%
13.79 GW	37.10
5.23 GW	14.07
11.45 GW	30.80
0.00	0.00
0.48 GW	1.29
0.39 GW	1.05
2.03 GW	5.46
0.82 GW	2.21
0.00	0.00
-2.05 GW	-5.54
0.81 GW	2.18
0.33	0.89
0.00	0.00
0.93	2.50
0.69	1.88

SMOOTH OPERATORS

The Climate Change Agreement (CCA) for Data Centres provides operators with discounts on the Climate Change Levy in return for improvements in energy efficiency. The fourth reporting period is due, so the latest data we have from the third period indicates that just under half the data centres within the scheme missed their targets but, as a sector, the target was achieved early. The data centres that missed their targets have to buy carbon credits. In Jan 2021 the price of a carbon offset was €30 but by Oct 2021 this had risen to €66 per tonne.

It should be noted that the CCA for Data Centres will expire in 2023 and, as yet, the government has not confirmed that it will continue. We await developments.

THE LAW

Large companies will need to comply with the Streamlined Energy & Carbon Regulations (SECR) and the Energy Saving Opportunities Scheme (ESOS). ESOS is an audit carried out on a four yearly basis, unless exempt by virtue of having ISO 50001 accreditation.

The problem with these is that unless you have a data centre aware ESOS assessor, the 'identified' opportunities are likely to be extremely limited – normally being 'raise temperatures and check air conditioning'. However, there are other energy saving options available. Another thing to be aware of is the TM44 regulations, which are similar to ESOS but apply only to air conditioning units. Again, these are regular audits and sometimes included as part of

an air conditioning maintenance or service contract.

CODE BREAKER

The best way to manage a data centre's energy consumption is to adopt the EU Code of Conduct for Data Centres (Energy Efficiency), also known as the EUCOC best practices. These cover management, IT equipment, cooling, data centre power systems, other data centre systems, design and build, and measurement and monitoring.

The EUCOC was originally developed in 2008 by the British Computer Society, The UK Department for Farming and Rural Affairs (DEFRA) and the EU-Joint Research Centre. It consists of 160 best practices to improve not only energy efficiency but also general operations in a data centre.

The EUCOC was the first set of best practices relating to data centre energy efficiency and has formed the blueprint for other regional guidance in the US, Asia Pacific (APAC) and Latin America (LATAM). It's is also one of the technical reports that form the BS EN50600 series of data centre design build and operate standards, namely BS EN 50600 TR-99-1. This is literally a copy of the EUCOC except that it is reformatted and splits the optional best practices into a separate section.

MONITOR AND MANAGE

The old adage 'you can't manage what you can't measure' applies to data centres. Another piece of advice is to either use your existing building management or energy management systems to obtain data or to install a data centre infrastructure management system (DCIM). This will give you visibility of the items that are using the most energy and allow you to investigate and then take steps to reduce your energy.

Meanwhile, a zombie server

'It's good practice to look for and remove zombie servers. Recent studies indicate that up to 40 per cent of a server estate could be zombies and that's a lot of energy and network capacity that can be saved or recovered.'

is one that is still consuming energy and network capacity but is not actually in use. These usually arise when replacement equipment has been installed but the original equipment has been left in-situ. You would expect the old equipment to be removed but sometimes IT staff leave them in 'just in case' and a decommissioning process (the last stage in a replacement project) rarely gets done or, for that matter, do updates to asset registers or project documentation. But that's a story for another article.

So, it's good practice (contained in the EUCOC) to look for and remove zombie servers. Recent studies indicate that up to 40 per cent of a server estate could be zombies and that's a lot of energy and network capacity that can be saved or recovered.

Data centre energy management training is available from specialist data centre training providers and you'd be well advised to send at least one member of staff on to one of these courses. They'll learn lots more about control systems, server power management and airflow management – all things which will make a difference in your data centre.

NEXT STEPS

With rising energy costs, the onus is on data centre staff to reduce energy consumption. The best way is to use the EUCOC or the BS EN50600 TR-99-1 to really start the process and supplement this with external consultants or get someone within your organisation trained who is data centre energy aware. Recent studies suggest that each server in your estate costs £14,000+ per annum in energy costs, software licensing and maintenance. Just removing a few zombie servers may release funds for your pet projects. Happy energy saving! ∎

JOHN BOOTH
As well as being managing director of Carbon3IT, John Booth is the chair of the Data Centre Alliance Energy Efficiency steering committee, vice chair of the British Computer Society Green IT specialist groups and represents both organisations on the British Standards Institute TCT 7/3 Telecommunications, Installation Requirements, Facilities & Infrastructures committee. He is also technical director of the National Data Centre Academy.

STT GDC partners with Schneider Electric and Iceotope to deliver innovative liquid cooling proof of concept

ST Telemedia Global Data Centres (STT GDC) has partnered with Schneider Electric and Iceotope to jointly conduct an immersion liquid cooling proof of concept in Singapore. The objectives of the proof of concept are to explore this emerging technology, future proof next generation data centre builds, and reduce both power and water consumption.

The proof of concept will leverage Iceotope's chassis level precision immersion technology, which uses dielectric liquid as a heat transfer medium. The liquids used by Iceotope are touch safe, non-conductive, non-toxic, non-flammable and non-ozone depleting. Using the dielectric fluid as a cooling medium instead of air provides higher thermal transfer capacity and improved efficiency.

This technology promises to reduce the reliance on some of the traditional energy hungry components of the cooling ecosystem, such as chillers and computer room air conditioning (CRACs) units.

Meanwhile, Schneider Electric has a track record of supporting data centre operators with dynamic cooling optimisation solutions that leverage cutting edge technology such as artificial intelligence and machine learning. Marrying this expertise with STT GDC's ambitions was a natural fit.

Ealing Hospital appoints Keysource to support data centre capacity increase

London North West University Healthcare NHS Trust (LNWH) has appointed Keysource to undertake a live upgrade of the data centre at Ealing Hospital. It follows an extensive review of the mechanical and electrical (M&E) infrastructure.

Keysource will redesign the existing space and create a modular solution to provide flexibility for LNWH that can expand with its future requirements in increments, in clear capacity steps across the M&E equipment. Another key benefit is that this will result in the freeing up of plant rooms through the relocation of all critical infrastructure within the data centre, creating valuable space within the hospital, whilst improving resilience.

The works will include the deployment of a new modular UPS system N+1 with 10 minutes autonomy, external maintenance bypass and a close coupled cooling system. This will be undertaken in a live environment with no downtime expected to existing services.

Custodian selects Aqua as premier cooling partner for new Dartford site

Custodian Data Centres has enlisted Aqua to design, supply and install an innovative temperature control system at its new DA2 10MW site located in Dartford, Kent. Aqua delivers a highly energy efficient, bespoke, closed loop air cooling system with integrated free cooling.

The design for Custodian's DA2 includes 12 custom designed cooling coils and a free cooling chilled water system, comprising three 500kW Aqua EcoPro+ optimised free cooling chiller units. The EcoPro+ units operate on R454B green refrigerant. Utilising integrated free cooling chillers drastically reduces the amount of time mechanical cooling is required, saving significantly on energy usage, carbon impact and wear and tear of components parts – in particular the compressor.

The Aqua EcoPro+ units have an in-built, optimised, free cooling coil, resulting in a fully packaged solution. In addition, with an Aqua unit free cooling is achievable at higher ambient temperatures than with many other brands on the market. This makes Aqua a suitable partner for Custodian and its client base, as it allows for upgrades and additional capacity quickly and easily as needed.

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PROJECTS & CONTRACTS IN BRIEF

Proximity Data Centres has announced the completion of Zayo's high capacity dark fibre network at its edge colocation data centre in Chester Gates near Manchester.

Kao Data has signed a formal carrier agreement with Virgin Media Business Wholesale to increase the low latency connectivity solutions at its Harlow campus.

Mission Critical Facilities International (MCFI) has agreed to build and deploy its Genius Modular Data Center – a purpose built, 500kW modular cloud data centre for a digital flare mitigation facility located in North Dakota. MCFI's Genius Modular Data Center provides an economical and energy efficient solution.

GTT will invest in a 400Gb/s upgrade of its global IP network to meet demand for high performance and secure internet enabled services.

Five9 has announced the general availability of two data centres located in Frankfurt and Amsterdam. The data centres serve Five9 customers in the European Union (EU), Europe, the Middle East and Africa, supporting the company's international growth and the desire for European customers to maintain data residency.

Allied Telesis

The new TQ6702 GEN2 Wi-Fi 6 (8x8) wireless access point from Allied Telesis joins the company's existing range of enterprise, small business and outdoor access points. It offers compatibility with legacy wireless clients and interference free high density access point installations to enable a superior wireless solution for enterprise networks everywhere.

Allied Telesis has combined the power of Wi-Fi 6 and eight spatial streams with its Autonomous Wave Control (AWC) wireless management platform, which enables a self-tuning wireless network that automatically reconfigures itself for the best possible performance. Using the company's channel blanket (AWC-CB) technology, a high capacity single wireless blanket can connect all devices in a building without worrying about interference or limited capacity. It therefore offers truly seamless roaming.

Allied Telesis' Wi-Fi 6 solutions, with a raw capacity of 4.8Gb, are here to power todays' mobile experiences. They offer faster speeds for immersive experience applications and more capacity for mobile and internet of things (IoT) devices.

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

Panduit

The FlexCore Optical Distribution Frame (ODF) from Panduit is a versatile front access cabling system that offers the necessary protection for critical network connections. The current transition in physical layer design results in much higher density optical fibre aggregation points that need to be managed across the data centre – often involving tens of thousands of fibres.

Managing more optical fibres, in either the same or less physical space, is essential and it is imperative to optimise data centre floorspace. FlexCore ODF offers three modular blocks – a 600mm wide frame,

P – Pathway
- Cable routing pathways clearly defined
- Rip and replace scenarios avoided ✓

A – Agile
- Patch cords easily traced for efficient MACs
- Patch cord lengths consolidated and on hand ✓

S – Secure
- Fibre circuits physically protected
- Multi level security access available ✓

S – Scaleable
- Incrementally scale (pay as you grow)
- Accommodate prolific cabling options ✓

150mm wide vertical cable manager and 300mm vertical cable manager, for maximum versatility, and this can reduce cabinet floor space by 50 per cent.

Multiple factors determine the value an ODF solution and although high fibre (port) density is important, close attention must be given to other factors. The starting point when measuring the value of an ODF is the 'PASS' test. FlexCore ODF delivers on all those requirements with its unrivalled manageability, scalability, fibre circuit protection and security features.

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

Legrand

Legrand has unveiled Nexpand, its new data centre cabinet platform. The new platform is flexible, sturdy and secure for housing data centre devices. It provides the scalability and future proof architecture needed to support the rise in digital transitions, internet of things (IoT) connectivity, 5G services, edge computing and artificial intelligence (AI) applications. The Nexpand platform is built on four fundamental values:

• Smart. The cabinet's interior is made to be adjusted in three dimensions, with a completely modular roof. This intelligent design provides more space and flexibility for managing top of rack infrastructure.

• Solid. The new design offers lightweight, solid doors in a frame that easily bears the IT equipment load, with a fully integrated locking and cabling system that is unique to the marketplace.

• Secure. Nexpand provides the highest level of security by interfacing with the most secure electronic door locking platforms.

• Sustainable. The new cabinet is designed to ensure optimal airflow management, resulting in a best in class, energy efficient solution.

To find our more **CLICK HERE. www.legrand.us**

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All you need to know

HellermannTyton

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

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

HellermannTyton manufactures a wide range of innovative solutions that are designed to provide connectivity to different zones within a building. Whether it's the Zone Termination Box, an under the floor cable distribution box, a work area pod or a pre-terminated 'to the desk' solution, HellermannTyton has a product that can meet the network infrastructure demands of any intelligent building.

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

R&M

A new generation of optical fibre distributors is accelerating the rollout of subscriber connections in broadband networks – even in rural areas. The ZOONA splice closure from R&M is a compact, robust, mechanically sealed splice closure suitable for rapid fibre to the home (FTTH) network expansion and aerial deployment.

A pre-terminated inlay with R&M fibre management offers solutions for splice connections and splitter modules. The QIKseal system enables easy and efficient handling, while assembly doesn't require special tools, time consuming work preparation or special expertise.

Capacity starts at 48 fibres and four fibre management tray systems (FMTS). Depending on the split ratio, the basic version can supply well over 100 FTTH subscribers and further closure variants are being planned.

Suppliers can set up FTTH access networks for entire districts or rural communities in just a few weeks and the ZOONA splice closure is ideal for expansion of additional fibre optic connections such as 5G antenna sites and internet of things (IoT) applications in urban or industrial environments.

To find our more **CLICK HERE. www.rdm.com**

New horizons

Charlotte Horsfield of Newcastle College looks at how the engineering sector is revelling in a more diverse workforce, and how women are having a greater impact

▶ Ada Lovelace, Radia Perlman and Adele Goldberg are just a handful of the women pioneers in science, technology, engineering and mathematics (STEM) who have changed the world for the better. They laid the stones of both scientific breakthroughs and gender inclusivity in the sector, and the journey continues.

NUMBER CRUNCHING

More women than ever are now choosing to take jobs in STEM roles, with a million women said to be working in core STEM occupations in the UK as of 2019. Women make up 24 per cent of the core STEM workforce, and we expect this figure to reach just over 29 per cent in 2030.

Today, we explore what it is like to be a woman in STEM. What are the challenges women face within the sector? How can they break into the field? Who are the women and organisations working to change STEM gender stereotypes?

We've walked a long way since 2009, as the number of women in core STEM

positions has increased by 66 per cent over the course of 10 years. The sector is evolving from a place of male centrism, as women infiltrate the industry. But there are still many obstacles women face within the industry, such as sexism and concerns over career progression opportunities.

LEADING BY EXAMPLE

Role models are a powerful way to significantly encourage women to follow a career in STEM. Findings from a CWJobs study show that women are more likely to get into a career in tech if they have had an inspirational figure to follow in the footsteps of.

Ada Lovelace, known as the Enchantress of Numbers, had her mother, Annabella Milbanke, as her role model. Milbanke, who was a prominent mathematician, would insist that her daughter was taught logic, science and mathematics from a young age. Mothers and other inspirational figures in women's personal lives can help motivate girls to pursue a career in STEM. The same goes for STEM icons such as electrical engineer, Edith Clarke, and American computer scientist, Grace Hopper.

But when respondents to a recent study by Newcastle College were asked if they could identify any women that they would recommend to inspire the next generation, only one in 10 could name one. This highlights the lack of female icons within the industry right now, and the need for more women in STEM to continue the gender inclusivity journey.

EDUCATIONAL ROADBLOCKS

The next generation of STEM female leaders starts at an educational level, but this also seems to be where it hits a

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roadblock. In fact, the number of female candidates in GCSE computing saw a drop between 2020 and 2021, despite the fact that the overall number of students sitting the exam saw an increase.

Could this be because girls are not being given knowledge about where their computing qualifications could get them? Or could this be because they are aware

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of the obstacles they will face, and that intimidates them?

If so, a clear career path outline and informational sessions at schools, which feature female role models and speakers, could help. For example, as part of a research by S González-Pérez, R Mateos de Cabo and M Sáinz, female volunteers working in STEM went to schools to talk with girls about their careers. The results showed that role model intervention improved girls' beliefs that they can be successful in a STEM career and increased their likelihood of going after one.

BUILDING THE FUTURE

So, who are the women and organisations paving the way to STEM gender inclusivity? One organisation helping girls to carve out opportunities in STEM and acquaint them with iconic women in the sector is STEMettes. The co-founder, Anne-Marie Imafidon, was inspired to create the organisation based on her personal experiences. While pursuing a degree in maths and computer science, she was one of the only three girls in a class of 70.

But her skills were exceptional. She was a child prodigy and one of the youngest people in the UK to pass two GCSEs in two different subjects in primary school. She graduated at 20 and went on to work in major international companies like Deutsche Bank and Goldman Sachs. She is now a keynote speaker and host of the Women Tech Charge podcast.

Now, Anne-Marie's mission is to encourage the next generation of STEM workers. Her work helping young women was recognised in 2017 when she was

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awarded an MBE for services to young women within STEM careers. Anne-Marie is a true role model!

PASSING ON THE KNOWLEDGE

As of 2019, in the core STEM subjects 35 per cent of students were female. In order to attract more female students in STEM degrees, it's important that schools and organisations do their part. Newcastle College is an establishment trying to boost the number of women in STEM.

Despite seeing some rise in the number of females signing up for engineering and digital courses following the introduction of foundation degrees in rail engineering and offshore renewables and subsea engineering, it acknowledges there is much more to do. Having recently appointed two female directors in both digital technologies and engineering, a priority focus moving forward will be to address the gender divide.

Veronica Spowart, director of digital technologies at Newcastle College, said in a recent interview celebrating International Women's Day, 'Within my current role at Newcastle College addressing the gender imbalance is a priority for me and my team. My advice to young girls choosing their career now is that digital, or any STEM subject, is the future.'

Teaching girls what is involved in STEM careers will surely help more women understand if it is the right career for them. Civil engineer, Jessica Green, was initially put off a career in engineering because she thought it would mean spending her life 'dressed in overalls working in tunnels'. But where does she get that perception from? Could it be that engineering doesn't receive as much glorification and status as other

industries do, such as architecture? Green commented, 'We see architecture portrayed in TV and film as a high flying career choice; do we ever see engineering portrayed like that?'

JOB SITE

For young girls to find the inspiration and motivation to pursue a career in STEM, it's important that they feel involved and know that their work will be valuable to the world. Because it is. They deserve to be equally represented alongside men and have their new and fresh ideas heard. Having both a male and a female perspective in the sector will result in innovations that are valuable to both genders. What this means is a fair world, where both men and women have equal opportunities and feel valued. ◼

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Charlotte Horsfield is PR and communications manager at Newcastle College. She has worked in marketing and communications for a number of years and her experience includes event management, content and copywriting, direct and email marketing and campaign development.

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