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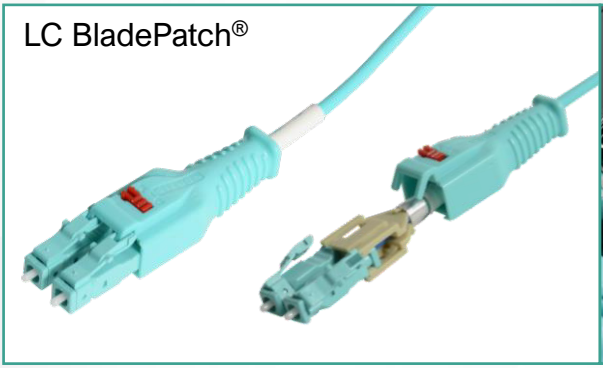

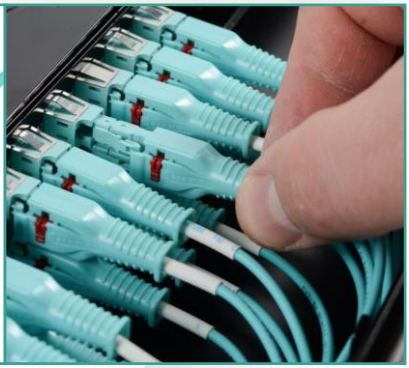

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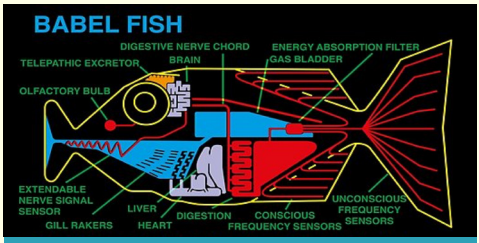

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Value judgement

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Even the staunchest advocate of data centre infrastructure management (DCIM) software would have to admit that it has a chequered history. For well over a decade it has struggled to shake off the reputation for hype, undelivered promises and wasted capital expenditure that were all too common features of its initial introduction. In fact, I can think of very few data centre technologies that elicit such strong opinions as DCIM.

Not surprisingly, there remains a high degree of scepticism around this technology set and for many who were involved in initial implementations of DCIM the old adage 'once bitten twice shy' will figure highly in their thinking. Yet things have moved on and with lessons learned from vendors and customers alike, this month's Question Time asks a panel of experts to offer their views on whether the scepticism about DCIM still justified and if it is now time to reappraise what it is and what it can do to make data centres more operationally efficient.

Talking of efficiency, 5G will allow major advances in data transfer speeds, latency, connectivity, capacity, reliability and mobility, however, edge data centres will need a massive amount of energy to facilitate it. In order to delve deeper into the subject we have two excellent articles from leading experts in this area. Marc Garner of Schneider Electric examines the need for greater energy efficiency in edge data centres and Jon Abbott of Vertiv explains why it's time to prioritise efficiency and sustainability in network infrastructure.

The history of copper network cabling infrastructures is fascinating for many reasons – not least because every time it's suggested that it has reached its potential, it evolves in new and interesting ways. To bring us up to date with what's happening in this area James Withey, liaison officer between IEEE 802.3 and ISO/IEC SC25 WG3, explains the recent developments in copper cabling standards and applications.

I hope you enjoy this issue of Inside_Networks. Don't forget, if you'd like to comment on any of these subjects, or anything else, I'd be delighted to hear from you.

Rob Shepherd
Editor

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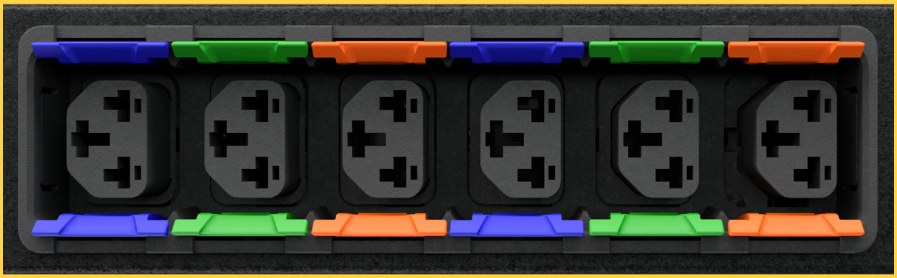

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Digital leaders expect long-term changes to where and how people work

Equinix has announced the findings of its annual global study of the views of IT decision makers on the biggest technology trends affecting businesses worldwide and the impact of the coronavirus pandemic on digital infrastructure plans.

Surveying 2,600 IT professionals from 26 countries, the study revealed that 44 per cent of UK businesses have rearchitected their IT infrastructures to meet new remote and hybrid working demands, with tech budgets increasing to accelerate digital transformation. Meanwhile, 69 per cent of digital leaders believe there will be long-term changes to where and how people work within their organisations, and 50 per cent still intend to expand into new regions, countries or metros, despite the disruption experienced as a result of the pandemic and Brexit.

Business investment in digital infrastructure has increased as a result of the pandemic, with 48 per cent of those surveyed in the UK, compared to 47 per cent of those surveyed globally, saying they have accelerated digital transformation plans. 45 per cent of those in the UK also said their budgets have been increased to satisfy the rapid growth in digital demands.

There has also been a major overhaul of IT strategies to meet the challenges emerging from the pandemic. Asked about their biggest priorities, 86 per cent of respondents in the UK – compared to 80 per cent globally – reported digitising their IT infrastructure was a top priority. 61 per cent said they see interconnection as a key facilitator of digital transformation.


Eugene Bergen Henegouwen

The Equinix Global Interconnection Index (GXI) Volume 4 forecasts that overall interconnection bandwidth – the measure of private connectivity for the transfer of data between organisations – will achieve a 45 per cent compound annual growth rate (CAGR) from 2019 to 2023 globally. The expected growth is driven by digital transformation and, specifically, by greater demands from enterprises extending their digital infrastructures from centralised locations to distributed edge locations.

Eugene Bergen Henegouwen, president EMEA at Equinix, commented, 'As digital leaders around the world are focused on digitising their organisations to respond to the challenges created by the pandemic, it's clear from this study that interconnection is very important. The fact that over half of IT decision makers in EMEA said interconnection will help them to navigate the challenges faced as a result of the coronavirus pandemic, with almost half believing it to be key to their organisation's survival, shows interconnection has become business critical to many enterprises.'

Higher costs, lower employment and fewer apprenticeships expected for the engineering services sector

The rising costs of labour and materials stand out as major concerns from the latest survey by the Electrical Contractors' Association (ECA) of electrotechnical and engineering services firms. This is expected to have a negative impact on profits and employment.


Andrew Eldred

Significant uncertainty has led to a 24 per cent of businesses employing fewer apprentices in Q2, while 34 per cent of respondents added that they would need less agency and subcontracted labour this quarter. Similarly, 78 per cent believed labour costs in Q2 would remain stable or rise, with just 20 per cent anticipating a fall. 22 per cent expect to employ less direct labour in Q2 compared to the last quarter.

Andrew Eldred, ECA director of employment and skills, said, 'Employment and apprenticeships are still at risk. Behind the headline growth figures, conditions remain challenging for many engineering services employers and employees.'

Vantage Data Centers provides renewable energy options to global customers

Vantage Data Centers is providing access to renewable energy options at each of its North American and European campuses, to enable customers to reduce their carbon emissions. Four of the company's campuses are currently powered by more than 99 per cent renewable energy for critical IT load through Vantage's utility partners, while the other campuses provide access to green power purchases and renewable energy credits through local utility partners.


Sureel Choksi

The company has also named Amanda Sutton as senior director of sustainability to lead Vantage's global sustainability program that will lessen its environmental impact worldwide. In addition, Neal Kalita will serve as the director of power and sustainability with a focus on the company's European campuses.

'Vantage is working collaboratively with customers, investors and utilities to invest in sources of renewable energy and set goals in all areas of sustainable development in order to make a positive impact in the communities where we operate,' said Sureel Choksi, president and CEO at Vantage Data Centers.

EU Cloud Code of Conduct becomes first GDPR initiative to receive green light from data protection authorities

The members of the EU Cloud Code of Conduct (CoC) General Assembly and SCOPE Europe have announced that the EU Cloud CoC has received its official approval by the Belgian Data Protection Authority, following the positive opinion issued by the European Data Protection Board.

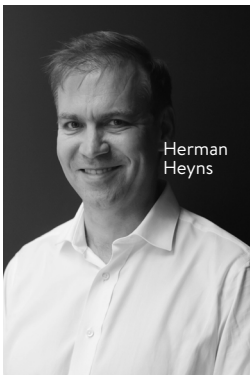

David Stevens

It is the first CoC covering all cloud offerings to be approved and will make it simple for cloud service users to determine whether a given cloud computing based service is General Data Protection Regulation (GDPR) compliant. In doing so, it will build trust in online services and raise the default level of data protection in the European cloud computing market – ultimately helping to accelerate the adoption of this key technology and bring the benefits of cloud computing to a wider section of Europe's economy.

David Stevens, chairman of the Belgian Data Protection Authority, the lead data protection authority for the CoC, said, 'Approval was achieved through collaboration within the European Data Protection Board and it is an important step towards a harmonised interpretation and application of the GDPR in a crucial sector for the digital economy. I hope that this first experience in approving a transnational CoC will mark the beginning of the development of more transnational codes of conduct to foster compliance for companies, harmonisation for sectoral organisations and transparency for data subjects.'

Digital transformation evades businesses that mismanage data

Data is poorly understood, inadequately valued and badly managed by global businesses, costing them and their investors billions of dollars every year, according to a report published by Anmut. This is a big problem because it means most businesses are running on data that isn't fit for purpose.


Herman Heyns

Anmut compiled data and anecdotal evidence from almost 100 chief data officers from organisations headquartered on five continents, whose collective annual revenues total over $1tn. It found that 91 per cent believe data is critical to the success of their businesses. However, only 34 per cent of their companies manage their businesses' data assets with the same disciplines as other business assets. These companies spend their allocated data management budget on creating value from their data that, in turn, helps them scale their businesses and develop their strategies.

'Time and time again we're seeing international businesses and household name brands coming under fire for reasons that seem preventable with hindsight,' said Herman Heyns, CEO of Anmut. 'Those that succeed do so because they really understand the value of their data, and therefore prioritise and manage it well.'

CityFibre named one of The Times Top 50 Employers for Women

CityFibre has secured a place in The Times Top 50 Employers for Women following an assessment by experts using criteria such as its approach to recruitment, family friendly policies and how it has championed gender equality in the context of the coronavirus pandemic. Run by Business in the Community, the list is one of the UK's most highly profiled and well-established benchmarks for employers striving for gender equality in the workplace.


Greg Mesch

As part of a range of inclusivity initiatives, CityFibre has established an employee led gender network to create a space for gender issues and equality to be discussed without judgement, to challenge existing bias and to advocate for measurable change. It has also launched the Aspiring Managers Programme and a mentoring scheme, both of which will serve to support the career development of women in the business. A recent staff survey showed that 93 per cent of women at CityFibre would recommend it as a place to work to others.

Greg Mesch, CEO at CityFibre, said, 'We're extremely proud of our people at CityFibre and of everything we've achieved together since we started a decade ago. Being recognised amongst the Top 50 Employers for Women is testament to the inclusive, welcoming and supportive culture we've nurtured and to the enormous contribution made by our female colleagues.'

NEWS IN BRIEF

David Lewis is the new president of the Electrical Contractors' Association (ECA), taking over from Gary Worrall.

Asperitas has announced its membership renewal of the Open Compute Project (OCP).

UKCloud has been named as a supplier on the Crown Commercial Service's (CCS) Cloud Compute Framework, one of only nine organisations to do so. The initiative has been introduced to provide a clear route for public sector organisations to adopt hyperscale cloud deployments directly from suppliers.

EPI recently awarded Princeton Digital Group's JB1 data centre in Indonesia the TIA-942 Rated-3 Design Certification.

BASE Bordon Innovation Centre, managed by Oxford Innovation, has become one of the few shared office spaces in the UK with 5G capabilities powered by powerQuad's energy storage technology. Each powerQuad charges at times when carbon and fuel prices are at their lowest, making it a greener and cheaper power source.

SUPREME SERVICE

WHY CLIENT COMFORT IS KEY TO SETTING YOUR COLO APART FROM THE CROWD

In a thriving market it is the flourishes afforded to customers that set a company apart from its competitors.

Take, for example, serviced offices. Landlords delivering only the basics may maximise their profits in the short-term but are near certain to oversee only fleeting tenancies.

In contrast, the provision of complimentary extras – be it simply a supply of fresh coffee – can prove a persuasive pull in relation to retaining customers and recruiting occupants.

Similarly, hoteliers prepared to pamper guests are far more likely to earn rave reviews than hosts serving up no-thrills fare.

Discerning customers are accustomed to getting more benefits for their buck and those businesses looking to reserve a room to rest their digital "heads" have plenty of choice.

Consequently, co-location operators and IT service providers are ill-advised to limit their offerings to the fundamentals.

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This clarity is accessible via a client-facing portal and delivers spa-like serenity and peace of mind as to the health and performance levels of assets.

However, XpedITe offers co-locations a greater return on investment than simply content customers becoming long-standing ones.

When integrated with Customer Relationship Management platforms, the benefits are more immediate. Sales staff have an up-to-the minute picture of available space and can forensically track the stock being consumed.

Such an audit ensures co-locations do not pass up on previously unclaimed revenues as every billable action is recorded.

Importantly, XpedITe holds the key to hassle-free compliance, monitoring the metrics needed to meet the ISO standards expected of trusted suppliers.

In short, XpedITe's extras will leave customers in no doubt that their satisfaction is taken very seriously.

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Build back better

Hi Rob

2021 is the year of recovery and growth for the construction industry. However, with labour shortages, supply chain disruptions and stricter regulations, challenging the industry to innovate must be a priority in order for it to recover and become resilient. Increasing productivity and performance are key challenges to overcome and technology must be at the heart of this transformation – accelerating the adoption of innovative processes to create high performing systems that work together and add value to society.

The adoption of new technology and smarter processes can deliver tangible benefits for construction firms, but there remains a fundamental stumbling block for those organisations looking to capitalise on new innovation – finding the best connectivity to do the job. This could be a frequent lack of high speed, portable and reliable internet connectivity, or having access to emergency communications should there be a delay in a fixed line installation or accidental breakage to a line.

Technology innovation has led industries to strive to be more efficient, productive and cost effective. The available technology in construction has advanced rapidly and we are now starting to see examples of how it can deliver efficiency and productivity opportunities at the start of all projects – truly revolutionising construction sites. Drones, robotics, 3D printing and augmented reality are no longer works of fiction but can be adopted by forward thinking firms looking to capitalise on the benefits that embracing innovation can bring to the construction site.

Connectivity is a necessity for businesses in virtually every industry and construction is no exception. Crucially, this is still one fundamental hurdle that the industry must overcome if it is to create a solid foundation for all new digital innovation.

Gaining access to connectivity can be a challenge for new sites where there is typically no existing infrastructure. But as internet communications are no longer restricted to fixed line only delivery, companies can now invest in a blended communications model of wired and wireless internet access that truly satisfies business needs – irrespective of location.

Advanced bonded service solutions enable organisations to gain additional resilience and contingency from combining different internet access connections together into a single ‘virtual pipe’, with precise performance management. With combined bandwidth and enhanced reliable internet performance integrated into a

portable solution, this service is highly suitable for rapid deployment emergency situations where internet services are required urgently and communications infrastructure is either missing or may take several weeks to be installed. When used correctly, sites can be up and running in a matter of hours, not weeks.

The construction industry cannot continue to utilise outdated processes and management methods but instead must embrace digital advances, and adopt smarter processes and technology to stay competitive. New technology will continue to disrupt the industry and change how we work, but there is no way that the construction sites of the future will ever become a reality unless the industry can conquer the basics of connectivity.

Drew Morris
Comms365

Editor's comment

The construction sector could clearly benefit from embracing technological change and failing to do so is to its detriment. The adoption of technology is not only important for advancements within construction processes and productivity but also essential in attracting a digitally-savvy generation to take up careers in the sector.

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Leading light

Hi Rob

I read with great interest the Question Time section in the June 21 issue of Inside_Networks on selecting an optical fibre cabling system for a data centre. With so many different technologies available in the data centre space today, each with their own set of pros and cons, it can be extremely difficult for owners and operators to make the right choice – not only for their day to day requirements but also when planning for the future and considering ever changing needs and demands.

Next generation Ethernet multimode fibre applications like 100Gb/s, for example, can be supported by 'traditional' technologies based on single wavelength over parallel fibres, as well as 'new' ones such as those using wavelength division multiplexing (WDM) technology over a single pair of fibres. Technologies can also be standards approved or based on multi-source agreements (MSA) between manufacturers, resulting in products which are compatible across vendors. These can, and often, act as de facto standards to establish a competitive market for interoperable products.

If we look at Ethernet fibre applications for the data centre, there are a number of application technologies available to deliver 100Gb/s, 200Gb/s and 400Gb/s over multimode fibres. However, we can also see applications that allow those same data speeds running over singlemode fibres, up to a maximum distance of 500m, with competitive budgets compared to the equivalent multimode solutions.

Taking a look at OM5 we can see that this will enable some distance enhancements when compared to OM3 and OM4, but only over specific IEEE standard applications like 400Gb/s and some other MSA based applications, all based on shortwave wavelength division multiplexing (SWDM). OM5, however, cannot provide any specific benefits for some of the current IEEE standard applications based on single wavelength transmission like 40GBASE-SR4, 100GBASE-SR4 and 200GBASE-SR4.

It is debatable, at least for new data centres, whether we should now be actively considering the jump to singlemode. This backbone infrastructure will not only support the data transmission demands of today but future requirements as well. It also provides a longer reach medium, for example, in large hyperscale data centres.

Capital expenditure levels for singlemode are now also starting to run much closer to those of multimode. This, combined with good data centre design and applications based knowledge, could mean that singlemode technology is right for consideration now.

Alberto Zucchinali
Siemon

Editor's comment

As always, Alberto makes some excellent points, which add weight to the already strong argument about the advantages offered by singlemode optical fibre in data centres. OS1 in particular has proved to be highly future proof.

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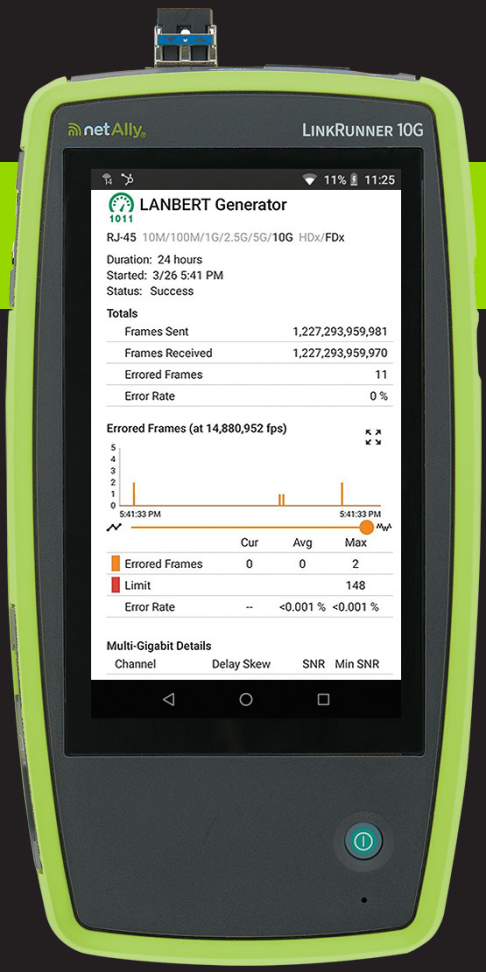

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Time to take another look

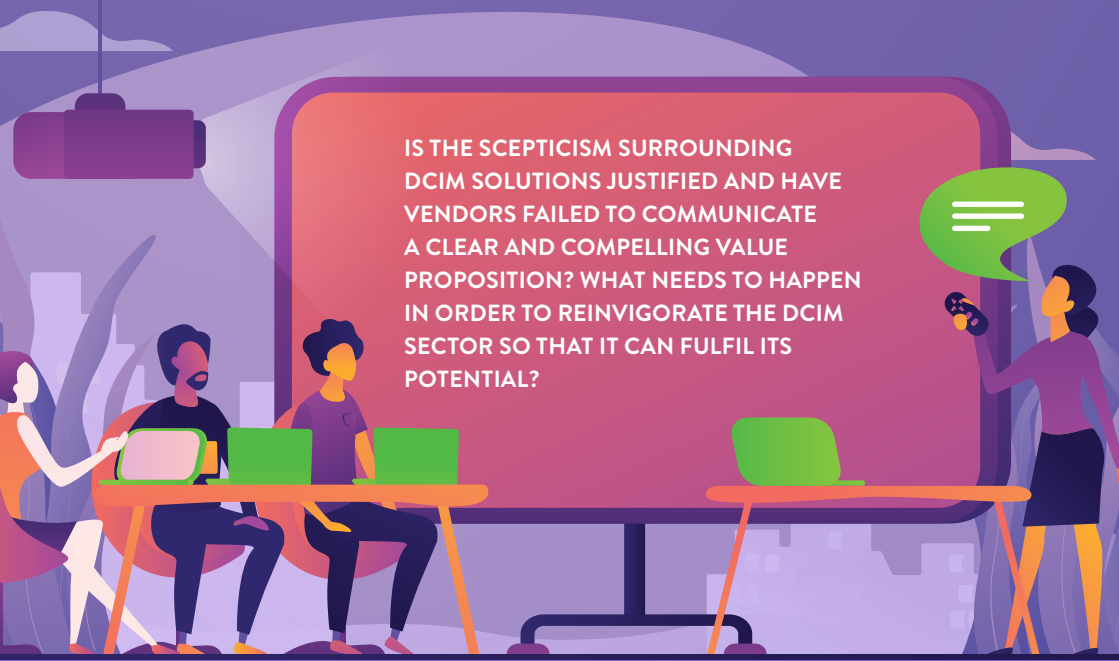
Despite its supposed benefits, there remains a degree of scepticism about data centre infrastructure management (DCIM) solutions and there are conflicting views about its true worth. Inside_Networks has assembled a panel of industry experts to examine whether the perception of DCIM can be improved and what needs to happen for it to meet expectations

By helping data centre managers monitor, manage, automate and optimise their IT estates, DCIM can enhance energy efficiency, save money, assist with the deployment of new equipment, and optimise moves, adds and changes. While this all sounds positive, after over a decade of development DCIM is still a controversial topic.

From the very beginning, DCIM promised much but often delivered little. Many DCIM systems were not correctly commissioned, leading to inaccurate monitoring and poor decision making, while DCIM vendors didn't clearly define the solution. This led to expensive implementations that often failed to deliver a true return on investment (ROI).

So what does the future hold for DCIM and can it fulfil its potential? Inside_Networks has assembled a panel of experts to examine what must be done to improve its image and create a genuinely beneficial solution for managing data centre infrastructures.

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



MARK ACTON

BUSINESS STRATEGY & TECHNOLOGY DIRECTOR AT RIT TECH

So is the scepticism surrounding the use of DCIM justified? Yes and no. DCIM has failed to deliver on the promises made and, in many cases, is merely a beefed-up building management system (BMS) or overpriced asset register! Nevertheless, experts are still predicting a 16 per cent growth to 2024 with a forecast market value of over $3bn.

The reality is that until recently the functionality required to deliver against the requirements of a useful DCIM system simply did not exist. A true DCIM system is far more than a nice graphical interface for an asset management system or an expensive adjunct to a standard BMS system. The original concept was a single system that allowed the management of resources to support the primary purpose of a data centre – to maximise IT service availability.

However, some vendors have used the DCIM banner to market products that really should not be classed as DCIM, while others have overpromised on the solutions they offer. True DCIM has a powerful role to play in the management of data centre operations by aligning IT, facilities and other business stakeholders to offer greater resource efficiency and the management capabilities necessary to be able to properly manage complex, distributed and hybrid architectures.

To some degree the reinvigoration of the DCIM sector is already happening. With the emergence of increasing numbers of edge facilities comprising small unmanned 'dark' sites, as well as the lessons learned from coronavirus pandemic, there is a recognition that they only way to manage increasingly complex hybrid digital estates is to use tools that offer full management capabilities – not simply the monitoring offered by legacy DCIM solutions.

There is also recognition now that no single tool will satisfy all the management requirements within a data centre and needs are different depending on business type. Integration is therefore the key – the ability to combine multiple specialist tools and data sets to offer a single cohesive and accurate 'view of the truth' across complex estates. This includes the ability to bridge the IT and facilities divide to eliminate the siloes that persist, offer more effective use of expensive data centre resources and, ultimately, to provide a demonstrable ROI.

'THE REALITY IS THAT UNTIL RECENTLY THE FUNCTIONALITY REQUIRED TO DELIVER AGAINST THE REQUIREMENTS OF A USEFUL DCIM SYSTEM SIMPLY DID NOT EXIST.'

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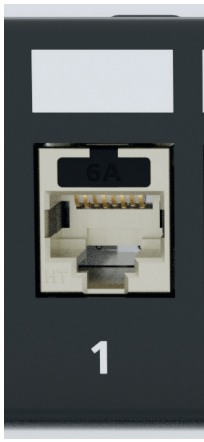

PATRICK DONOVAN

SENIOR RESEARCH ANALYST AT SCHNEIDER ELECTRIC

In the face of continued demands for sustainability, energy efficiency and reliability, DCIM has become a critical component of data centre operations. I believe any scepticism over the value of DCIM, while understandable, is not justified. However, that's not to say there aren't times when outlandish claims are made about the software, or vendors fail to communicate what's really required to truly harness its capabilities.

If we reflect on the original hype surrounding DCIM, some levels of scepticism are certainly justified. However, when it comes down to whether or not DCIM improves and simplifies the management of a portfolio of data centres and distributed IT, there's no cause for concern. In fact, DCIM has evolved to harness next generation software capabilities utilising the cloud, data analytics, artificial intelligence (AI) and machine learning (ML) training models to address legacy gaps and offer a far more comprehensive solution than older systems.

Regardless of the hype, many end users have enjoyed the benefits of traditional on-premise DCIM and have successfully used it to maximise the efficient use of data centre resources. DCIM has improved the availability and resiliency of physical infrastructure systems and the IT workloads they support. Effective, well implemented DCIM does indeed simplify, facilitate and provide a clear view of what would otherwise be a very complex and diverse ecosystem of disparate systems, spread across geographically dispersed sites.

Realising the true value of DCIM also requires the user to ensure it becomes fully integrated with each part of their operation and maintenance program. Assets need to be accurately documented and maintained over time, while the system needs to be configured with the appropriate settings and thresholds based on operating requirements, alarms incorporated into an issue resolution process and reports customised based on local requirements.

Collaboration also remains essential. In fact, by not incorporating DCIM into operational processes and/or neglecting to achieve buy-in from all relevant stakeholders on the commitment to use it, customers will find it far more difficult to realise its full potential.

One of the ways to invigorate and encourage new adopters of commercial DCIM is for vendors to focus on making it easier for people to get started – making their solutions more intuitive to use and easier to maintain. The best way to do this is with an open, flexible, cloud based DCIM architecture.

'I BELIEVE ANY SCEPTICISM OVER THE VALUE OF DCIM, WHILE UNDERSTANDABLE, IS NOT JUSTIFIED.'

STEPHEN BOWES-PHIPPS

SENIOR DIGITAL INFRASTRUCTURE CONSULTANT AT PTS CONSULTING

Just the term 'DCIM' alone causes arguments within the data centre sector. Viewed from a mechanical and electrical (M&E) perspective, DCIM often works very nicely, particularly if it's working with equipment. Viewed from an IT perspective, DCIM seems to be a troublesome, expensive tool that is poorly integrated within the ubiquitous IT single pane of glass. If a facilities manager has a BMS, DCIM offers little more and is harder to configure and maintain.

The challenge for those responsible for data centre and IT systems is to demonstrate the value to both parties of purchasing and maintaining a DCIM solution. And this is the issue that has been ongoing for the last 15-20 years.

I have seen some excellent DCIM set-ups that are purchased, focused and updated (expensively) for the M&E side with little or no regard for the IT. I have rarely seen DCIM used with the same degree of functionality, integration and value that allows both IT and facility departments to understand the performance between IT and M&E equipment, and the impact on data centre costs, operations and efficiency.

DCIM needs to become the go to tool when the whole 'system' – facilities, IT equipment, applications and networks – must be understood, tuned and reported on. Why is this important? Because in order to demonstrate real ROI for DCIM, data centre stakeholders need to combine their requirements and build a system that integrates across all critical components. Keeping initial requirements simple and integrating the system fully into change management processes are both vital to long-term success.

The next logical step is to integrate across data centres that are also virtual and remote. DCIM providers need to work closely with plant and equipment providers across the industry, as well as IT infrastructure manufacturers, to ensure widespread standards based connectivity for the plethora of systems and devices within data centres.

DCIM is never going to replace the proprietary tools that IT systems managers use but it can be a useful additional data source, which demonstrates a combined value across data centre IT systems and M&E.

'VIEWED FROM AN IT PERSPECTIVE, DCIM SEEMS TO BE A TROUBLESOME, EXPENSIVE TOOL THAT IS POORLY INTEGRATED WITHIN THE UBIQUITOUS IT SINGLE PANE OF GLASS.'

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MICHAEL AKINLA

BUSINESS MANAGER CENTRAL EUROPE NORTH AT PANDUIT

I believe that developers and users of DCIM systems understand that you can't manage what you don't measure! However, a degree of scepticism exists today and for me this is a good thing, as it keeps us on our toes. It ensures questions are asked and answers lead to better understanding and more effective monitoring, analysis and control.

Around the year 2000, data centres became critical assets with the overprovisioning of expensive power, cooling and other resources. Corporations heavily resourced these cathedrals of data and DCIM became the darling of market research companies, with many systems coming to market. When the benefits failed to materialise to their satisfaction, the blame was placed on DCIM providers. As such, DCIM entered years of pariah status within the data centre community.

DCIM is not just a software solution or an engineering problem, as it involves all key decision groups – facilities, IT, finance and executive teams – and is a combination of hardware, software and humans. It's a little like Strava, which I use to measure performance on my bike against certain parameters. Reviewing my results, I adjust my next ride to lift my results closer to where I want them. Without Strava, I'm simply guessing what to change to get better results.

Most problems with DCIM occur through lack of a clear requirement from the customer and incorrect situation analysis by the DCIM installer. Good communication is vital, as data centres have become more complex, while operational expenditure, sustainability and efficiency have become essentials. DCIM provides power consumption, cooling capacity, space utilisation and IT loading information, which is key to the operation of a data centre. It is like a living organism and DCIM is the nervous system that allows us to understand when it is in pain and what remedies to take.

The move to open platforms allows communications between all the various elements combining data collection, integration and visibility. DCIM has evolved with the growth in IP devices and edge, and continues to converge on to Ethernet protocols to optimise the data from all areas of a site – proactively protecting the effectiveness of a data centre.

'DCIM IS NOT JUST A SOFTWARE SOLUTION OR AN ENGINEERING PROBLEM, AS IT INVOLVES ALL KEY DECISION GROUPS – FACILITIES, IT, FINANCE AND EXECUTIVE TEAMS – AND IS A COMBINATION OF HARDWARE, SOFTWARE AND HUMANS.'

DEAN BOYLE
CEO AT EKKOSENSE

Since the introduction of the DCIM concept by Gartner it has struggled to mature and deliver against the needs of data centre operators. Worse than that, DCIM has become a tarnished term following disappointing deployment results. Customers quite rightly ask 'what has DCIM ever done for us?'.

Many companies spent huge sums on DCIM projects, only to abandon them midway through due to complexity and cost. Furthermore, some of the bigger product vendors significantly overpromised on their DCIM platform capabilities and usefulness, completely devaluing their DCIM proposition.

DCIM has never really been defined, and has – in my view – never actually existed in the way it was originally sold. The early hype and the promise of seamlessly marrying the IT and M&E aspects of a data centre operation just never materialised. Many DCIM vendors originated from the IT side of the fence and, although they claimed comprehensive functionality for 'inside the rack', none of them properly addressed the very real M&E needs of data centre operators – particularly overall energy efficiency and capacity management.

I would argue that most solutions classed as DCIM only offer monitoring capabilities rather than any of the useful management tools suggested by the name. It's also perhaps worth noting that Gartner no longer references DCIM or publishes reports, as the term has been so devalued.

That's unfortunate, as the basic concept is still valuable – it's just that up until recently there haven't really been any solutions that have truly merited the DCIM tag or offered a tangible ROI.

I think there is huge potential for change or reinvigoration, and the good news is this is already happening. The impact of the coronavirus pandemic – particularly the difficulties involved in getting people into a site and the emergence of remote 'dark' edge sites – means that people are increasingly looking at both enhancing remote monitoring, as well as identifying management capabilities where there is no routine human presence on-site. This is likely to continue after the pandemic.

What they're after is DCIM 2.0, but this time with very smart management capabilities and demonstrable short-term ROIs. AI and ML led solutions don't just highlight problems as they occur but actually deliver intelligent insights and recommended solutions before issues even develop.

'I WOULD ARGUE THAT MOST SOLUTIONS CLASSED AS DCIM ONLY OFFER MONITORING CAPABILITIES RATHER THAN ANY OF THE USEFUL MANAGEMENT TOOLS SUGGESTED BY THE NAME.'

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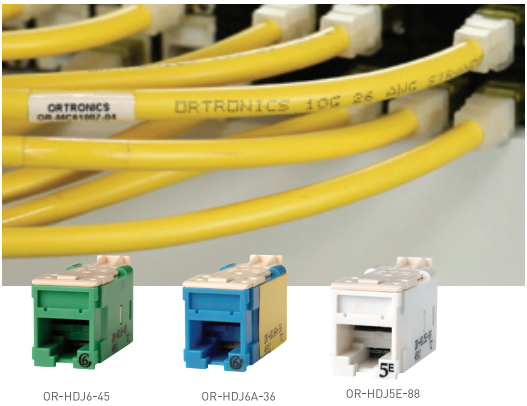

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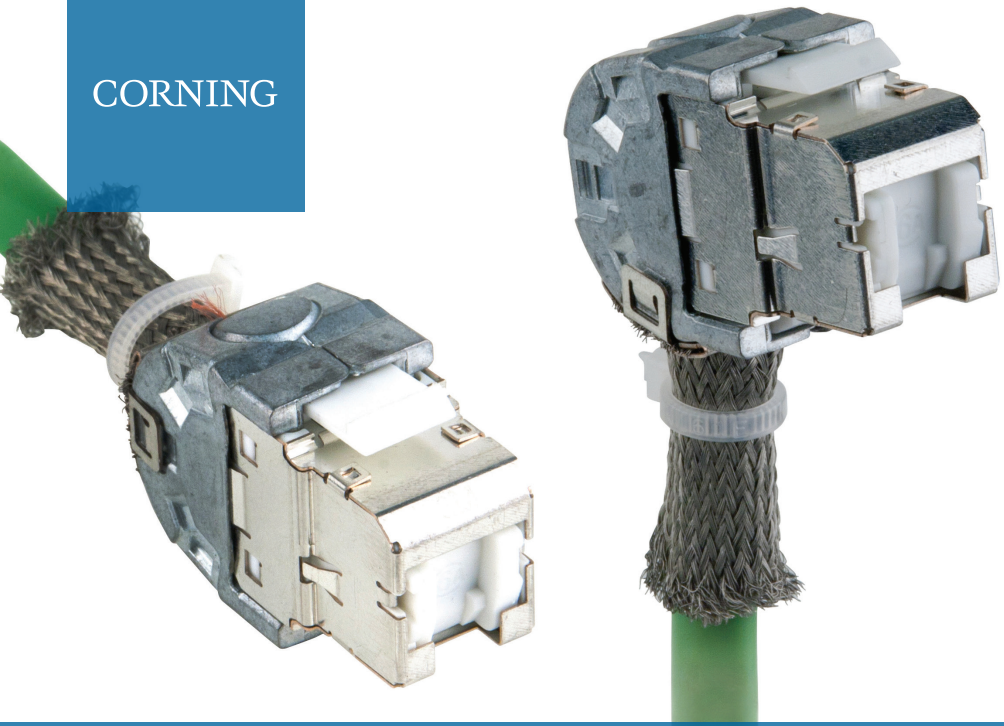

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With three cable entry points, our RJ45 Cat.6 and Cat.6_A shielded and unshielded jacks make installation simple with tool-less termination for unshielded twisted pair cables. Each jack component can terminate to any compatible certified cable and patch cord combination. They're also reusable, so wiring mistakes don't mean wasted inventory.

Like every product in our comprehensive, end-to-end copper interconnect solution, these jacks work with our full range of copper cables. This range includes the cables that are B2ca rated and certified by independent laboratory testing to meet the highest standard of the Construction Products Regulation (CPR) for telecommunication cables intended for permanent installation inside of buildings and construction works.

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HERMAN CHAN
PRESIDENT AT SUNBIRD SOFTWARE

Data centre professionals are justified in being sceptical of first generation DCIM software. In the early days, vendors and analysts each put their own spin on the definition of DCIM, creating confusion for prospective buyers. Vendors overpromised and underdelivered, and marketed their DCIM products as a panacea to all data centre problems. The overhyped products did not deliver as promised, leaving early adopters struggling to deploy and extract the full expected value of their investments. More than a decade later, some data centre professionals still hold the perception that DCIM software is just smoke and mirrors.

However, over time, customers have voted out those failed vendors from consideration. Many early providers with incomplete and difficult to use products are no longer commercially viable options. Instead, the emergence of second generation DCIM has reinvigorated the sector and is fulfilling the promises left unkept by its first generation counterparts. Cutting edge data centre professionals now realise the enormous potential of modern DCIM software and report high satisfaction ratings and fast ROI.

Second generation DCIM provides enhanced capabilities such as zero configuration analytics that enable data centre professionals to easily track their key performance indicators, automation via integration that greatly reduces the manual effort to enter information, and 3D visualisation that makes remote data centre management better than being physically on-site.

Modern DCIM software offers data driven collaboration, multi-vendor compatibility, super-fast deployments and enterprise class scalability. It also provides a completeness of capabilities spanning asset, capacity, change, energy, power, environment, security, connectivity, visualisation, business intelligence and analytics.

The opportunity for better uptime, increased efficiency of capacity utilisation and improved productivity of people is enormous for data centre professionals who deploy second generation DCIM. Industry experts have spoken, and they report benefits such as getting 40 per cent more usage out of facilities and power resources, improving asset tracking efficiency by 50 per cent, spending 25 per cent less time managing assets, locations and connectivity, and dramatically reducing the potential for human error.

> ‘THE OPPORTUNITY FOR BETTER UPTIME, INCREASED EFFICIENCY OF CAPACITY UTILISATION AND IMPROVED PRODUCTIVITY OF PEOPLE IS ENORMOUS FOR DATA CENTRE PROFESSIONALS WHO DEPLOY SECOND GENERATION DCIM.’

Centiel expands its sales team with appointment of Graham Murray


Graham Murray

Centiel UK has expanded its hardware sales team with the addition of Graham Murray as sales engineer. He will be responsible for external hardware sales, specialising in uninterruptible power supply (UPS) system replacements.

Before joining Centiel UK, Murray was a sales engineer at Kohler Uninterruptible Power (KUP) for more than four years and, prior to that, he worked at UPS Systems for several years as a technical sales account manager. He commented, 'My new role is varied and includes working on new projects and replacing end of life systems. I will be helping clients upgrade to the very latest technology, which is rightsized to reduce overall total cost of ownership and, at the same time, offers the highest levels of efficiency, availability and reliability.'

Louis McGarry, sales and marketing director at Centiel UK, commented, 'Graham's appointment will further strengthen our team and offer support to our valued customer base. His experience with system integration and project sales will make a valuable contribution to the continued growth of Centiel in the UK.'

Trend Networks acquires Terahertz Technologies


Paul Walsh

Trend Networks has acquired US based fibre optic and photonics test equipment company Terahertz Technologies (TTI). TTI will continue to design and manufacture products at its premises in Oriskany, New York, ensuring that its products continue to be made in the USA.

The existing TTI team will remain, including the engineering, sales and production teams, as well as CEO, Michael Mazzatti, who founded the company in 1989. He said, 'We are looking forward to the next chapter for TTI and joining the Trend Networks family. A renewed sales and marketing effort and international distribution network will also bring TTI testers to more users globally.'

Paul Walsh, CEO at Trend Networks, added, 'TTI has a fantastic team and some extremely talented engineers, so we are excited to work alongside them to expand our range of fibre testing products, as well as innovate new solutions.'

Mayflex wins Avigilon Elite Distribution Partner of the Year award

Mayflex has been awarded the Avigilon Elite Distribution Partner of the Year for EMEA award at Avigilon's virtual partner conference. Avigilon judged the award based on several criteria including commitment to the brand, turnover, year on year growth, stockholding, training offered, and sales and marketing activities. Out of 50 distributors in the EMEA region, just four awards were given to distributors in Germany, Spain, Italy and to Mayflex in the UK.


Tom Filce

Tom Filce, Mayflex's director of sales for security, commented, 'We are delighted to have won the award. We have been distributing Avigilon since 2010 and it's a brand that we very much believe in. Our teams of external and internal security specialists have extensive knowledge and experience, a number of which are fully trained Avigilon System Design Experts, which is critical to ensuring that our customers get the right level of support and advice.'

Legrand achieves independent verification from MultiLane

MultiLane has independently verified that Legrand's Infinium Quantum Fiber System increases network performance beyond IEEE's industry standard fibre connectivity loss for greater network efficiency and cost optimisation. It was also shown to achieve significant bit error rate (BER) improvement with a notable reduction of forward error correction (FEC) codewords. The Infinium Quantum Fiber System was tested via the Multilane ML4054B 400G transceiver test platform.


Gene Smith

'For many years, the conventional wisdom held that any performance level at or beneath the IEEE standard was deemed to be good enough,' said Gene Smith, director of product management and marketing at Legrand. 'However, when it comes to today's complex electronics and more advanced modulation schemes, "good enough" will not do. Thanks to MultiLane's foresight to conduct this test we now have the verified data that clearly shows Infinium Quantum's dramatic effects in optimising optical headroom to increase overall network performance.'

CHANNEL UPDATE IN BRIEF

Schneider Electric has launched its Edge Software & Digital Services Program – a complete suite of benefits, support tools and certifications that enables IT solution providers to create a managed power services practice.

UK Connect has been granted 5G for enterprise branch specialisation status by Cradlepoint, becoming the UK's sole construction connectivity provider to achieve it.

Costain has joined i-Trace, a part-government funded demonstrator of artificial intelligence and blockchain for securing internet of things environments.

Mayflex has become a strategic partner to Zitko Talent – the new industry training initiative designed to fast-track entry level field engineers into fire and security.

Pax8 has welcomed David Willis to its board of directors.

Mitel has formed a strategic partnership with Five9, which will provide customers and partners worldwide with access to a leading contact centre as a service (CCaaS) solution that operates seamlessly with Mitel's unified communications solutions.

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Deep *thought*

James Withey, liaison officer between IEEE 802.3 and ISO/IEC SC25 WG3, explains the recent developments in copper cabling standards and applications

In 1979 The Hitchhiker's Guide to the Galaxy was published and Douglas Adams introduced us to the Babelfish, which helped Arthur Dent and Ford Prefect hitchhike around the galaxy by removing the communication barrier between species. That same year, Robert Metcalfe founded 3Com and worked with the leading data communication companies of the day to promote Ethernet as an open standard, with the first public standard published in 1980. This paved the way to removing communication barriers between IT devices.

SINGLE LIFE

In the decades since, Ethernet has increased both in popularity, data rate and, crucially, in where it is used. No longer just for IT networks, in various forms Ethernet links industrial machinery, operational technology (OT), building systems, lighting, sensor networks and so many other devices that we now call the internet of things (IoT).

By bringing all these aspects of an installation together on a single application it becomes easier to manage the whole premise without relying on multiple systems and the Babelfish required to link those systems. Much of the current work in standardisation supports this unification, by standardising applications and cabling to allow the network manager to understand and control more of their premise with fewer systems.

STARTING POINT

Since the 2016 publication of the Ethernet standard for 2.5GGb/s and 5Gb/s, along with 25Gb/s and 40Gb/s transmission, there have been no new projects at IEEE looking at four pair cabling – but there has plenty of activity looking at single pair applications.

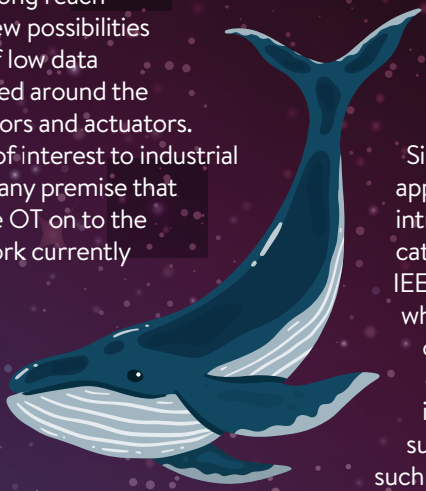
2016 also saw the IEEE publication of 1000BASE-T1, extending the data rate of the previous year's publication of 100BASE-T1 to 1000Mb/s. These applications were aimed at the automotive and industrial sectors and, with a reach limited to 15m for unshielded cable, had very little impact to premise cabling installations. This changed when at the end of 2019 IEEE published 802.3cg, which covered two new applications with a data rate of 10Mb/s – one of which has far longer reach.

WITHIN REACH

The first of these was 10BASE-T1S, which has 15m reach and was intended for the support of industrial machinery with point to point connections. It also allows for a configuration where up to eight devices can be connected along one line of single pair cabling up to 25m long. This 'multidrop' configuration is particularly useful to the industrial

sector and machine builders, and has already led to a new IEEE project to enhance its capabilities. But more of that later...

The second part of IEEE 802.3cg sticks with the more widely used point to point configuration, but extends the reach to 1000m. With such a long reach 10BASE-T1L brings new possibilities for the connection of low data rate devices distributed around the premise, such as sensors and actuators. This is no longer just of interest to industrial premises, but also to any premise that wishes to incorporate OT on to the same Ethernet network currently used for IT.



Part of what enables such a long reach comes from the changes in the specification for the cabling to be used. IEEE 802.3cg makes use of cabling with a much lower attenuation of up to 18AWG conductors and operates in a much lower frequency range below about 20MHz. These two factors contribute to simpler active equipment and, hence, a lower relative cost. They also allow for other cabling gauges to be used where shorter reaches are being considered.

CONNECTING TOGETHER

Moving on from the applications themselves, standards have been published, or are nearing the end of their development, that specify the components to be used, the requirements for links and channels within the premise, and testing to ensure compliance. These standards all rely on each other to support the final operation of the application on generic cabling.

Both TIA and ISO are developing new categories and classes of generic cabling to support Single Pair Ethernet (SPE) applications. TIA 568.5 will introduce the new single pair category of SP1 to support the IEEE 10BASE-T1L applications, while work has also begun on a standard for industrial cabling in TIA-568.7 that introduces classes to support other applications such as 100BASE-T1 and 1000BASE-T1. These documents also include the component specifications for cables and connectors within TIA, whereas a separate standard is being completed for field testing – TIA 5071.

LIKE MINDED

ISO is also conducting similar work with three new classes of cabling in ISO 11801-1 Amd.1 including T1-A, which is targeted at 10BASE-T1 applications, and two more classes – T1-B and T1-C. These cover the other higher speed SPE applications and present a potential opportunity for development of new applications that take advantage of higher performance cabling.

For single pair cabling in industrial

premises, ISO has recently published ISO 11801-3 Amd.1, which not only provides guidance on how and where to use SPE but is also the first standard to provide normative requirements for industrial end to end link configurations. This allows for installation and evaluation of field terminated plugs on the ends of the cabling. Updates are also nearing completion on the ISO standard for distributed building services that will also add the use of single pair cabling.

The IEC is also working on a complete system of cable types for SPE within the 61156 standards series. Many are either published already, or nearing completion, and will cover the horizontal and work area cable targeting several different performance levels. Other documents in the IEC 63171 series define the connectors refenced by the ISO cabling standards.

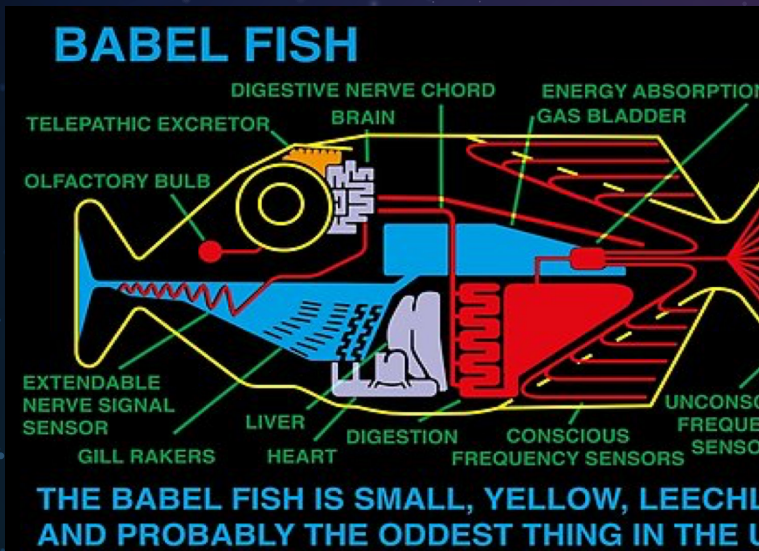
WHAT ABOUT POWER?

In addition to data transfer, SPE is fully capable of delivering power. The exact power available to a device will depend on what power classes are supported by the particular power sourcing equipment, and also on the resistance of the cabling, which is related to the length and wire gauge used. Based on those factors a maximum of approximately 50W is available at the powered device, enabling a wide range of devices to be connected and powered by an SPE cable.

‘Both TIA and ISO are developing new categories and classes of generic cabling to support Single Pair Ethernet (SPE) applications.’

The issue of heat rise in cabling bundles is still present for SPE cabling, just as for any cable where power can be delivered. Guidance on this subject can be found in the TIA-184-A, and ISO 29125 standards. These both relate the current to be delivered to the size of the cable conductors and the size of the cabling bundle that can be used within an acceptable temperature rise.

ISO has also just published an amendment to its 18598 standard for automated infrastructure management (AIM). Amongst other improvements it addresses the identification of bundle size and resistance of the cabling to allow



AIM systems to assist with management of remote powered devices within the premise.

ON THE HORIZON

As I hinted earlier, the multidrop version of 10BASE-T1 has already attracted enough interest to launch a project to enhance the reach and number of devices. The IEEE 802.3da project will extend the reach to 50m, include support for up to 16 devices and is expected to be published towards the middle of 2023.

IEEE also launched a new study group in March of this year to investigate enhancements to the point to point single pair standards. The enhancements being considered are, firstly, to improve support for time sensitive networking – a feature considered highly beneficial by industrial users. The study group will also consider increasing the data rate for long reach point to point networks. This activity is so new that there are no specific reaches or data rates that can be reported yet, but for those who have asked if it will be possible to aggerate single pair networks on to a single pair backhaul, or if there are applications being considered above 10Mb/s, then those questions have certainly been heard and are being worked on.

MIND YOUR LANGUAGE

Single pair networking is still in the early stages of being rolled out to premise networks, but the standards not only specify what is available today but also look forward and address the opportunities that a market-wide installation of SPE will present. Once all our systems speak the same language, we can look forward to removing the Babelfish from our networks. ■

JAMES WITHEY

James Withey is a senior engineer at Fluke Networks. He has over 20 years of experience in testing of cabling systems and 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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Comtec, part of the ETC Group, offers the most comprehensive range of copper cabling systems, with solutions from industry leading brands including CommScope NETCONNECT and SYSTIMAX, Draka, HellermannTyton, Molex, Nexans and Siemon. These, together with the proven, long established and price competitive Ultima solution mean that we have a cabling system to support every project and every budget.

With options for Category 5e, 6, 6A and 7A held in stock, including CommScope and Draka eco-packaged solutions, we have a copper cabling system to support even the most demanding application.

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Siemon

Siemon's history of innovation is reflected in the company's broad range of end to end copper cabling solutions. First to market with Category 6 and, later, with its Category 7A TERA system, Siemon's copper solutions offer best in class performance across all critical transmission parameters.

The TERA Category 8.2 copper cabling system was founded on the TERA connector. It delivers a complete end to end system that exceeds ISO/IEC Category 8.2/Class II specifications for two connector, 30m Class II channels for 25Gb/s and 40Gb/s switch to server applications in the data centre.

High performance, high speed interconnect assemblies for direct attach point to point applications in the data centre are also part of the copper portfolio and support up to 100Gb/s across an array of applications. They are available in a variety of QSFP28, SFP28, QSFP+ and SFP+ form factors including hybrid breakouts and active optical cables.

In industrial internet of things (IIoT) environments that increasingly leverage 10BASE-T1L Single Pair Ethernet (SPE), Siemon's TERA cabling system already offers a commercially available SPE ready end to end infrastructure.

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

HellermannTyton

HellermannTyton is reshaping and relaunching its LAN product range. Having already said goodbye to Category 5e in 2020 and the Deca10 Keystone Jack earlier this year, HellermannTyton has launched its new Cat6A solution, with a whole host of exciting products due to be introduced over the coming weeks.

The range includes the new Cat6A Jack, panels, cable and patch leads. The Cat6A Jack is designed to be toolless and does not require any specialist termination tools, while the Cat6A panels come in both flat and flat angled versions. HellermannTyton will also be introducing a new range of category panels and outlets, along with a selection of LC and Euro modules, faceplates and backboxes.

All of the new products from HellermannTyton will be supplied in plastic free packaging where possible, enabling the company and its customers to do their bit for the environment and planet.

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

Leviton

Leviton has expanded its portfolio of Pre-Terminated Copper Trunk Cables with new Category 6, 6A, 7 and 8 rated options, and now offers additional bundle sizes. The new trunks allow for faster network deployment to bring equipment online quickly and minimise downtime during moves, adds and changes.

The trunks can be ordered in cable counts from 2-12, with a range of factory terminated jack and/or plug configurations. The trunks use Atlas-X1 and eXtreme jacks, which feature Leviton's patented Retention Force Technology. This extends connector life by preventing tine damage after repeated connections. Leviton has also introduced the following trunk cable constructions – eXtreme Cat 6 UTP, Atlas-X1 Cat 6A UTP, Atlas-X1 Cat 6A F/FTP, Atlas-X1 Cat 7 S/FTP and Atlas-X1 Cat 8 S/FTP.

Most trunks can be configured and manufactured within two weeks at Leviton's EMEA Data Centre Factory, with rapid shipping to jobsites throughout Europe, Middle East and Africa. Based in Glenrothes, Scotland, the EMEA Data Centre Factory runs on world class IT systems with online configurators that allow for rapid ordering and delivery of both copper and fibre optic make to order (MTO) cable assemblies.

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

Patch Solutions

Available from Patch Solutions, Patchsee offers a range of Category 5e, Category 6 and 10GBASE-T Category 6A copper patch cables. The products use a unique light technology installed within the patch cable.

This technology enables the immediate identification of the end of a cable by connecting a special torch that shines either a flashing or stable light through the cable to the corresponding end. It really comes into its own when using longer length cables, perhaps for zonal or top of rack deployments, where patch cables are being passed between racks in high density installations.

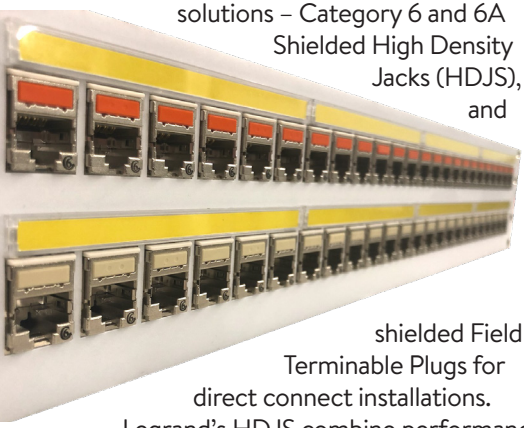
Available in multiple lengths from 0.6-30m, FTP or UTP and PVC or LSZH jacket, there is a cable for every eventuality – from a small server room to a large data centre. Request a sample pack from us today.

For more information contact a member of our team on 01442 890890, **CLICK HERE** to send an email or to visit the Patch Solutions website **CLICK HERE.**

patchsolutions.com

Legrand

To support the evolving need for high power power over Ethernet (PoE) applications and enhanced electromagnetic interference (EMI) protection in dynamic network installations, Legrand has introduced two new high performance solutions – Category 6 and 6A Shielded High Density Jacks (HDJS), and



shielded Field Terminable Plugs for direct connect installations. Legrand's HDJS combine performance and modularity to deliver a dynamic high density rack-mounted solution. The new HDJS connector provides industry leading protection against EMI, including up to 22dB of alien crosstalk headroom, and is designed to mitigate the impacts of high power PoE on the internal components of the connector. Flat or angled HDJS patch panels allow up to 48 RJ-45 ports per 1RU, are easy to install and ground, and support optical fibre modules for a complete mixed media installation.

Legrand's new shielded Field Terminable Plugs are available with Category 6A performance, and a straight or 90° boot. Together, Legrand's HDJS and FTP Field Terminable Plugs offer dynamic flexibility and premium performance.

For more information **CLICK HERE.**

www.legrand.us/ortronics

Corning Optical Communications

Corning Optical Communications has introduced corn starch packaging for all standard copper patch cords as part of the company's ongoing effort to reduce and eliminate single use plastics from its product portfolio.

The environmentally friendly corn starch packaging is fully biodegradable and has been implemented across Corning's full standard copper patch cord range, which is available in various categories for office and industrial applications, as well as pre-assembled cables.

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

Excel Networking Solutions

Excel's copper systems combine award winning technology with flexible options, high density solutions and a comprehensive choice of products – all covered by a 25-year warranty when installed by an accredited Excel Partner.

Excel's copper portfolio includes a range of independently verified ISO 11801 and Construction Products Regulation (CPR) certified cables across a broad range of copper categories, as well as an extensive selection of patch panels and modular frames that are complemented by a wide choice of interoperable connectivity.

Copper component products including keystone jacks, modules and outlets from Excel are available in multipacks in 100 per cent plastic free packaging, which can save up to 60 per cent installation time on-site. The full portfolio of Excel's copper cabling products is also available in its product guide.

More details about Excel Networking Solutions and its full range of products are available by **CLICKING HERE.**
www.excel-networking.com

Quick clicks

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

Data Center Debut: 400G Takes Center Stage is a webinar from **Leviton** that will take place on 30th June.
To find out more and to register **CLICK HERE.**

Adopting Appropriate Infrastructure in Datacentre Design is a blog from **Centiel.**
CLICK HERE to read it.

Building Your Talent Pipeline is an article from **CNet Training's** Andrew Stevens. **CLICK HERE** to read it.

Why Sustainable 5G Networks Are a 150-Year-Old Problem is a blog from Andrew Donoghue of **Vertiv.** **CLICK HERE** to read it.

A Guide to Successful Installation of Power over Ethernet is a white paper from **Fluke Networks.** **CLICK HERE** to download a copy.

Panduit, together with industry thought leaders, is hosting We Connect: The Journey of Innovation – a virtual event filmed live on Wednesday 16th June 2021. **CLICK HERE** to find out more.

Is Your Data Center Keeping Up with Complex High-Density Fiber Links? is the question posed in a blog from **Siemon.** **CLICK HERE** to read it.

A matter of urgency

Jon Abbott of Vertiv explains why it's time to prioritise efficiency and sustainability in network infrastructure

The rollout of 5G brings new challenges around energy management for the data centre industry. This is because 5G networks result in higher network density, heavy reliance on IT infrastructure and increased data traffic – all of which adds-up to increased energy consumption. Realising the benefits of 5G is estimated to lead to energy demands of 3.5 times more than those required for 4G.

SHARP FOCUS

The coronavirus pandemic has driven awareness of the vital role that data centres play in society, giving them a status akin to critical national infrastructure. This means more scrutiny and accountability when it comes to taking action on reducing energy use. As countries continue to deploy 5G in 2021 and beyond, we can expect the focus on sustainability to increase. Therefore, infrastructure businesses need to sharpen up their strategies and invest in more efficient practices to build both a successful 5G business case and maintain a strong environmental commitment.

When it comes to investing in and maintaining equipment, sustainability must become a top priority. For example, price and functionality have been a natural focus when purchasing equipment in the past but network managers must now also consider whether it is optimised for lifecycle efficiency.

EFFICIENCY DRIVE

When it comes to capital expenditure (CapEx), the business case for adopting efficient solutions must be evaluated across the lifecycle of a solution. High

performance rectifiers, for example, can be dismissed by procurement teams in favour of less efficient, cheaper alternatives. But to balance efficiency and CapEx, businesses should look at the total cost of ownership over a sustained period. This will enable them to uncover 'inefficiency' cost factors that are often overlooked, for example, higher energy costs and Power Usage Effectiveness multipliers.

Operation expenditure (OpEx) is also a key consideration for running a greener network. This means ensuring that all infrastructure is maintained to be as energy efficient as possible. Optimisation is important here and active technology utilisation provides a great example. Most physical servers only run at about 10-15 per cent utilisation, according to recent Pulsant data. This is inefficient because an idle server can still consume up to 40 per cent of the power of a fully utilised server. By using technologies such as virtualisation to boost server utilisation, facility managers can reduce energy consumption and costs. There are lots of resources available to help networks and data centre businesses better optimise their infrastructures to manage costs and boost sustainability.

REMOTE CONTROL

The industry can also offset the increased energy costs for 5G by transitioning toward data led smart sites. This is because 5G networks will run on millions of servers, mostly located in smaller edge data centres. There is an opportunity to ensure these edge sites are specified, equipped, commissioned and operated efficiently.

Remote monitoring technology can now manage everything from temperature and humidity, heating, ventilation and air conditioning to ensure that edge sites are energy optimised. Remote monitoring also means these sites are less dependent on human intervention, significantly reducing carbon footprint as fewer people need to physically visit their locations.

A HOLISTIC APPROACH

While enhancing their own operations will drive energy efficiency gains, to make a real difference owners and managers must look at how they can work more holistically with the energy ecosystem. It is

'Price and functionality have been a natural focus when purchasing equipment in the past but network managers must now also consider whether it is optimised for lifecycle efficiency.'

by taking a united approach to sustainability that energy providers and infrastructure providers can start to move the dial.

The starting point is to look at how facilities can better utilise renewable energy. Ireland is leading the way here, boasting multiple partnerships between data centre operators and power companies. For example, SSE Renewables and Echelon have agreed to develop a joint 520MW offshore wind farm that can meet the power needs of Echelon's data centres.

However, these projects don't just power data centres, they can also make more renewable energy available for public consumption. For example, Amazon's Irish wind farm projects are projected to add 229MW of renewable energy to the Irish grid each year. This will reduce carbon emissions by 366,000 tonnes of CO2 each year and produce enough renewable energy to power 185,000 Irish homes per annum. This is a model that other countries should seek to replicate if they are serious about rolling out 5G whilst reducing their carbon footprints.

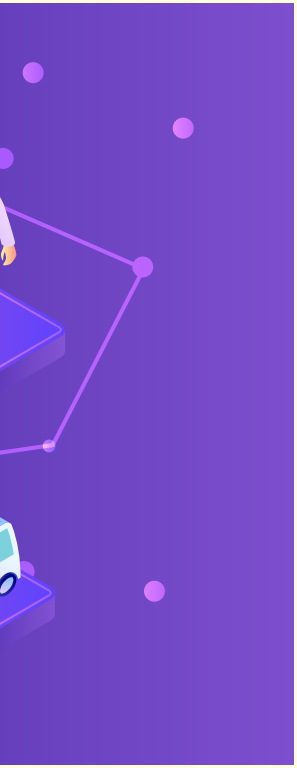
A FORCE FOR GOOD

We must remember that network efficiency improvements are only one piece of the energy puzzle. Those efforts must be paired with a 5G powered, societal approach to curbing energy use and emissions.

The deployment of 5G can deliver enhanced digital services which will, in turn, help other industries become more

sustainable. For example, in transport and logistics 5G can facilitate smart traffic infrastructure and automated last 100 yard delivery. This will mean reduced waste, fewer trips and higher productivity – all of which result in lower energy intensity of transport. It's estimated that $280bn of benefits would be delivered by 5G in the period leading up to 2030.

Similarly, Vertiv and STL Partners estimate that 5G will deliver improved access to healthcare to over a billion patients by 2030. Use cases include connected ambulances, remote patient monitoring and virtual consultations. While healthcare benefits cannot be easily measured in monetary terms, many of the 5G enabled use cases will reduce patient and clinician travel, and boost higher clinician productivity – all of which result in less energy and emissions for the same or better patient service outcomes.



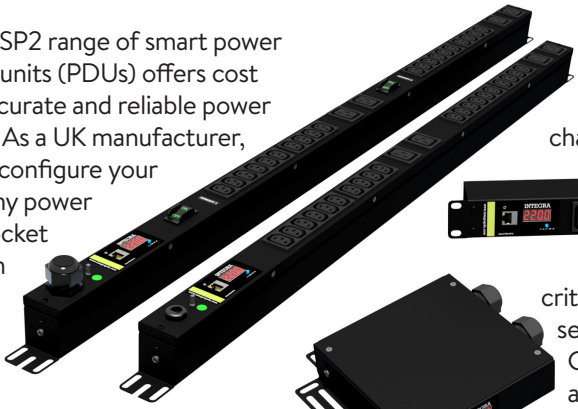
END TO END

While 5G will deliver huge benefits to business and society, it will also place greater energy demands on network and IT infrastructure. The key for network operators, and society at large, is to balance the positives of 5G with a smart and proactive approach to boosting sustainability. For networks, this means prioritising the purchase of efficient equipment and focusing on optimising infrastructure to reduce energy consumption. However, there is also a huge opportunity for the network, data centre and renewable energy industries to work together to deliver cleaner power for IT infrastructure and the wider energy grid. Finally, as a society, we must also ensure that 5G is being used to power services that ultimately enable sustainability initiatives for the long-term. ■

JON ABBOTT

Jon Abbott is technologies director, global telecom strategic clients EMEA at Vertiv. He defines telecom strategy through 'voice of the customer' and segment trend, focusing on power, cooling and energy efficiency. Abbott has over 20 years of experience in the telecom field, working with critical infrastructure for original equipment manufacturers (OEMs) and communications service providers (CSPs) alike.

Integra PDU



The Integra SP2 range of smart power distribution units (PDUs) offers cost efficient, accurate and reliable power monitoring. As a UK manufacturer, Integra can configure your PDU with any power input and socket combination you require, or even as an inline to monitor legacy PDUs.

The SP2 display has easy scroll readings and simple network management protocol (SNMP) connectivity. Volts, amps, watts, kWh and power factor can be measured and additional values include RMS volts, RMS amps, KW, internal temperature, frequency, power factor, peak volts, peak current, kVA, kWh, and kg/CO2 consumption cost kJ/H BTU/h.

With one per cent accuracy, PDU management software is available free of charge, with alerts for all critical high/low metrics set and sent via email. Communication is achieved via IPV4 HTTP, SNMP, SMTP (email), XML, HTML and Telnet, with access into SNMP PDU software and a supplied management information base (MIB) for third-party integration. The Integra SP2 range comes with a five year warranty.

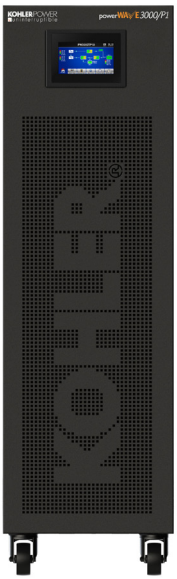
To find out more call the Integra team on 01823 242100 or **CLICK HERE** to visit the website.

integrapdu.com

Kohler Uninterruptible Power (KUP)

Kohler Uninterruptible Power's (KUP) PowerWAVE 3000/P1 solves the problem of providing economical to run and dependable critical power protection for higher load single-phase applications such as vital servers, networks and telecommunications. Compact in size and easy to install and operate, this 10kVA or 20kVA double conversion model lowers energy costs and carbon emissions, whilst providing a stable and resilient supply of power.

Behind its efficiency of 96.6 per cent lies intelligent design, optimised airflow and highly efficient components. With up to four units able to be connected in parallel for larger loads, dry contact cards, network interface SNMP cards and responsive sensors allow close monitoring for maximum confidence and peace of mind. Other key features include a bright 4.3-inch graphical touchscreen display, providing quick access to an intuitive system menu and a maintenance bypass switch connection.



To find out more **CLICK HERE.**

www.kohler-ups.co.uk

Secure Power

Secure Power is the home of power protection. Our ethos is to deliver the right power requirement to you, no matter what the scope. Whether you purchase hardware from us or from elsewhere, we are able to offer suitable services to wraparound these products.

From delivery and positioning to uninterruptible power supply (UPS) installation, commissioning and ongoing UPS maintenance and service plans, Secure Power can support you.

Did you know nearly all UPS above 3kVA require a hardwired connection on the input of the UPS? Whilst this can be undertaken by a 'competent' person, working with UPS and DC/battery power is something most people avoid, due to the risks involved.

To avoid any errors in installation that could potentially void warranties on any products sold, offering these wraparound services may well lead to increased revenue paths, as well as helping deliver a suitable solution for the end client.

To find out more about Secure Power's array of service offerings **CLICK HERE.**

securepower.com

Vertiv

Managing mission critical IT sites can often be a major challenge. Take the complexity out of your deployments with hassle free and cost effective solutions from Vertiv.

With a market leading line-up of hardware, software and service solutions from our Avocent, Geist and Liebert brands, which are designed for rapid deployment and quick and easy start-up, building a robust solution under one roof has never been easier.

Whether it's network reliability, dealing with power outages or managing multiple IT sites, Vertiv's edge ready solutions make us the perfect choice for you to manage, protect and power your distributed IT environments.

For more information

CLICK HERE.

vertiv.com

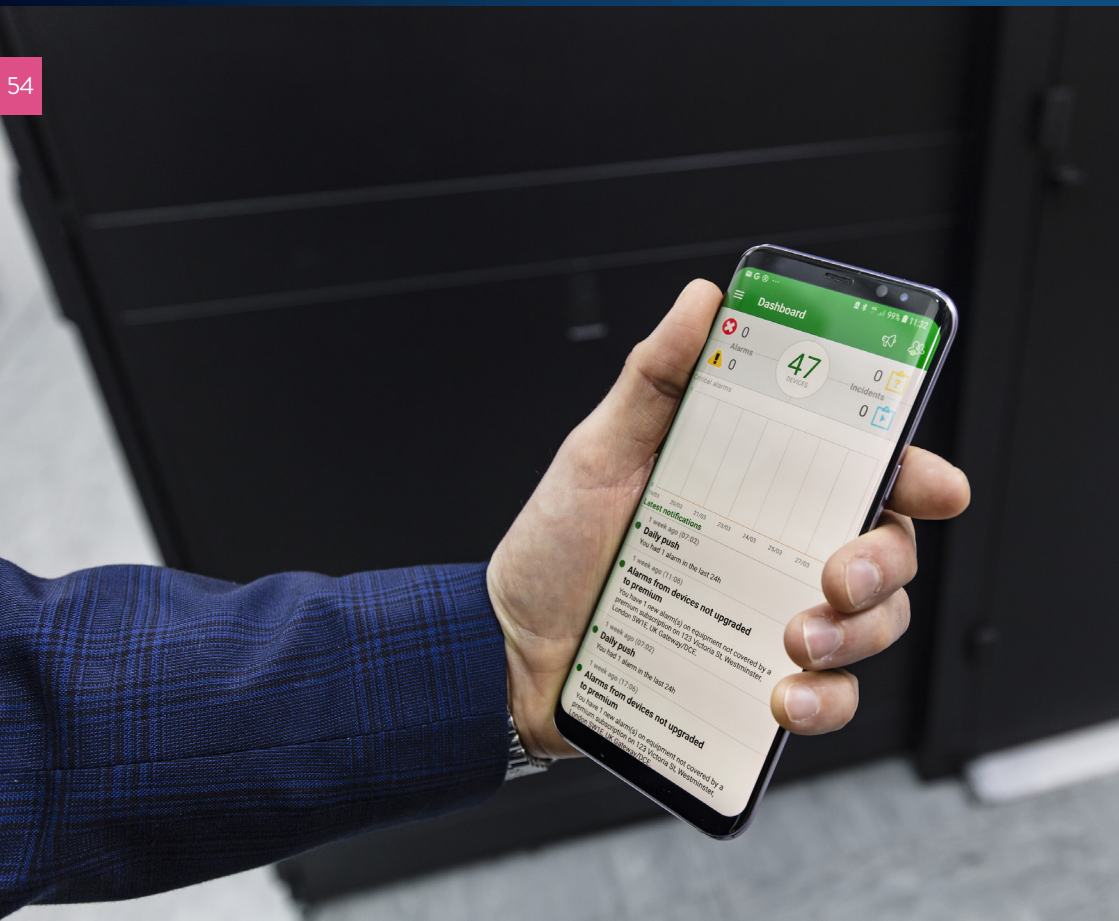
Sizing it up

With the emergence of 5G, Marc Garner of Schneider Electric examines the need for greater energy efficiency in edge data centres

The energy requirements of hyperscale and colocation data centres have attracted much public attention, often amid concerns that the strains they place on electrical generation and their energy consumption presents another challenge in attempts to drive decarbonisation. However, an issue rapidly growing in importance is the efficiency, or energy demands, of smaller data centres at the edge of the network.

NUMBER CRUNCHING

Edge computing accounts for an ever-increasing share of the data processing upon which our modern digital economy



depends. Gartner estimates that by 2025 75 per cent of enterprise data is expected to be created and processed at the edge. Meanwhile, IDC predicts the worldwide edge computing market will reach a value of $250.6bn by 2024, with a compound annual growth rate (CAGR) of 12.5 per cent between 2019-2024.

There are several factors driving the proliferation of data and its consumption at the edge. First among them is the demand for low latency applications including digital streaming from film, TV and music platforms. Secondly, internet of things (IoT) connected devices, artificial intelligence (AI) and machine learning (ML) are driving digital transformation in almost every industry. Many organisations are designing new experiences, reimagining business processes and creating both new products and digital services that rely on innovative and resilient technologies to underpin them. This is leading to more data being created and shared across the network – ultimately causing huge delays in transmission and download speeds.

FIVE ALIVE

The emergence of 5G technology is also beginning to transform the sophistication of business and mission critical digital services across multiple industries. However, the short range that is required to gain maximum benefit from these new technologies means that an inevitable consequence is that ever more data generation and consumption will be driven to the edge. As such, mobile edge clouds (MECs) will see a huge increase in the number of localised edge data centres needed to support them.

Schneider Electric, which is a member of an expert group formed by the World Economic Forum to investigate the implications of widespread 5G adoption, expects that there will be three times as many additional 5G clusters enabled by MECs, with around 7.5 million new micro data centres installed by 2025. Traditional telco networks were never designed for 5G, which means the estimated global investment in the buildout of associated 5G infrastructure will be around €1.3tn.

ENERGY DEMANDS

Various analysis suggests that data centres represent 1-2 per cent of global electricity usage and by 2030 as much as 3,000TWh of energy will be used by IT. The implications of energy consumption at the edge are considerable, meaning that managing the carbon impact effectively must begin with system design.

Deploying 100,000 data centres at the edge, each consuming 10kW of power would cause a consumption of 1,000MW for the IT power energy alone. Assuming a moderate Power Usage Effectiveness (PUE) ratio of 1.5 would mean these systems also emit the equivalent of 800,000 tons of CO2. However, if each

‘Deploying 100,000 data centres at the edge, each consuming 10kW of power would cause a consumption of 1,000MW for the IT power energy alone. Assuming a moderate Power Usage Effectiveness (PUE) ratio of 1.5 would mean these systems also emit the equivalent of 800,000 tons of CO2.’

edge facility was standardised and designed for a PUE of 1.1, we could reduce CO2 emissions by 25 per cent to 600,000 tons annually. Clearly, there is a need to apply the same due diligence to reducing power consumption at the edge as there has long been in the case of larger data centres.

Given the sheer scale of micro data centre deployments, not least to form the basis of MECs, the design of this infrastructure must consider energy efficiency as a priority. A corollary of the high volume is that installation speed and time to market is essential. Consequently, there is a clear benefit in producing pre-integrated systems where standardisation, modularity, performance and sustainability form fundamental components.

DESIGNING FOR EFFICIENCY

Building greater energy efficiency into infrastructure that will be rolled out in such high quantities will have a multiplier effect – not just in terms of lower cost but in terms of producing increased energy savings and reduced carbon emissions. At the start, energy efficient technologies should be part of the basic micro data centre design, which may include lithium-ion (Li-ion) uninterruptible power supplies (UPS) that offer increased reliability, a longer and more efficient lifecycle, greater charge and discharge cycles, and increased energy savings.

Liquid cooling also offers great potential for energy saving at the edge. Using chassis level immersion cooling can reduce energy expenditure, while removing the need for electrically powered components such as fans, which can be prone to failure. For edge applications, especially those powering 5G MECs, and which are often located in urbanised areas, there is the added benefit of reduced noise pollution.

REAL DEAL

Applications deployed at the edge are mission critical, meaning that the ability to ensure uptime and reliability is essential. Due to their distributed nature, one of the biggest challenges is managing such a great volume of sites, where it’s not possible to place permanent, on-site personnel. As such, remote monitoring software is fundamentally crucial, not just from an energy efficiency

perspective, but to enable greater real time visibility.

Next generation data centre infrastructure management (DCIM) platforms offer the ability to monitor multiple edge facilities from any location. Should an outage or failure be experienced, operators can quickly dispatch service personnel to perform maintenance or repairs as necessary. Voltage, system temperature and network traffic, for example, can also be monitored and managed, offering both optimal performance and insight into energy usage. Furthermore, ML and AI capabilities can also offer data driven insight into how equipment is functioning, with proactive recommendations on how to improve performance.

FORWARD THINKING

With dependency on mission critical infrastructure continuing to increase at a dramatic rate there's no doubt that energy efficiency and sustainability must become critical factors in the quest to roll out 5G. Operators cannot adopt the same approach they once did with legacy data centres and learn to become more efficient as they go.

While energy management software remains critical, it is the design of these systems that offers end users a truly practical means of managing energy demands at the edge. It requires standardisation, modularity, resilience, performance and efficiency to form the foundational building blocks of edge computing infrastructure.

THE RIGHT APPROACH

By considering adaptive technologies, and embracing a culture of continuous innovation, operators can harness the benefits of transformative applications and services powered by 5G. What's more, by choosing a more sustainable approach to edge computing they can play their part in the quest for net zero carbon emissions – and that will benefit us all. ■

MARC GARNER

Marc Garner is vice president of Schneider Electric's Secure Power Division in the UK and Ireland. He is responsible for leading a team of expert power professionals to support customers in data centres, server rooms, edge computing and mission critical environments. Garner is a 15 year veteran of Schneider Electric and has worked in sales, marketing and leadership roles.

Building a brighter future

Having practically grown up on construction sites, Nancy Novak now uses her vast expertise to build cutting edge data centres. Rob Shepherd spoke to her about why she isn't just changing the way data centres are built, but why she is also on a mission to reinvent construction

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

NN: I have been in the construction industry for more than 30 years and I'm currently Compass Datacenters' chief innovation officer. I wasn't always focused on data centres though and early on in my career many of the projects I worked on were for the military. These included building launch facilities for the Atlas V program on both coasts and renovating the Pentagon after the 9/11 attacks. I've also built museums, hospitals, airport expansions and worked on a lot of other amazing projects.

> 'Facts are important, but they aren't everything in getting the outcomes you want – sometimes the best way to be persuasive is with your message and the way you listen and engage.'

My father was a general superintendent for one of the largest construction companies in the world. He would regularly bring my twin sister and I to job sites – especially during summer breaks. It made a huge impression on us.

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

NN: I resisted it for quite a while. Data centre facilities became a bigger part of my project portfolio after I joined Balfour Beatty. My background building other types of mission critical facilities made me a fit for leading data centre projects, so I got an increasing number of those as the demand for IT space skyrocketed.

Anyone who has ever built a data centre knows they are not a lot of fun to build. The intense time pressures and technical specifications require double or triple shifts around the clock, which wears on everyone involved. And, at the end, you basically have a giant windowless box that doesn't exactly match what I imagined I would be building as a girl back visiting my dad's job sites.

After I retired from Balfour Beatty I would have said you were crazy if you told me I would end up in the data centre industry. However, I got a call from Chris Crosby, the founder of Compass Datacenters. He offered me a job leading construction for the company and I am pretty sure I laughed at the idea. However, it quickly became clear that the same things that frustrated me about data

centre projects were the exact things he wanted to change.

RS: What particular challenges are facing the data centre sector and how can they be addressed?

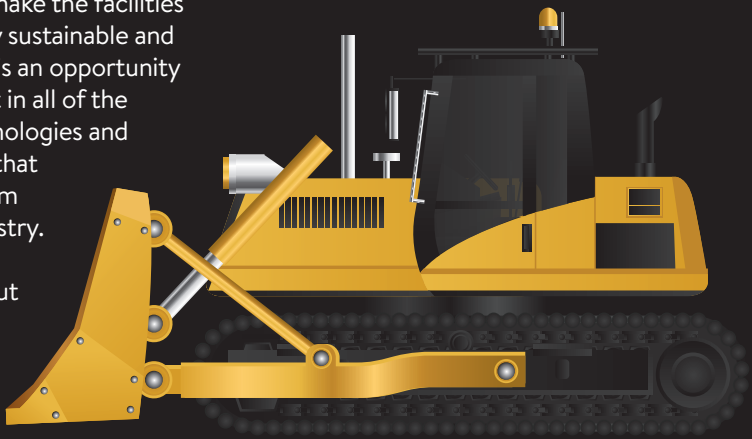
NN: So many of the challenges revolve around how to build out this new kind of infrastructure at a massive scale and at a pace that matches how quickly tech companies are expanding. In construction terms, data centres are the new kid on the block, so we are still trying to figure out the best way to build them. There is lots of opportunity for innovation because of how new it is.

What excited me about working with Chris Crosby and his team is how they wanted to fundamentally change the way data centres are built. The goals are to make the process better for construction crews, make it safer, make the facilities more environmentally sustainable and much more. This role is an opportunity to indulge my interest in all of the next generation technologies and innovative processes that are poised to transform the construction industry. I may have laughed at the initial invitation, but I was quickly super-energised about how interesting and impactful this job would be.

Prefabrication is a big part of how we will build data centres in a far smarter, better way. Evaluating and implementing new technologies is a big focus of my work as well. We are turning construction into an industrialised production process using a variety of technologies that allow us to build better and faster. That involves cool technologies like virtual reality, robotics and exoskeletons, which remove the reliance on brute strength that has been such a prerequisite for participation in the construction industry.

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

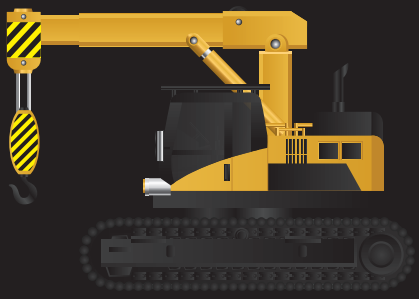
NN: The honest answer is that we are still figuring that out, given how new data centres are. And a lot of the initiatives I am working on are aimed at answering



that exact question not only for Compass Datacenters but for the industry as a whole.

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

NN: We are heading in the right direction, but there's much more to be done. One thing I am focused on is to broaden the definition of sustainability for data centres so it focuses on much more than just energy consumption. I look broadly at the carbon footprint of materials, energy usage across the entire lifecycle of a facility, water usage and much more.



'We are turning construction into an industrialised production process using a variety of technologies that allow us to build better and faster. That involves cool technologies like virtual reality, robotics and exoskeletons.'

In terms of sustainability, two of the areas I'm most excited about are the use of green concrete that sequesters carbon from the atmosphere and utilising more efficient manufacturing processes. We are also looking at how to keep stored energy on-site for back-up power, as diesel generators have a huge CO2 impact. Another major focus is extending the lifespan of data centres by designing them with greater adaptability, so they can change as companies' IT needs evolve.

RS: You are a vocal advocate for greater diversity and inclusivity in the data centre sector. Is enough being done to encourage more women to have science, technology, engineering and mathematics (STEM) based careers?

NN: The future of our industry depends on bringing more people into our workforce. There is a massive skills shortage in the construction field that is driven by major demographic trends, and that creates a bottleneck for scaling up construction of data centres. There is also a growing workforce shortage in the data centre industry and that will impact our ability to grow if we don't recruit more people into this type of career.

We have to cast a wider net and bringing more women into the industry is a major part of that. Currently, only 10 per cent of the construction workforce is women and it is even lower in the trades.

I devote a lot of time to talking to girls and young women about the value of studying STEM disciplines and pursuing careers in engineering and construction. There are also a lot of great programs that are aimed at educating young people about these career paths. This provides a strong foundation and is making a difference, but it's not enough. Companies

also need to have the right mentoring and advocacy programs in place to give women the right support and opportunities for leadership.

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

NN: That's an easy one to answer. It's how data centres are built so that we can deliver this critical infrastructure everywhere it is needed. It is the foundation of the world economy, the infrastructure for innovation and a driver for achieving greater equality of economic opportunity for people around the world.

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

NN: I would have companies across the technology industry collaborate to address the digital divide. Through iMasons, I'm collaborating with a growing collection of prominent people in the tech industry who want to tackle this issue in a holistic way. These are people who care deeply about this issue, and they also have senior leadership positions that give them the ability to do something big and bold about it.

> 'We have to cast a wider net and bringing more women into the industry is a major part of that. Currently, only 10 per cent of the construction workforce is women and it is even lower in the trades.'

Lack of access to technology and connectivity has made remote learning a challenge for so many students. That is tragic enough on its own, but it's not just children. There are barriers to opportunity and access that affect many populations besides children – including people of colour, people with disabilities, people whose first language isn't English, and many other groups. This is too important an issue to be on the sideline and the people coming together on this have a chance to really make a difference. Big things are happening and there is a role for every one of us to play.

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

NN: 'Don't let your facts get in the way of your message'. Early in my career, I would come into meetings and conversations equipped with loads of information that I was certain would make the strongest case about a certain issue being discussed. I thought those facts would surely get me the outcome I was arguing for, but they often ended up standing in the way of getting buy-in.

A mentor of mine reminded me that construction is first and foremost a people business. To truly build consensus, sometimes it works best to not come in like a bulldozer of facts and instead do more listening and have more two-way conversations. By practicing that, I found that I could get my message across more effectively and get the outcome I wanted much more frequently.

Facts are important, but they aren't everything in getting the outcomes you want – sometimes the best way to be persuasive is with your message and the way you listen and engage. ■

Nutanix provides scalable learning platform for Coleg Gwent

Coleg Gwent in South Wales has chosen the Nutanix enterprise cloud solution in a bid to transition from local to virtual desktops, using Citrix as the preferred vendor for virtual desktop software.

With an objective of moving away from the traditional classroom and adopting a more flexible approach to learning delivery, Coleg Gwent soon realised that desktop virtualisation would be the best approach, being scalable, robust and requiring minimal disruption during implementation. Following the installation of Nutanix enterprise cloud infrastructure in the Coleg Gwent data centre and the configuration of the Citrix software to meet its virtual desktop requirements, the first rollout was to around 600 on-campus Windows laptops.

The Nutanix and Citrix combination also scored when it came to management, with the ability to configure and manage the whole solution from a single console. More than that, Coleg Gwent can continue to scale its end user computing solution to meet the new flexible learning objective and do this almost instantly.

Hard Rock Hotel Amsterdam American advances guest experience with Wi-Fi 6 from Extreme Networks

Extreme Networks has deployed a cloud managed Wi-Fi 6 network for Hard Rock Hotel Amsterdam American. The new network delivers faster connectivity across the premises, enabling secure, reliable Wi-Fi access for guests and staff, as well as simplified network management for its IT team.

The 173 room Hard Rock Hotel Amsterdam American is located in one of the city's most famous art nouveau buildings in the Leidseplein district. The historic site was a challenge to equip with reliable Wi-Fi using legacy wireless technology, making it difficult for Hard Rock Hotel Amsterdam American to offer guests modern, digitally driven amenities.

Hard Rock Hotel Amsterdam American needed to upgrade its wireless network infrastructure to meet new demands for contactless services including guest registration, in-room dining requests, remote checkouts, and coordinated housekeeping. After deploying ExtremeWireless Wi-Fi 6 access points and the ExtremeCloud IQ network management platform, it has seen improved performance throughout the facility.

Supernap Italia expands its data centre capacity in Milan

Supernap Italia plans to expand its Milan footprint with the acquisition of two new strategic land parcels in the Siziano area of Milan, located within the same industrial park as the company's existing 40MW campus. The two new land parcels cover 170,000m² and can support three data centres totalling 35MW of incremental capacity.

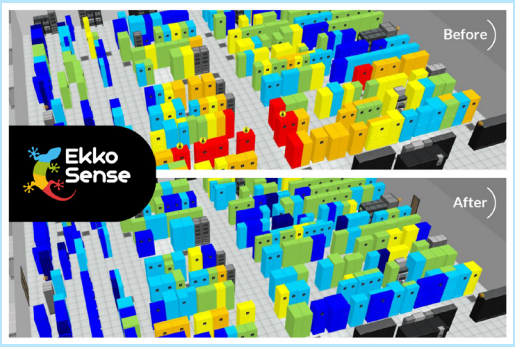
The land is development ready, with capacity available as early as Q3 2022. With the new facilities, Supernap Italia will continue to provide best in class colocation services to leading hyperscale and global enterprises to meet their digital infrastructure needs. A portion of the land, in convention with the Commune of Siziano, will be dedicated to public use and urbanisation projects that are particularly valuable to the community.

Supernap Italia chose Siziano in 2015 for the development of its first Italian data centre campus because of the area's unique advantages, including easy access to major highways and railways, low seismic risk and the ability to implement dedicated connectivity infrastructure and develop electrical substations.

O2 expected to save one million kilos of CO2 year on year with EkkoSense

O2 has become the first major mobile network operator to rollout new data centre management software from EkkoSense across its entire estate.

The software uses smart sensors fitted to data centre equipment to monitor exactly how much cooling each site needs at any one time and report back on how to optimise it as demand changes. This not only helps make sure each site operates as efficiently as possible, it also helps identify any issues and prevents overcooling or overheating.



The new EkkoSense software is expected to deliver energy savings equivalent to one million kilograms of CO2 year on year.

O2 has already upgraded around 70 per cent of its core network sites with brand new equipment and EkkoSense data centre optimisation software is delivering an energy saving of between 15-20 per cent per site – equivalent to 678,000kg of CO2 in its first pro-rata year of use.

PROJECTS & CONTRACTS IN BRIEF

Proximity Data Centres has announced a strategic marketing partnership with ITS. The partnership follows the announcement of a joint venture between ITS, the Liverpool City Region (LCRCA) and NGE in February.

Eneco Belgium is working with ENSEK to implement its cloud based software, allowing it to provide new services to its customers and accelerate its journey to energy transition.

JD Sports has modernised its telephony network with the support of Maintel. It upgraded its unified communications infrastructure due to an aging IT set-up, with a number of new store premises needing to be incorporated into its network.

Kao Data has welcomed a new customer in Civo. The agreement will see Kao Data deploy the UK Innovation Corridor's first fully operational OCP-Ready system, and enable Civo to launch its UK cloud region.

Nokia has been selected by Net4Mobility, the joint venture between Swedish mobile operators Tele2 and Telenor, to rollout commercial 5G services across significant areas of Sweden in a five year deal. Nokia will supply equipment from its AirScale portfolio helping Net4Mobility to deliver ultra-high speed, low latency and highly secure 5G connectivity to its subscribers.

R&M

To date, measurement protocols with transmission and attenuation values for individual connectors have been printed and filed in order to document cabling projects. Now, however, this data can be processed digitally thanks to R&M's Measurement Data on Demand service.

R&M connectors are equipped with a QR DataMatrix code, which links to measurement data stored in the cloud. Installers and technicians on-site simply scan the code with their smartphones in order to digitally access project documentation information.

R&M creates the 'personality profile' of the connectors in a standardised format. Measured values of individual connectors can be accessed immediately, processed digitally and copied into project documentation. Using the DataMatrix code, installers can also call up installation instructions locally to ensure that they are properly installed on the building site.

CLICK HERE to watch the video.

rdm.com

Fluke Networks

Fluke Networks' LinkIQ Cable+Network tester combines switch diagnostics with state-of-the-art cable measurement technology to enable installers, system integrators and network support professionals to easily troubleshoot network cabling and/or connect power over Ethernet (PoE) devices to a network. It provides simple pass/fail test reports using the company's innovative LinkWare PC cable test management software.

LinkIQ's single test approach automatically provides the appropriate measurements based on what is at the other end of the cable. For an open cable, it shows the length and pairing. If this is terminated with the supplied remote, the test result shows the maximum data rate the cable can support – up to 10Gb/s.

However, if the cable is connected to a switch port, LinkIQ will show the name of the switch plus the port name, VLAN, speed and duplex. If PoE is advertised, it will display the power and class (up to 90W or Class 8) and then load the switch to verify the power that can be delivered.

To find out more about LinkIQ **CLICK HERE.**

www.flukenetworks.com

Panduit

Panduit, along with industry thought leaders, is hosting We Connect: The Journey of Innovation – a virtual event that will take place on Wednesday 16th June 2021.

Streamed in real time from four Panduit Customer Briefing Centres in EMEA, as well as the company's global headquarters in Chicago, USA, the 300-minute event has been designed to offer partners and customers a virtual journey through the latest data centre and industrial electrical infrastructure technologies.

The event's agenda offers a wide range of sessions including Atlona's showcase Office 2.0: Transition to a Hybrid Workplace, or how to return to the workplace after the coronavirus pandemic with easy to use audiovisual (AV) solutions. The content also includes a roundtable on Short Circuit Protection – Promoting Electrical Safety and Capabilities for Industrial and Data Centres. There will also be presentations on the latest cable and cabinet technologies in networking and electrical infrastructure applications.

CLICK HERE for a free sign-up to We Connect: The Journey of Innovation.

www.panduit.com

Siemon

Siemon has introduced an innovative enhancement to its LC BladePatch duplex fibre optic jumper. The company's new space saving UniClick housing builds upon LC BladePatch's patented push-pull latch design to provide unmatched accessibility and ease of operation in ultra-high density fibre patching environments.

The UniClick housing features a one piece body with an integrated switch to make it faster and easier to change polarity. This reduces the LC BladePatch's already small footprint, simplifying jumper installation and patching administration.

The UniClick housing also improves on the jumper's patented fibre polarity change process by eliminating multiple components and steps by incorporating a single polarity reversal switch.

LC BladePatch jumpers are compatible with any standard duplex LC adaptor opening or LC small form pluggable (SFP) module. They feature superior connector polish that meets stringent Telcordia and ISO/IEC end face specifications, and exceed all ANSI/TIA and ISO/IEC insertion loss and return loss requirements. Available in OM3 and OM4 50/125 multimode and OS1/OS2 singlemode, in both UPC and APC configurations, and in OFNR, OFNP and LSOH jacket constructions, every LC BladePatch is factory inspected.

To find out more **CLICK HERE.**

www.siemon.com

All you need to know

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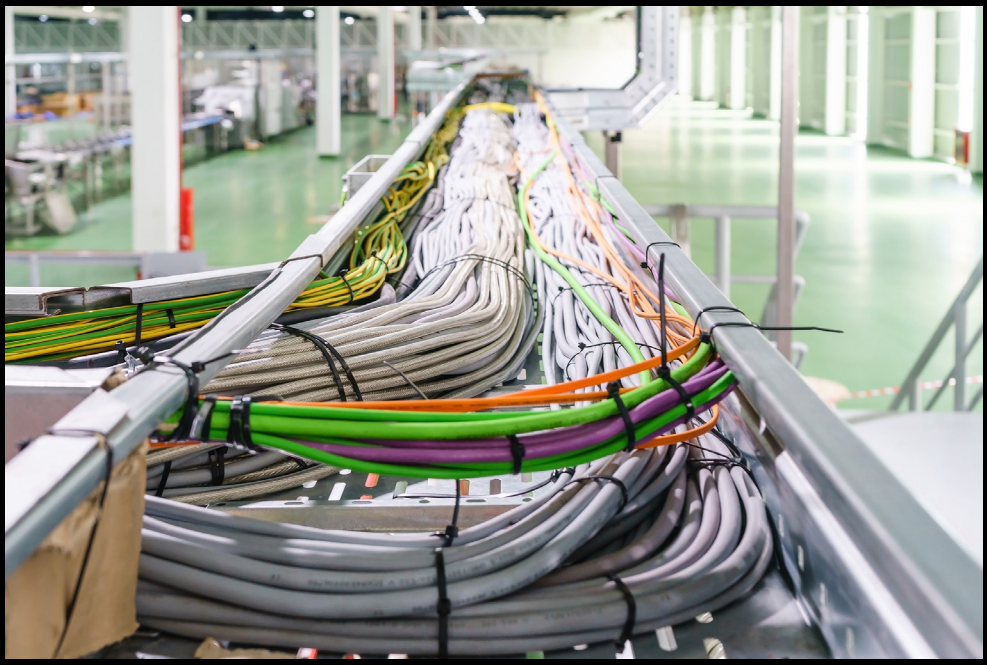
Going the distance

Piers Benjamin of Corning Optical Communications examines how it is now possible to redefine the capabilities of power over Ethernet (PoE) with optical fibre



By definition, PoE is a system that passes electric power along with data over cabling. Traditionally, this has been done over a twisted pair copper cabling system, up to a distance of 90m, and for many businesses this is more than sufficient.

GIVE ME STRENGTH

Where challenges can start to occur, however, is when PoE is required throughout a larger enterprise space and more fibre is introduced to the horizontal. Our devices aren't always within 90m of an intermediate distribution frame (IDF) closet or telecom room (TR). Sometimes we may have to power devices that are outdoors and require cables that exceed many hundreds of metres in length.

Let's take a look at how the PoE standard has developed over the years, the technologies and trends that are pushing it to the next level and how traditional PoE can be strengthened with fibre.

MORE POWER

Since the introduction of networking devices in premises, the industry has struggled with providing power to allow those devices to work their magic. The 2003 PoE standard

IEEE 802.3af, for example, only provided 15W of power, which was suitable for smaller devices to benefit from a single hybrid network/power cable connection via an RJ-45 plug. Unfortunately, this standard enabled only basic devices such as VoIP phones and IP cameras – all other power hungry devices and/or devices more than the Ethernet distance limit of 90m from a PoE switch still required AC outlets to be located close by.

As signal strength and device functionality became more robust, the need for more power to support these requirements also increased. Around 2009, the IEEE 802.3at PoE+ standard pushed the power limit up past 25W, allowing slightly more power hungry devices such as Wi-Fi access points and pan/tilt/zoom cameras to benefit from the single point of connectivity. While this showed progress, we were still limited by the 90m Ethernet distance. 25W was still too low a power level to provide massive migration of hardware over to PoE.

HIGHER DEMANDS

So what has changed? In 2018, we saw the ratification of a new PoE standard – 4PPoE or PoE++ (IEEE 802.3bt) – which enabled 50W and 90-100W transport, opening up many additional applications. Next generation multiband Wi-Fi, cellular small cells and LED building lighting systems can now all be driven off PoE++.

The march towards higher power, as well as the explosion of technologies spurred by the internet of things (IoT), has pushed the number of devices powered in our spaces through the roof. In addition to the above mentioned devices already demanding higher strength PoE, we're also seeing security, telecommunications, life safety and building automation systems join traditional enterprise network infrastructures. This can challenge an exclusively twisted pair copper infrastructure from distance, bandwidth, pathway space and flexibility points of view.

Twisted pair copper, and by natural extension PoE, is already showing its limitations. Beyond the challenges around distance, many devices require more than the existing wattage provided by IEEE 802.3at and even more than the IEEE 802.3bt standard.

SEE THE LIGHT

An intelligent power system can reside within a passive optical network architecture. Power supply units are housed within intermediate distribution frame (IDF) rooms and are connected to devices like remote access units with composite cabling.

> 'Traditional PoE can now be strengthened by combining the bandwidth and distance advantages of fibre optic cabling with an intelligent power solution enabled by composite cabling.'

For those who need to provide cellular and/or public safety systems inside their facilities, many manufacturers still rely on singlemode fibre for the signal transport via analogue radio frequency over glass (RFoG) technology. Lots of these devices require hundreds to

thousands of watts of power. In many cases this power must be run hundreds of metres back to the main distribution frame (MDF) rooms or head-ends, due to centralised power back-up requirements.

These and other high power devices such as the TVs, lighting systems and distributed PoE switches mentioned earlier cannot rely on even the best copper cable or PoE systems planned today. When looking at the possible pathway congestion and distance limitations the proliferation of PoE devices foretell, even the latest solutions are limited to 100W over 90m. Thankfully, we are seeing new technologies, as well as evolutions of existing well known technology, rising to fill the gaps.

TAKING ADVANTAGE

Traditional PoE can now be strengthened by combining the bandwidth and distance advantages of fibre optic cabling with an intelligent power solution enabled by composite cabling. Intelligent power technology paired with smaller 'micro zones' could power several 25W PoE devices using a combination of a single small composite fibre and copper cable, combined with short patch cables running to and from the micro zone.

Composite cables are made with stranded copper and fibre under the outer jacket – the fibre for data transmission and the stranded copper for remote powering. This combines the distance and bandwidth capabilities of singlemode fibre with the power carrying capability of stranded copper conductors in one cable.

This solves a number of problems. Foremost the distance limitations as discussed but also congested pathways, with increased demands on the network requiring multiple layers of single purpose infrastructure. Compared to the amount of copper typically required in the horizontal, composite cable can take up much less space and this means more capacity for future upgrades and, often, reduced maintenance costs.

PUT INTO PRACTICE

Common applications that we're seeing for long distance PoE applications include

security CCTV camera networks, distributed antenna systems (DAS), passive optical networks (PON), as well as any remote low voltage powered applications. IP cameras and security devices, for example, are now common throughout indoor and outdoor spaces, but may not be close to existing telecom rooms or a PoE based switch.

Take LED televisions – they now require both power and a network connection, and a high powered connection of 100W or more would make it possible to do away with the power cord. Instead of forcing all of our power and data hungry devices to go to PoE switches located in telecom rooms via homerun cables, we could break up the switches and place the power and data distribution closer to the devices. This comes with an added benefit of reducing cable loads in the horizontal.

THE TIME IS NOW

It is an exciting time for network designers, with the long respected bandwidth/distance/power boundaries for Layer 1 in our networks crashing down. While copper remains a compelling medium for the last point to point connection to a device, optical fibre offers unmatched bandwidth and distance advantages, and will undoubtedly be a key component in the networks of the future. Combining optical fibre with higher power solutions via composite cable provides a robust extension to traditional PoE systems, allowing us to bring future ready bandwidth and power to our devices safely and easily. And perhaps even more exciting is that the 'wire it once' capability of optical fibre can simplify future upgrades and reduce cost over the lifetime of the network. ■

PIERS BENJAMIN

Piers Benjamin joined Corning Optical Communications in 2018 as EMEA marketing manager for in-building networks. He has over 10 years' experience within the industry, with past marketing roles including working for a UK distributor. At Corning, Benjamin is responsible for marketing activities across traditional LAN and fibre in the horizontal technologies.

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