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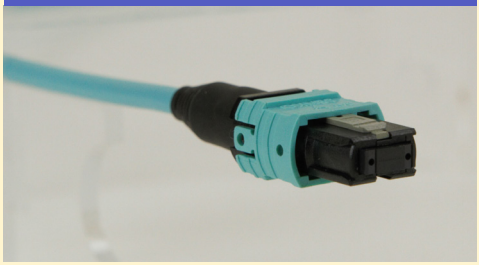

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As the rate of digital transformation accelerates, data centres are increasingly expanding into new locations. These so called emerging markets are not only benefitting from the experience of Tier 1 locations, they are, in many cases, embracing the opportunity to avoid obvious mistakes and redefine how data centres are designed, built and operated.

As the number of new facilities in places such as Asia, Africa and Latin America grows exponentially, sustainability and energy efficiency are priorities alongside economic growth. So to assess whether the experiences of the past are creating better data centres for the future, Inside_Networks has assembled a panel of experts to examine the opportunities presented by the data centre sector in emerging markets and identify what lessons established locations can learn from them.

One of the issues faced by emerging data centre markets is finding people with the skills and know how required – but this isn't unique to them. The global skills shortage is nothing new and the problem of attracting and maintaining talent is one that shows little sign of going away. To highlight the scale of the issue, Uptime Institute's August 2023 Staffing and Recruitment Survey found that 58 per cent data centre operators are having difficulty finding qualified candidates.

So we are in a situation where one of the biggest growth sectors on the planet can't find enough people to work in it. In this issue, Jon Healy of Keysource looks at how the ongoing skills shortage is affecting project delivery and why increased collaboration across the supply chain is needed. Then our old friend Andrew Stevens of CNet Training shares his thoughts on employee education and development strategies across the digital infrastructure industry.

Also in this issue we focus on fibre optic cabling standards, with two excellent articles on the subject. In the first, Manja Thessin of AFL examines the rapid evolution of fibre optic standards. Richard Ednay of Optical Technology Training (OTT) then provides some fascinating personal insight and asks whether standards are really a reliable source of information.

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

Rob Shepherd
Editor

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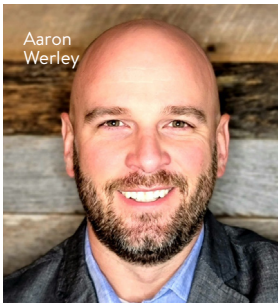
Nokia and Zayo achieve new worldwide distance record for 1Tb/s transmission on live network

Nokia and Zayo have completed a live field trial of Nokia's Photonic Service Engine super-coherent optics (PSE-6s), demonstrating a world's first 1Tb/s transmission on Zayo's Los Angeles to Phoenix route at over 1,000km. The companies also achieved a North American transmission record of 800Gb/s over a single wavelength from LA to El Paso on a 1,866km link, also using the Nokia PSE-6s.


Aaron Werley

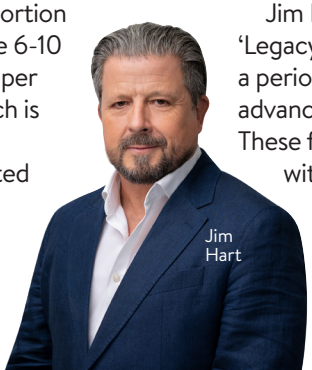
Zayo continues to invest in the capacity, capability and sustainability of its optical network to support transport of new 400 Gigabit Ethernet and 800 Gigabit Ethernet services. The trial performance demonstrates the ability of Nokia's optical technologies to support all three of these areas by increasing spectral/bandwidth efficiency, reducing the number of coherent optics required and lowering network power consumption.

Aaron Werley, vice president of technology at Zayo, said, 'The infrastructure projects we have, and continue to complete to advance connectivity between key cities, involves the deployment of new 800Gb/s and higher-speed routes. Nokia's PSE-6s coherent technology allows Zayo to offer ever increasing commercial wavelength speeds, so when customers demand innovative, higher-bandwidth solutions, the capacity is there.'

BCS report claims legacy data centres are increasingly facing a plethora of challenges

The latest BCS report highlights the multifaceted issues confronting traditional data centres, illuminating the complexities that organisations must navigate to remain competitive and efficient in today's digital era. According to the IDC, the average data centre is nine years old, while Gartner states that any site more than seven years old is obsolete. One-third of respondents have at least some proportion of their facilities that are 6-10 years old and around 17 per cent operate stock which is 10 years old or more.

Most respondents cited multiple challenges affecting them, with 56 per cent of participants stating that the operational costs per square metre are too high to be competitive and would be problematic in the future. The lack of sustainable and renewable power closely followed in second place, illustrating the difficulty in meeting environmental targets when there is a lack of available renewable power to meet modern IT environment demands.


Jim Hart

Jim Hart, CEO at BCS, commented, 'Legacy data centres were designed during a period when current technological advancements were not anticipated. These facilities now struggle to cope with the escalating requirements of modern computing. They are at a critical juncture where they must overcome a myriad of challenges to stay relevant in the digital age.'

Schneider Electric increases support for Host In Ireland's Orchards in the Community initiative

Schneider Electric is participating in Host In Ireland's Orchards in the Community, a collective plan of action that aims to save Ireland's declining bee population and ensure its survival for future generations, along with other endangered species such as flying insects and butterflies. Schneider Electric is one of 73 companies that have pledged to contribute to the planting of over 3,587 mixed fruit orchards across Ireland.


Mark Yeeles

Schneider Electric has sponsored a total of 500 orchards, equating to 2,500 trees over the course of three planting years. In 2023 it sponsored a further 100 orchards consisting of three apple trees, a plum tree and a pear tree in each orchard. 34 orchards have been taken by employees and 66 orchards went to communities that had signed up for the initiative.

'We're proud to once again be sponsoring the Orchards in the Community initiative and increase our support for this leading sustainability initiative,' said Mark Yeeles, vice president of Schneider Electric's Secure Power division in the UK and Ireland. 'Driving sustainable change which can be seen within the community is at the heart of our organisation. We hope the orchards will create holistic ecosystems which will be beneficial for many years and generations to come.'

Women at higher risk of losing their jobs to AI

The rapid adoption of artificial intelligence (AI) could disproportionately affect women and disadvantaged groups in terms of job losses, according to the UK government's Policy Implications of AI report. The policy paper states that AI is set to have a major impact on society, from everyday applications and decision making.

The research warns that stakeholders have raised concerns that AI developments may disproportionately affect disadvantaged groups. It states that the majority of clerical work is currently carried out by women, who may be exposed to higher levels of job losses. It says that academics, think tanks and technology trade associations have recommended that the government should help workers retrain and gain relevant skills, and ensure that existing inequalities are not exacerbated.


John Kirk

John Kirk, deputy CEO at ITG, said, 'The rapid pace of AI adoption will bring seismic changes to critical business functions like sales and marketing, accelerating productivity and empowering organisations to grow. However, the impact of these technologies on working practices must be carefully considered, with staff provided with the necessary tools and training they need to thrive in this new world of digital work.'

BCS claims that without intervention it will take nearly 300 years to close the gender gap in tech

According to BCS, The Chartered Institute for IT, it will take 283 years before women make up an equal share of the tech workforce, if the current trend continues. As such, the gender gap in IT must close far more quickly – not least to make sure emerging technologies like artificial intelligence reflect society.


Julia Adamson

BCS' annual Diversity Report found that between 2018 and 2021, the proportion of women tech workers rose from 16 per cent to 20 per cent. However, this modest improvement stalled in 2022 with the percentage of all women in the sector remaining the same, according to BCS analysis of ONS data. Black women still account for just 0.7 per cent of the tech specialists, rising from 0.3 per cent in 2019.

Julia Adamson, managing director for education and public benefit at BCS, said, 'More women and girls need the opportunity to take up great careers in a tech industry that's shaping the world. A massive pool of talent and creativity is being overlooked when it could benefit employers and the economy. There has to be a radical rethink of how we get more women and girls into tech careers, and a more inclusive tech culture is ethically and morally the right thing to do.

Report finds the UK is Europe's most advanced digital economy

The UK is the leading destination in Europe for investment, global tech companies and start-ups, according to a new report from the Computer & Communications Industry Association (CCIA). The study found the digital economy and online retail support £227bn in economic action, with the UK's digital sector adding a further £113bn in gross value to the overall economy.


Trevor Wagener

The digital sector provides over 2.6 million jobs with an average annual pay of £45,700, 37 per cent more than the UK average, according to the report. In 2022, the UK tech sector made $30bn in venture capital investment, being the third largest amount in the world, bringing in investments from global tech giants such as Amazon, Google and Microsoft.

CCIA chief economist and research centre director, Trevor Wagener, commented, 'These findings reveal that the UK's robust tech sector doesn't just benefit the companies at the top – its success contributes massively to the country's workers, businesses of all sizes, and the wider economy across the UK.'

Kao Data completes £206m debt raise with Deutsche Bank to accelerate data centre platform expansion

Kao Data has completed a £206m debt raise, via Deutsche Bank. The announcement marks a significant step forward for Kao Data, providing debt financing to fast-track its contracted developments with customers across the cloud, artificial intelligence (AI) and financial services, and the build-out of its KLON-06 data centre in Slough.


Matthew Harris

Kao Data's new financial capability reinforces an exceptional 12 months for the organisation, which has secured several key customers. In May 2023 it also announced a new £350m investment into a Greater Manchester data centre, followed by the completion of its KLON-02 facility in Harlow in November.

'The success of our new debt raise is testament to the growth of our business, our reputation for industry leading operations and technical delivery, and both the scale and demand for world class infrastructure, engineered for AI,' said Matthew Harris, chief financial officer at Kao Data. 'We are delighted to be working with one of the world's leading digital infrastructure lenders in Deutsche Bank.'

NEWS IN BRIEF

AFL Hyperscale has rebranded to AFL. The rebrand signifies AFL's commitment to becoming the market leader in customer experience by delivering cutting edge technologies and exemplary service.

A consortium of seven Dutch companies and research institutes will receive funding from the Dutch Ministry of Economic Affairs and Climate after the European Commission gave the green light to the Important Project of Common European Interest - Cloud Infrastructure and Services (IPCEI-CIS) in December.

CityFibre delivered £100m in revenue in 2023, representing a significant milestone for the business as its scaling continues at pace.

Equinix has announced the general availability of Equinix Fabric Cloud Router, a new virtual routing service to help enterprises easily connect applications and data across multiple clouds and on-premise deployments.

The Wi-Fi Alliance has selected a member of the Ruckus Wi-Fi 7 access point portfolio for its Wi-Fi Certified 7 interoperability certification test bed. The device is the only commercial access point in the test bed to deliver unmatched interoperability for the platform across Wi-Fi Certified 7 devices and bring advanced Wi-Fi performance to the next generation of connected devices around the world.

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Is it time to bring the cl

Hi Rob

Organisations of every size, across the private and public sectors, have bought into the idea that a shared IT infrastructure offers better value for money than a dedicated, on premise set-up. However, every single organisation using one of the big three hyperscalers is effectively paying twice as much as they should for essential IT systems, including storage and application hosting. Even worse, they are paying for a service that is significantly less secure and typically less well supported than an on premise alternative.

Security is becoming a very real concern for businesses reliant on the public cloud. By default, the dominance of the big three hyperscalers makes them a prime target for hackers. Distributed denial of service (DDoS) attacks on these organisations are occurring almost continuously, creating huge security vulnerability.

At first glance the cloud model is appealing. The idea that costs are known, with a set monthly subscription, along with the option to scale up and down in line with demand, is compelling. However, it is the hidden costs of the cloud that have caught so many companies by surprise. The hyperscalers' financial calculators look simple but buried in the small print is the information that every additional slice of service and support costs more.

So how can businesses achieve the required level of security at an affordable cost, without having to revert to large and unaffordable capital expenditure? The answer is to retake control and bring equipment back on premise, while also retaining the benefits of cloud technology.

A growing number of service integration and management (SIAM) companies have recognised the fundamental issues associated with public cloud services and are offering this 'back to the future' on premise model with the essential flexibility. Servers can be spun up on premise as required, with costs linked to usage. Support is included and, by moving back on premise, security risks are allayed.

For any business concerned about the need to rebuild a server room or employ dedicated tech experts, neither is an issue. The latest generation of servers can be run at higher temperatures, which means there is no need to recreate the air conditioned server rooms of the past. Servers can simply be located within existing network rooms or

oud back on premise?

offices or, if the business lacks space, the entire system can be securely colocated within a dedicated and locked rack. Tech support is included as part of the service, with providers leveraging the remote, open source technology used to deliver cloud services to cost effectively ensure the on premise systems are working effectively.

Bringing this vital infrastructure back into the business is not just cheaper but inherently more secure. Rather than the open, public access model required by the large hyperscalers, an on premise set up takes the opposite approach. Everything is locked down first, with access opened up only as required using highly secure tunnels to safeguard the business. Further, because the entire private cloud set-up is owned by the company, security changes can be made immediately.

The ability to regain this level of control is encouraging growing numbers of organisations to actively bring data and systems back in house. They are unhappy about the growing latency issues associated with the additional layers of security the hyperscalers are having to implement. In addition, there is a recognition that a reliance on the public cloud adds operational risk – any interruption to the internet connection leaves an entire organisation unable to operate.

The public cloud has its place. It is an ideal location for hosting a website or public facing apps. But with growing recognition that every single IT deployment would be both cheaper and more secure with an on premise set up, attitudes are changing. It's time to regain control, go back to the future and implement an on premise private cloud.

Mark Grindey
Zeus Cloud

Editor's comment

Public cloud has revolutionised business operations for companies of all sizes in a variety of vertical sectors and, as Mark points out, on paper the argument for doing so is compelling. However, there's no doubt that the last year has seen more companies returning to an on premise set-up for the reasons he outlines. Perhaps the old adage 'if it looks too good to be true, then it usually is' should be remembered.

Is the skills shortage harming ability to scale?

Hi Rob

The simple answer is yes. Back in 2022, Gartner predicted that by 2025 40 per cent of newly procured premises based compute and storage will be consumed as a service, up from less than 10 per cent in 2021.

As a managed service provider, this is an area where we are seeing increased demand from our customers. With that comes an increased demand for engineers at small to medium sized enterprise level, such as skilled technicians who are subject matter experts on bridging the hybrid gap between on premises and cloud support. This is just one example of how recruiters are constantly trying to attract and acquire a diverse range of skilled candidates with a varied range of expertise, to ensure their organisation has a skilled workforce capable of meeting the rapidly changing needs of the end customer.

There are some green shoots in the data centre industry from a recruitment perspective. Engineers and technicians who have moved into the sector are continuing to hone their experience and increase their skill set. But for new graduates, the data centre industry no longer has the pull that others have.

With an ever-growing complex security threat landscape, the demand for heightened data privacy and security policies has increased. With that, we are seeing real growth among graduate level engineers coming into the workforce with a cyber-specific degree and passion to develop a career in cybersecurity. Therefore, there needs to be a real focus from providers to highlight the data centre industry as a viable career path, not only for the Gen Z engineers starting their careers but also for millennial engineers who have had to adapt to new technologies over their 10+ year career already.

A simple look at the educational options available for new engineers coming into the workforce shows that there are multiple avenues for someone to focus on as a career path. A study conducted back

g the data centre industry's

in November 2023 by The Knowledge Academy highlighted that within the tech sector, both infrastructure engineers and software engineers are among the top five most in demand jobs in the UK. This shows that there is clearly work to be done at an educational level to show that this is an exciting and in demand career path for those beginning their career.

We are seeing an increase in initiatives globally, where educational bodies are teaming up with data centre organisations to offer tailored data centre skills programmes. With the rapidly increasing pace of the sector, including the recent boom of artificial intelligence, these initiatives need further driving to see an impact on the available and upcoming talent pool.

Recruitment strategies within data centre organisations must be always twofold, with a focus on bringing in new and emerging talent, while also ensuring that the talent that you have in the business is supported as part of your internal succession planning programme. One brilliant and notable factor about the data centre industry is that we see people coming from varied backgrounds including military, chemical engineering, offshore sectors and other environments.

This allows these individuals to lean into their asset focused experience whilst continuing to develop within the tech, cloud and hybrid space and add different skills to the table. The ability to leverage the experience of your talented workforce at any level is something that should not be taken for granted.

In my experience, an internal programme that monitors your organisation's growing skill set, whilst ensuring any potential gaps are highlighted internally, helps ensure that your organisation remains ahead of the curve when it comes to supporting your clients in their developing or emerging tech needs.

Abby Thomas
Systal

Editor's comment

As Abby points out, there are some great initiatives out there, which are starting to address some of the longstanding recruitment issues the data centre sector has experienced. The question is whether they can keep pace with the exponential growth of the sector. For more on this subject check out this issue's training and skills development special feature.

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Redefining what's possible

As the data centre sector expands into emerging markets, it provides an opportunity to create more efficient and effective facilities. Inside_Networks has assembled a panel of industry experts to discuss whether the experiences of the past will create better data centres for the future

According to Turner & Townsend, the top five data centre locations by cost remain Tokyo, Zurich, Silicon Valley, New Jersey and Singapore. However, emerging markets, characterised by rapid economic development and increasing connectivity, are now being targeted by data centre operators. So much so that Turner & Townsend also found that cost increases of between 11-22 per cent have been seen in seven markets across Asia, Africa and Latin America.

As the proliferation of new data centres in these regions grows exponentially, it provides an opportunity to create more efficient and effective facilities. Building more sustainable data centres in emerging markets presents an opportunity to align economic growth with environmental responsibility. Meanwhile, investing in local talent for the design, construction and operation of these data centres not only stimulates an emerging market's economy but also fosters community engagement. Additionally, implementing data centre efficiency standards and certifications ensures adherence to global environmental benchmarks.

Inside_Networks has assembled a panel of experts to examine the opportunities presented by the growing data centre sector in emerging markets and identify what lessons established locations can learn from them.

CARRIE GOETZ

PRINCIPAL AND CHIEF TECHNOLOGY OFFICER AT STRATEGITCOM

Necessity is the mother of invention, so they say. They, in this case, is anyone that has ever worked in this industry. Every data centre site is different. Each piece of land has unique natural resources, contours, climate and any variety of factors that may or may not make a site ideal for a data centre. In emerging markets, that is also true, and in some cases to a greater extent due to infrastructure needs. But this is opportunity knocking!

One advantage in emerging markets is the benefit of others' successes and mistakes over quite some period of time. This industry tends to be very cyclical, with a rotation of renewal as things become new and improved. The benefit of hindsight leads to clearer vision, while empirical data about actual savings across a variety of situations leads to better intelligence.

Different people, places, things, supply chains etc can foster invention. Suppliers to new regions don't have a legacy position, meaning many are hungrier to become the incumbent. This can lead to true partnerships and co-development of new solutions. Bringing people of varied backgrounds together to solve a need often has amazing results.

Our established community can learn a lot about operating in adverse environments with limited resources from emerging markets. The data centre industry follows hyperscalers, despite the fact that most data centres won't be built to hyperscale. Sometimes the simplest solution provides the best results. Companies solving complex problems at massive scale can benefit from scaling up other technologies and deploying a mixed approach of size and technologies. I don't believe one size fits all. Just as data centre needs change, so do data centre solutions. Ingenuity is alive and well in our industry.

We can learn more about adaptability from emerging markets. As the supply chain remains an issue, sometimes the right solution might just be in an emerging market. The problem on both sides is finding the time to evaluate all the cool new toys. While the internet does make solutions and information about them available to everyone, you still have to find it! Artificial intelligence could be a game changer for innovation by combing worldwide resources quickly and concisely. The diverse talent and trades that work with that information will be catalysts for change.

'SUPPLIERS TO NEW REGIONS DON'T HAVE A LEGACY POSITION, MEANING MANY ARE HUNGRIER TO BECOME THE INCUMBENT. THIS CAN LEAD TO TRUE PARTNERSHIPS AND CO-DEVELOPMENT OF NEW SOLUTIONS.'

JOE MCCAFFREY

CHIEF EXECUTIVE OFFICER AT DUKE MCCAFFREY

Emerging markets have the advantage of learning from the mistakes made by first and second generation data centre providers – some examples include the significant congregations of data centres in Frankfurt, London, Amsterdam, Paris London and Dublin (FLAPD). Over time, these Tier 1 markets have experienced significant power constraints, with available power not able to keep pace with the burgeoning demand for data centres. Consequently, many developers found themselves with costly sites that were either challenging or impossible to develop.

In response to these challenges a new trend is emerging – the sustainable regionalising of data centres. These new facilities are strategically located to integrate with renewable energy sources like solar farms. By situating them some distance outside major cities, regions can accommodate more concentrated clusters and have better access to sustainable power.

In the Middle East, for instance, there is a growing commitment to sustainability and efficiency. Despite a longstanding reliance on fossil fuels, there's an acknowledgement that the era of such sources is nearing its end. This region also benefits from significant capital, which facilitates ambitious green projects.

With the end user always in mind, emerging market players are also noticeably more focused on designing and building data centres directly for customers, as opposed to speculative building. This approach is likely to lead to higher quality and more efficient facilities. It also enhances the long-term performance of these data centres, offering improved lifecycle value and improved total cost of ownership (TCO) to owners and investors.

There is likely to be a shift in mature markets watching emerging nations closely, especially as Tier 1 markets face ever-growing pressures of achieving new environmental, social and governance (ESG) objectives. This evolution in data centre design and development will see the leveraging of new technologies and innovative design principles, with emerging markets not only avoiding past mistakes but also setting new standards in the data centre industry. These standards are likely to prioritise energy efficiency, reduced carbon footprints and higher operational efficiencies.

Emerging markets have a unique opportunity to redefine the data centre industry. By learning from past challenges and embracing sustainability, they are poised to lead the way in creating the next generation of data centres.

> 'EMERGING MARKETS HAVE A UNIQUE OPPORTUNITY TO REDEFINE THE DATA CENTRE INDUSTRY. BY LEARNING FROM PAST CHALLENGES AND EMBRACING SUSTAINABILITY, THEY ARE POISED TO LEAD THE WAY IN CREATING THE NEXT GENERATION OF DATA CENTRES.'

JON LABAN

RESET CATALYST AT THE OCP FOUNDATION & OPENUK BOARD MEMBER

This is a wonderful question. However, I have to say that I don't like the term emerging markets because it tends to infer backwardness and I see more creative innovation in these places than I do in the mature markets located in materially prosperous nations. Necessity is the mother of creation and sloth is an inevitable consequence of excessive materialism.

As we have seen with ICT, mobile and digital money payment systems, the so called emerging markets have not been hindered by sunken costs in legacy practices/technologies. It has allowed them to leapfrog to best value practice in the very latest and greatest technologies that are years ahead of the conventional found in so called mature markets. Three examples of this are:

- M-PESA, which in Kenya has tens of millions of users with over 100,000 agent outlets. It offers a much lower cost for transferring money because it avoids the rents taken by the prosperous nations for transferring money by conventional 'banked peoples' like you and I here in England.
- Hacking. The term is used here in its original form to define the work done by innovative makers (active prosumers) and not its corrupted meaning of a security hacker. Here, open source technologies are used to minimise costs and maximise benefits to the local people and their communities, and to remove paying rents to the rich proprietary ICT vendors that lock-in their passive consumers. Apple is master of the art of proprietary lock-in using the hypnotic effect of branding and marketing.
- Leading innovations in the design, build, operation and use of mobile phone networks. The standout innovator here being Safaricom in Kenya, with a special mention to its chief information officer, George Njuguna.

What can people in the so called established locations learn from the world's most innovative peoples living outside of those locations? Everything! But unfortunately they will learn nothing because the arrogance born of colonialism prohibits such learnings. I am very confident of one thing though and that is the lowest cost and just good enough technology always wins in the end.

'I HAVE TO SAY THAT I DON'T LIKE THE TERM EMERGING MARKETS BECAUSE IT TENDS TO INFER BACKWARDNESS AND I SEE MORE CREATIVE INNOVATION IN THESE SO CALLED PLACES THAN I DO IN THE MATURE MARKETS LOCATED IN MATERIALLY PROSPEROUS NATIONS.'

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Labelling Solutions

JOHN HALL

MANAGING DIRECTOR AT NLIGHTEN UK

With challenges of available land, planning, power, time to market and rapidly rising construction costs, data centre users and operators considering building a presence in both emerging markets and Tier 1 locations need to take stock. They must take a much harder and more holistic look at the pros and cons of greenfield versus brownfield.

Demolition or abandonment of existing legacy data centres instead of refurbishment has been the norm for far too long. While building from scratch and contributing substantially to carbon emissions is sometimes the only choice – in the case of large hyperscale facilities, for example, there are growing opportunities for repurposing existing enterprise data centres that are either sitting empty or no longer used at anywhere near full capacity.

This is being driven by the onward migration of enterprise and service provider businesses moving some or all of their equipment from on premise data centres to colocation and/or into the cloud. With this, there is an unprecedented opportunity to ringfence much of the embodied carbon expended in the construction phase of vacated legacy premises. Offsetting the environmental impact of future data centre operations in such facilities will also make a positive impact on zero emissions reporting.

Clearly, significant investment, construction engineering and mechanical and electrical expertise are essential when considering the refurbishment and upgrading of legacy structures. Not least for assessing their structural load capacity. However, there are major benefits with premises that pass such scrutiny.

Compared to a new build, these include significantly less construction expenditure and much faster time to market by a more straightforward planning process. Furthermore, there will be considerably smaller construction engineering workforce requirements and existing IT talent that can be retained. Crucially, there will be existing fit for purpose power and connectivity to site, which can be upgraded and expanded as needs arise.

This plays particularly well for well-funded edge colocation providers where locational proximity to regional towns and cities is key to achieving low latency for enterprise business, industry, content delivery networks (CDNs) and regional cloud providers. At the same time this helps the data centre sector overall through a more sustainable delivery of modern facilities to address accelerating capacity demands, while also reducing its carbon footprint.

> ‘DEMOLITION OR ABANDONMENT OF EXISTING LEGACY DATA CENTRES INSTEAD OF REFURBISHMENT HAS BEEN THE NORM FOR FAR TOO LONG.’

ANDY HIRST

MANAGING DIRECTOR CRITICAL INFRASTRUCTURES AT SUDLOWS

The influx of emerging markets opens up exciting prospects for the data centre sector. It provides an opportunity for data centre experts in both the design and construction disciplines to be able to share their experience and incorporate lessons learnt over the last 20 years of technological growth that the data centre sector has experienced.

Clients and end users in these emerging regions are able to deploy the latest technologies and processes required to deliver a new wave of efficient and resilient facilities. By working with international data centre specialists, they're able to build on the lessons learnt in established regions and work with an experienced and knowledgeable team to provide confidence in delivery.

Sudlows has experience of setting offices up and delivering projects in multiple regions. Each region usually has its own challenges to overcome outside of the obvious local regulations. For example, weather conditions, which in some cases can be extreme – from high temperatures and humidity to contamination such as sand and salt content in coastal air.

These issues and how they are dealt with require consideration before any designs are carried out, as clearly the correct solution and equipment selection will be driven by the conditions. It is quite common for Sudlows to model the environmental impacts on technologies and processes being deployed.

An example of this is a project we carried out in Qatar on the heat rejection of external cooling units on a rooftop, where by modelling it we were able to highlight that the high temperature was trapping the heat from the units. We were able to propose a solution to eradicate this potential problem at the early stages of the design process. Another example is where, due to high altitude, a facility being designed in Johannesburg was subject to lower air density. Cooling units and generators were impacted and had to be derated.

So, the emerging markets entering the data centre journey will bring their own regional challenges. However, it is clear that as long as experienced design and build organisations are involved through the full process, then there is no reason why these next generation of data centre facilities in these regions should not be state-of-the-art.

'EACH REGION USUALLY HAS ITS OWN CHALLENGES TO OVERCOME OUTSIDE OF THE OBVIOUS LOCAL REGULATIONS. FOR EXAMPLE, WEATHER CONDITIONS, WHICH IN SOME CASES CAN BE EXTREME.'

NANCY NOVAK

CHIEF INNOVATION OFFICER AT COMPASS DATACENTERS

The shortage of available power and land in traditional major markets for data centre projects is an enormous challenge for the industry. Many of these major markets around the world are reaching their capacity – or have already reached their limit – at a moment when demand for data centre facilities is accelerating due to the emergence of artificial intelligence and machine learning, continued growth of cloud computing and exponential growth in the volume of global data.

Secondary and emerging markets will be vitally important for the next wave of data centre development. So much so, that I don't think we will be calling these locations secondary markets and/or emerging markets for very long.

One thing that makes emerging markets ideal for these projects is how much they value these major infrastructure investments. Major markets benefit enormously from the digital infrastructure they are home to, and that can be taken for granted by metro areas that already benefit from it every day. Emerging markets want to have the advantages of that kind of infrastructure – including the economic impact, the infusion of IT talent, the engine for their digital economy and more – and that welcoming mindset often makes it a great collaborative effort between data centre builders and the public and private sector in those locations.

There are challenges working in these markets, however. From a construction point of view, the biggest challenge is that most of them do not have experience with these kinds of engineering projects, which require skilled labour, experience with innovative construction techniques, advanced safety protocols and the like.

Those are often in abundance in traditional major markets, but often not in these emerging markets. Data centre companies should therefore be prepared to provide education and training to build the skills and know how of local teams. This may include bringing in talent from established markets to share their skills and experience with local contractors and construction partners.

This lack of data centre experience in emerging markets does present exciting opportunities because it may be the perfect opportunity to use innovative modular construction designs and prefabrication techniques. Using these approaches can enable these projects to move forward quickly, efficiently and with excellent quality – even if local teams are still on a learning curve. Emerging markets will be the ultimate proving ground for innovations that are transforming the way digital infrastructure should be built around the world.

'SECONDARY AND EMERGING MARKETS WILL BE VITALLY IMPORTANT FOR THE NEXT WAVE OF DATA CENTRE DEVELOPMENT. SO MUCH SO, THAT I DON'T THINK WE WILL BE CALLING THESE LOCATIONS SECONDARY MARKETS AND/OR EMERGING MARKETS FOR VERY LONG.'

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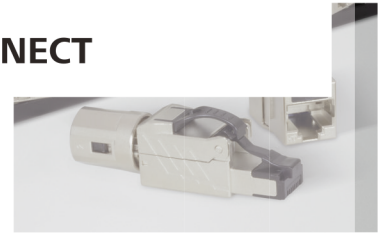
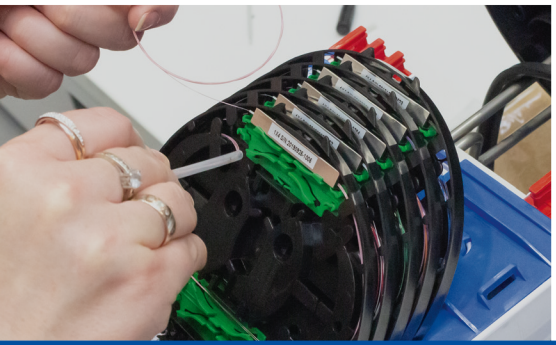




*HellermannTyton City and Guilds courses are provided by Lucid Optical Services Ltd, a City and Guilds approved centre.

IN-AD-TRAINING-R12

Siemon LightVerse Copper/Fiber Combo Patch Panel wins 2024 BIG Innovation Award

Siemon's LightVerse Copper/Fiber Combo Patch Panel has been named a winner in the 2024 BIG Innovation Awards presented by the Business Intelligence Group. The LightVerse Copper/Fiber Combo Patch Panel breaks new ground in space constrained data centres and intelligent buildings by seamlessly integrating high performance fibre optic and copper connectivity within a single 1U rack space.


Henry Siemon

'We are proud to receive this prestigious recognition from the Business Intelligence Group,' said Henry Siemon, president and CEO at Siemon. 'The LightVerse Copper/Fiber Combo Patch Panel embodies our commitment to continuous innovation, providing our customers with the agility and efficiency they need to thrive in today's hyperconnected world.'

'Innovation is driving our society,' added Maria Jimenez, chief nominations officer at the Business Intelligence Group. 'We are thrilled to be honouring Siemon, as they are leading by example and improving the lives of so many.'

R&M appoints new regional manager for Northeast Europe

R&M has appointed Jakub Czapliński as its new regional manager for Northeast Europe. He also acts as managing director of R&M Polska, which includes the company's Warsaw based manufacturing facility. Czapliński succeeds Andrzej Zagólski, who retired at the end of January after more than 30 years of successful work for R&M.

'With his expertise and experience, Jakub will lead the strong teams from R&M Northeast Europe in Poland, Hungary and the Czech Republic to further success,' commented Michiel Panders, R&M general manager Europe excluding Germany, Austria and Switzerland (DACH). 'He will build on the strong foundation that Andrzej Zagólski has created over the past 30 years.'


Jakub Czapliński

Doug Loewe joins Kao Data as its new CEO

Kao Data has appointed Doug Loewe as its new chief executive officer (CEO). With a reputation for leadership across start-ups, scale-ups and large corporations, Loewe has previously held senior positions at a host of respected companies including Macquarie Asset Management (MAM), Virtus, Yondr, Interxion, Rackspace and CompuServe Network Services.


Doug Loewe

Having pioneered large scale data interconnection and artificial intelligence (AI) data centre developments in previous roles, Loewe will lead the next phase of Kao Data's growth strategy across the UK and continental Europe. This will accelerate the development of Kao Data's high performance colocation platform engineered for AI and advanced computing.

On his appointment Loewe commented, 'With a rich heritage of delivering data centre excellence, Kao Data was a natural fit with the high achieving values I have always held close. I'm glad to join the organisation to lead the company's next stage of corporate growth.'

nLighten UK names John Fitsiou as latest addition to its sales team

nLighten UK, formerly Proximity Data Centres, has announced John Fitsiou as the latest addition to its rapidly expanding sales team, joining as account director. Fitsiou brings a wealth of experience to nLighten, having previously held key positions in the data centre and telecoms industries. His career includes senior positions at EXA Infrastructure and GTT, along with a substantial tenure at Interoute.


John Fitsiou

Commenting on his new appointment, Fitsiou said, 'Joining nLighten at this dynamic phase in the company's next stage development is extremely compelling. The surge in demand for edge and artificial intelligence services presents significant new business opportunities, which nLighten is ideally positioned to address through its range of high quality regional edge data centre services, underpinned by a continually growing and highly connected nationwide and pan-European edge platform.'

ConnectiviTree and CMC Networks partner to automate and accelerate global networking

CMC Networks and ConnectiviTree have signed a co-operation agreement. This partnership brings together ConnectiviTree's innovative technology and CMC Networks' extensive reach to deliver world class solutions, and marks a significant milestone in advancing the future of connected experiences for enterprises worldwide.

CMC Networks delivers secure and reliable communication services across diverse regions, with a predominant focus on Africa and the Middle East. It will enhance the central pillars of ConnectiviTree – its planned network, known as CTree RootNet, while its planned software counterpart, CTree Plaza, will include top tier network security, redundant data network and routing capabilities, in-house maintenance and assurance control, dedicated and unique optical fibre routes, and cutting edge software and technologies. ConnectiviTree will benefit from CMC's extensive network footprint, while CMC will utilise ConnectiviTree's Plaza system and RootNet to enhance its product offering.


Marisa Trisolino

'ConnectiviTree's RootNet and Plaza automation solution will allow us to extend our product offering to our customers,' said CMC Networks' CEO, Marisa Trisolino.

CHANNEL UPDATE IN BRIEF

Keysource has announced a collaboration agreement with PTS Consulting Middle East. The partnership is expected to significantly enhance the ability of both organisations to serve the growing demand for data centre services across the region. It will also foster innovation and collaboration in the industry, driving the advancement of data centre solutions to support the rapid growth of digital transformation projects.

Vertiv has opened a new manufacturing facility in Chakan, Pune, India. The plant manufactures thermal management products and solutions tailored for colocation, cloud, telecom and enterprise data centres, catering to both domestic and international markets.

North has appointed Andrew Foster as its new managing director for public services. Prior to joining North, he served as the regional managing director for Capita's local public services business.

MicroCare has appointed Lu Anne Green as chief operating officer (COO). With a history of excellence in manufacturing and operational leadership, she brings a wealth of experience and expertise to this pivotal position.

Centiel to demo its sustainable UPS at Data Centre World

For the first time in the UK, Centiel will demonstrate the capability of its new StratusPower uninterruptible power supply (UPS) at Data Centre World on booth D725. StratusPower provides complete peace of mind in relation to power availability, while helping data centres to achieve net zero targets.

Centiel's latest innovation leads the industry, as StratusPower shares all the benefits of the company's award winning CumulusPower three phase, true modular UPS, including nine nines (99.9999999 per cent) availability to effectively eliminate system downtime. It also has class leading 97.1 per cent online efficiency to minimise running costs, true hot swap modules to eliminate human error in operation – but also includes long life components to improve sustainability.

David Bond, chairman at Centiel UK, confirms, 'Historically, Centiel's innovation led to the creation of one of the most efficient and available UPS solutions on the market in CumulusPower. For the past four years we have been working to ensure our latest UPS is as sustainable as possible too.'

He adds, 'Like all our UPS, StratusPower is manufactured at our factory in Switzerland. However, uniquely, it includes even higher quality components, so instead of replacing filter capacitors and cooling fans every four years, they now need replacing every 15 years – or just once during their entire 30 year design life. As a data centre has a design life of typically 25-30 years, StratusPower will last as long as the data centre. Furthermore, at end of life, StratusPower can also be almost 100 per cent recycled.'

As a three phase modular UPS, StratusPower covers a power range from 50kW-1,500kW in one cabinet and can be paralleled for 3,750kW of uninterrupted clean power, which is perfect for data centres. UPS cabinets are designed with scalability and flexibility in mind, and future load changes are easily accommodated by adding or removing UPS modules as required. A data centre will never outgrow a well specified StratusPower UPS and it can be constantly rightsized to ensure it always operates at the optimal point in its efficiency curve.

CLICK HERE for further information about Centiel or to send an email **CLICK HERE.**

www.centiel.co.uk

Progress report

Manja Thessin of AFL examines the rapid evolution of fibre optic standards

The global fibre optic industry is undergoing a profound transformation to meet the increasing demand for high speed data transmission. At the core of this transformation lie the standards that ensure compatibility, reliability and performance across a vast array of fibre optic applications, systems and components. This article explores the dynamic landscape of fibre optic standards, focusing on key international organisations and their collaborative efforts.

Recommendation	Title	# of Subcategories	1st Publication	Last Revision
G.652	Characteristics of a singlemode optical fibre and cable	2	1984	2016
G.653	Characteristics of a dispersion-shifted, singlemode optical fibre and cable	2	1988	2010
G.654	Characteristics of a cut-off shifted singlemode optical fibre and cable	5	1988	2020
G.655	Characteristics of a non-zero dispersion-shifted singlemode optical fibre and cable	3	1996	2009
G.656	Characteristics of a fibre and cable with non-zero dispersion for wideband optical transport	1	2004	2010
G.657	Characteristics of a bending-loss insensitive singlemode optical fibre and cable	4	2006	2016

Main recommendations published by ITU on optical fibres

KEY INFLUENCE

The development of consistent worldwide fibre optic network standards relies on the collaborative efforts of key organisations, with the International Telecommunications Union (ITU) at the forefront. The ITU, through its study group, SG15, which is specifically dedicated to optical fibre transport, plays a pivotal role in establishing performance specifications and recommendations. SG15's contributions are crucial in defining parameters for prevalent fibre types such as G.652 through to G.657.

With representatives from over 100 nations, SG15 utilises the ITU-T's consensus process to publish advisory recommendations. These recommendations underpin the functionality of modern telecom networks on a global scale, emphasising the importance of international cooperation in defining and maintaining consistent fibre specifications.

PERFECT HARMONY

The harmonisation of fibre optic standards is exemplified by the International

Electrotechnical Commission (IEC) Technical Committee 86 (TC 86). Comprising specialised subcommittees such as SC 86A (fibres and cables), SC 86B (interconnecting devices and passive components) and SC 86C (systems and active devices), TC 86 operates at the forefront of standardisation efforts.

IEC SC 86A is dedicated to standards for fibres and cables. The group's current endeavours within working groups WG1 and WG3 focus on revising and restructuring existing standards to reflect latest technological advancements. Recent publications by SC 86A include IEC 60793-1-1 outlining fibre measurement methods and test procedures. IEC 60794-1-1 was restructured, setting general cable specifications. IEC 60793-2-50 on singlemode fibre specifications now includes innovative 200 micron coating for B-654 category fibres. This coating enables high count fibre cables with reduced diameters – crucial for optimising space and installation efficiency.

IEC SC 86B is actively developing environmental testing specifications under IEC 61300-1. Within SC 86B, the Vision Inspection Task Force is refining visual inspection standards for fibre connector end faces per IEC 61300-3-35 to standardise the assessment of scratches and defects. The subcommittee is also exploring improvements in loss measurement accuracy.

In a recent milestone, IEC SC 86C approved IEC 61280-1-4, which specifies the encircled flux measurement method for multimode fibres. Additionally, the publication of IEC 61280-4-3 outlines various methods for measuring attenuation and return loss in passive optical networks (PONs), contributing to a more standardised approach to system testing.

In Europe, the European Committee for Electrotechnical Standardization (CENELEC) plays a vital role by adopting relevant IEC specifications to meet regional needs. This ensures a seamless integration of global standards into the European context, promoting interoperability and consistency.

LEADING LIGHT

The Telecommunications Industry Association (TIA) facilitates the standards process in North America. Notably, the TIA's TR-42 Engineering Committee, composed of hundreds of stakeholders, is actively involved in developing and maintaining the TIA-568 cabling standards.

Connectivity Method	Array Trunk Cable	Array Adapter	Fiber Transition	Duplex Patch Cord
U1	Type-B	Type-A	Type-U1	A-to-B
U2		Type-B	Type-U2	

New ANSI/TIA-568.3-E duplex connectivity methods

The TIA-568.3-E Optical Fiber Cabling and Component Standard publication in September 2022 was a recent stride in this collaborative effort. This standard, among other things, harmonises colour coding for connectors, simplifying identification and reducing potential errors.

Additionally, the standard offers valuable guidance for installing multimode cabling

'The rapid evolution of fibre optic standards is a testament to the industry's commitment to innovation and excellence. As technology advances, key standards bodies and their committees play a critical role in developing and updating standards to keep pace with the changing landscape.'

and recommends the use of laser optimised OM3, OM4 and OM5 graded index fibres for modern data centre and campus cabling infrastructure. OM3 was the first fibre designed around 850nm vertical cavity surface emitting laser (VCSEL) light sources, while OM4 and OM5 provide higher effective modal bandwidth, enhancing their ability to support extended transmission distances at high speeds. Notably, OM5 fibre was characterised at 860nm and 953nm wavelengths, making it well suited for emerging wavelength division multiplexed schemes needed to handle signalling rates of 400Gb/s and 800Gb/s.

The TIA recommends several outside plant (OS) singlemode fibre cable types to address diverse reach needs. OS1 supports short indoor runs and customer demarcation points below 2km. OS2 enables ultra-long haul wide area network links over great distances. Indoor/outdoor fibre cables connect nearby buildings rated for outdoor installation, such as between two campus facilities up to 2km apart.

The updated TIA-568.3-E standard also introduced significant changes that impact fibre transitions and polarity methods. MPO trunk cables between switches and fibre enclosures must now be 'pinned' with a consistent transmit to receive orientation. In contrast, MPO breakout

Project	Title
IEEE P802.3cw	Physical Layers and Management Parameters for 400 Gb/s Operation over DWDM (dense wavelength division multiplexing) Systems
IEEE P802.3da	Physical Layer Specifications and Management Parameters for Enhancement of 10 Mb/s Operation over Single Balanced-Pair Multidrop Segments
IEEE P802.3df	Media Access Control Parameters for 800 Gb/s and Physical Layers and Management Parameters for 400 Gb/s and 800 Gb/s Operation
IEEE P802.3dg	Physical Layer Specifications and Management Parameters for 100 Mb/s Operation and Associated Power Delivery over a Single Balanced-Pair of Conductors
IEEE P802.3dh	Physical Layer Specifications and Management Parameters for Multi-Gigabit Optical Ethernet using Graded-Index Plastic Optical Fiber for Application in the Automotive Environment
IEEE P802.3dj	Media Access Control Parameters for 1.6 Tb/s and Physical Layers and Management Parameters for 200 Gb/s, 400 Gb/s, 800 Gb/s, and 1.6 Tb/s Operation
IEEE P802.3dk	Greater than 50 Gb/s Bidirectional Optical Access PHYs

Developing IEEE 802.3 projects / Source: TIA FOTC – IEEE 802.3 Ethernet Standards Update

modules, patch cords and equipment ports are designated as 'unpinned'. This simplifies installations by allowing installers to mix and match unpinned components without worrying about polarity reversal.

The standard further introduces new types of MPO transitions – Type-U1 and Type-U2 – that enable compatibility between MPO trunk cables with pinned connectors and patch cords with unpinned connectors. These new transition types maintain consistent signal polarity from end to end, which is critical for the cassette based fibre breakouts commonly used in data centres.

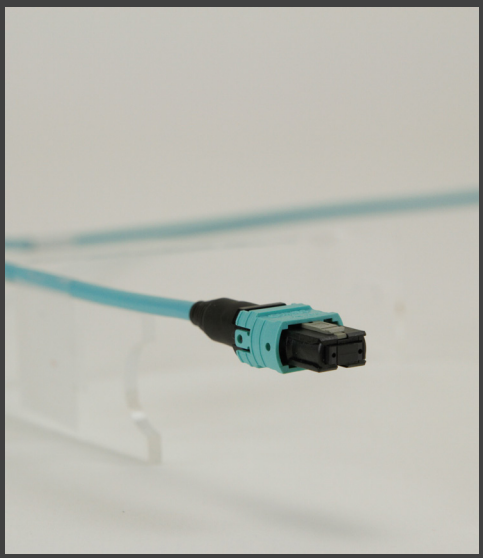
Whereas previous connectivity methods for array based duplex applications were limited to Methods A, B, and C, the new Type-U1 and Type-U2 universal transitions offer the advantages of Method B without requiring unique MPO to LC modules on each end. This simplifies deployments by allowing the same MPO to LC modules and duplex patch cords to be utilised on both ends of the channel along with a Type-B trunk cable.

PIVOTAL ROLE

Internationally, the Institute of Electrical and Electronics Engineers (IEEE) plays a pivotal role in defining premier Ethernet standards through the IEEE 802.3 Ethernet Working Group. Coordinating efforts across various national and international venues allows for aligning specifications, while addressing regional differences. Input from stakeholders including manufacturers, laboratories, carriers and users helps balance innovation with backward compatibility, ensuring network technologies evolve coherently.

The IEEE 802.3 Ethernet Working Group is actively developing standards to meet rapidly growing bandwidth needs. The recently finalised IEEE 802.3db standard, which supports high speed interconnect requirements within data centres and networks, specifies transmission speeds of 100Gb/s, 200Gb/s and 400Gb/s over short reaches of up to 100m using multimode fibre optic cable.

The IEEE 802.3 working group is developing the next generation of high



speed Ethernet standards to support the continued growth in network bandwidth demands. The IEEE 802.3df task force is working towards publishing a standard by June 2024, specifying 400 Gigabit Ethernet and 800 Gigabit Ethernet using 100Gb/s signalling per lane.

Concurrently, IEEE 802.3dj is developing standards for 200 Gigabit Ethernet, 400 Gigabit Ethernet, 800 Gigabit Ethernet and 1.6 Terabit Ethernet, employing 200Gb/s per lane signalling, targeting publication by March 2026. Collaboration through these projects establishes multi-terabit capabilities expected to support exponential bandwidth growth over the next decade.

FUTURE PROSPECTS

Standards bodies play a crucial role in validating and codifying the latest innovations emerging from research labs around the world to facilitate real world adoption. For example, the IEC has several projects within its SC 86B working groups aimed at extending the capabilities of fibre optic systems.

These projects include contactless expanded beam connectors designed to improve connectivity in harsh environments and high power laser applications such as onboard and copackaged optics that could enable new applications in manufacturing and medicine. Additionally, multicore fibre connector interfaces are promising to multiply network bandwidth density, while hollow core fibre shows the potential to carry unprecedented power over long distances.

KEEPING PACE

The rapid evolution of fibre optic standards is a testament to the industry's commitment to innovation and excellence. As technology advances, key standards bodies and their committees play a critical role in developing and updating standards to keep pace with the changing landscape. As these standards continue to evolve, they will undoubtedly pave the way for more efficient, reliable and high performing communication networks that will shape our hyperconnected future. ■

MANJA THESSIN

Manja Thessin serves as enterprise market manager for AFL, leading strategic planning and market analysis initiatives. She has more than 20 years of ICT experience in the field, as well as in design and engineering, and project management. Thessin has managed complex initiatives in data centre, education, industrial/manufacturing and healthcare.

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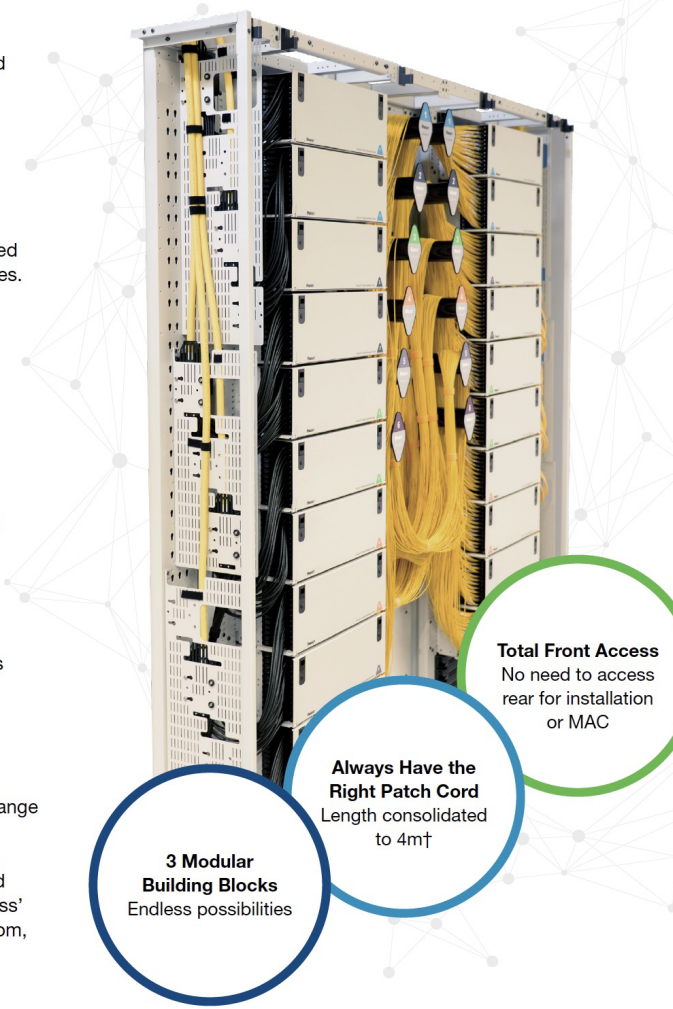

* Assumes 4 double frames (2 double frames in a 'back-to-back' arrangement). Design conditions and configuration specifics apply.

† Based on either a single frame, double frame or quad frame (quad being a double frame placed back-to-back).

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Data centres can scale their growth efficiently and cost effectively by deploying leading edge, scalable, modular connectivity systems that provide future proof solutions from day one. The flexibility offered by Huber+Suhner's CDRs, IANOS and MTP Pro solutions provides a comprehensive foundation from which a data centre can grow on demand and in parallel to its customers' current and future requirements.

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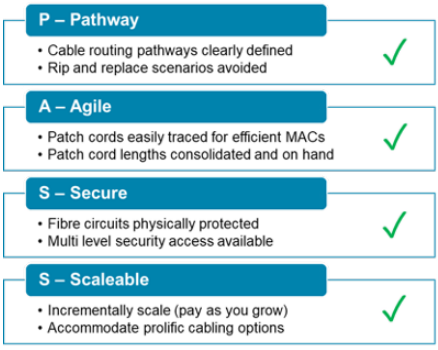
Panduit

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



The starting point when measuring the value of an ODF is the 'PASS' test.

Managing more optical fibres, in either the same or less physical space, is essential, as data centre floorspace becomes critical. FlexCore ODF offers three modular blocks – a 600mm wide frame, 150mm wide vertical cable manager and 300mm vertical cable manager, for maximum versatility, and can reduce cabinet floorspace by 50 per cent.

It is not only high port density that is important – FlexCore ODF delivers unrivalled manageability, scalability, fibre circuit protection and multi-level security.

For more information **CLICK HERE.**
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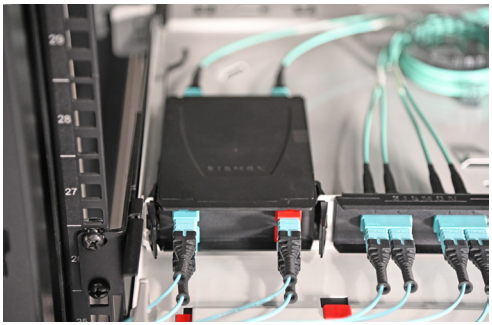
Siemon

Now more than ever, maintaining network performance, integrity and managing overall reliability are of critical importance. Passive network monitoring is a critical tool to help ensure users meet and maintain their customers' service level agreements.



Siemon has further expanded its LightVerse system to include a full range of passive TAP modules, designed to offer network operators an easy and flexible method for passively monitoring their network performance. LightVerse passive TAP modules are available in singlemode and multimode configurations and three connectivity types – MTP to MTP, MTP to LC and LC to LC.

All modules are offered in two standard power splits – 70/30 and 50/50 – with other power splits being available on request. They are interoperable with Siemon's existing range of LightVerse patch panels, enclosures and standard wall mount box, allowing users to deliver passive network monitoring where they need it most.

CLICK HERE to find out more.

www.siemon.com

Networks Centre

The latency or delay for a signal at a particular wavelength travelling down an optical fibre is determined by the length of the fibre and the group refractive index for the fibre at the wavelength being used. Under MiFID 2, EMSA has stated that trading venues offering hosting space to clients must offer this service 'under the same conditions', which includes 'equal cable length', but perhaps it should have been described as 'equal latency over the cabling'.

The two main issues are the Index of Refraction (IoR) and the core lay within the sheath, which varies from cable to cable and for different fibres within the same cable. Techniques exist to measure latency to a high accuracy, but the most appropriate technique will depend on the length of the fibre, the degree of accuracy required, the layout of the optical fibre cores within the cables, and whether it needs to be length tested before or after installation.

Nick Taylor – Networks Centre **and** FIA
John Colton – FIA

To find out more about Network Centre's high performance, quality cable **CLICK HERE,** call 01403 754233 or to send an email **CLICK HERE.**

www.networkscentre.com

Excel Networking Solutions

Excel Networking Solutions has one of the market's most comprehensive ranges of fibre optic solutions, all supplied in plastic free packaging. The Enbeam range is extensive and includes bulk cable, patch cords, adaptors and connectors, pigtails, fibre panels, pre-terminated, FTTx, PON, MTP and high density solutions and accessories.

With our pre-terminated solutions, we can reduce installation costs and times, as well as equipment and specialist labour costs. All items are 100 per cent inspected, fully tested and traceable. Our team operates with a fast turnaround – typically three working days from order.

When installed by an accredited Excel Partner, Enbeam fibre products can be covered by our comprehensive 25-year warranty.

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www.excel-networking.com

Aginode

Aginode, formerly Nexans Telecom & Data, provides a wide range of optical fibre cable and connectivity solutions for data centres, enterprise and FTTx applications.

LANmark ENSPACE is a fibre system specifically designed for data centres, featuring a choice of high density (HD) or ultra-high density (UHD), depending on user requirements. ENSPACE UHD supports 144 LC or 72 MPO per rack unit and is available in 1U, 2U or 4U variants, whilst ENSPACE HD supports 96 LC or 48 MPO connections per unit and comes in 1U or 2U.

With practicality in mind, both feature easy access to the fibre modules from both front and rear, include a labelling cover that folds down 180° for easy visibility, even for panels at the top of the rack. The UHD version has sliding trays enabling easy fingertip access in a UHD environment.

Aginode LANmark products are distributed exclusively via Netceed in the UK. **CLICK HERE** to find out more.

www.aginode.net

Complete Connect

Demand for higher data rates is driving the latest innovation in Complete Connect's scalable MX Series optical fibre system. The VSFF MDC connector can double fibre and port density in your network.

Why would you need ultra-high density (UHD)? Rack space is valuable and pressure on space will continue through the adoption of 400Gb/s, 800Gb/s and 1.6Tb/s – particularly when breaking out into multiple 50Gb/s and 100Gb/s channels.

And how? Using high-fibre connectors (MTP 8-fibre and 16-fibre) and smaller duplex connectors (MDC).

MTP to MDC cassettes and MDC adaptor modules provide UHD 48-fibre duplex port presentation, with easy channel separation at the front. That means a capacity of 288 fibres (144 duplex ports) per 1U of rack space for when 400Gb/s and 800Gb/s is commonplace. Furthermore, parallel transmission through MTP 8-fibre and 16-fibre connectors to duplex MDC ports enables use of easy, efficient and scalable Base-8 or Base-16 channels.

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

Taken on trust

Richard Ednay of Optical Technology Training (OTT) asks whether standards are really a reliable source of information

There is concern about widespread misunderstandings in the sector and the amount of misinformation that we are continually exposed to. Let's look at the problem of misinformation in a little more detail and why it's imperative to understand what's in the optical fibre standards in order to be able to apply them effectively.

MIS AND DIS

Misinformation and its more sinister close relative, disinformation, are nothing new. For decades, overenthusiastic marketers have stretched the truth in extolling the virtues of the products they are pushing. Frequently, mistakes have crept into data sheets that have gone unchecked and, more recently, new communications channels on social media have allowed malicious disinformation to circulate widely.

However, the rise of large language model artificial intelligence (LLM AI), and its inexpert use, have caused an explosion of misinformation everywhere, with lots of AI generated, incoherent nonsense appearing on LinkedIn, for example. The combination of easy access to AI systems, with their apparent ability to generate seemingly plausible answers to any sort of questions, together with inexpertly framed questions and insufficient ability to analyse and finetune responses, has resulted in a lot of meaningless, irrelevant and often just plain wrong information floating around out there.

TRAIN IN VAIN

Another part of the problem is the reliability of the source of the information that is used to train the LLMs. Garbage in, garbage out! But then the problem can be compounded if the output garbage becomes a part of the information that is input to train the next iteration of the LLM.

To counter this proliferation of misinformation, it is important that AI should be used as a tool to improve speed and efficiency, rather than being applied as a replacement for knowledge that you do not possess. If you do not know enough about the subject to check AI generated content, then you are in very dangerous territory if you rely on that content. You risk your credibility, your reputation and that of your employer. Much better to say nothing, than pretend that you can comment expertly on subjects that you know nothing about.

ARE STANDARDS THE ANSWER?

So, where do you turn to for reliable information for making those big decisions about cabling infrastructure and networking systems? Are standards the answer?

In general, standards are developed by working groups made up of technical experts. Once a proposal to develop a new standard has been approved, a working draft is produced and then discussed and refined in the working group until consensus is reached on the content and wording.

For international standards, the committee draft of the new (or revised) standard is then circulated to the national standards committees of those countries that participate in the work of relevant technical committee. This provides the opportunity for a more widespread review of the proposed new standard by a second tier of national experts. Any comments and recommendations from the national committees are then fed back to the working group and discussed at its next meeting. This process is repeated until the document is stable, and then the draft standard goes out to the national committees again to be voted on.

Any new international standard should have been subjected to a significant amount of scrutiny to make sure it is technically correct, free from errors and fit for purpose before it is published. This should all provide a high level of confidence in the reliability of the information contained in these standards.

FIRST THINGS FIRST

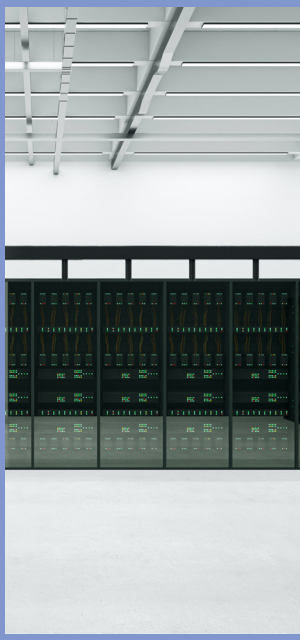
Being aware of what standards exist and how to get hold of them is an important first step. As some examples, there are standards for premises cabling systems from ISO/IEC, CENELEC and the TIA, there are standards for fibre optic components and test methods from the IEC, Ethernet standards from IEEE 802.3, telecoms system recommendations from

‘If you do not know enough about the subject to check AI generated content, then you are in very dangerous territory if you rely on that content. You risk your credibility, your reputation and that of your employer.’

the ITU, and any number of multi-source agreements on transceivers etc.

Finding your way around the world of standards is not trivial and requires a certain level of expertise in itself. Also, just referencing a standard without any knowledge of its content can be pretty useless. Many standards contain a number of different options and it is up to you to specify the option and performance that is right for your application (and budget!).

Another common misconception about standards is that they ensure that products that conform to the standard are of the highest quality. In order to dispel that naïve expectation, it may be useful to understand a little more about the way standards are actually developed. So, here are some of my personal views from an insider’s perspective and someone who has been involved with the development of standards in a number of different national and international standards development organisations (SDOs) including BSI, IEC, ISO/IEC, ITU and TIA.



SCRATCHING THE SURFACE

‘Standards are like sausages – if you like the end product, then it’s probably best that you don’t know how they are made.’ I remember clearly the insightful opening remarks made by Herb Congdon, chairman of TR-42 engineering committee, at one TIA meeting that I attended. Standards are made by people, and everyone attending a standards meeting is there for a reason. Most attendees are employees of, or are sponsored by, commercial organisations with products to sell and profits to maximise. So, the utopian dream of perfect standards, developed by teams of altruistic experts is sometimes far from the reality.

For example, let’s dispel that myth that standards always set the bar high for conformance. If a working group has to

achieve consensus, then no manufacturer that is sat around the table is going to agree to a standard that their company cannot meet (profitably!). So, the performance required by the standard sinks to the lowest common denominator of the capabilities of the participants involved in the committee. Once a figure is written in, it becomes hard to change when revisions are made, as protagonists demand 'backwards compatibility' with earlier versions of that standard. So raising standards in line with technological improvements is often difficult.

The premises cabling standards provide us with some good examples of this problem. Fibre optic connectors are allowed to have up to 0.75dB of loss and splices up to 0.3dB. These figures were set decades ago in the Mb/s era, but are hopelessly inappropriate for today's technologies and systems that operate at data rates of 100Gb/s, 400Gb/s and beyond.

KEEPING UP TO DATE

Knowing your standards and what they say is key to using them effectively. For example, instead of using the 0.75dB figure in ISO/IEC 11801-1, you could specify using singlemode fibre optic connectors to grade B of IEC 61755-1, which should have a loss of no more than 0.25dB. This is much more appropriate for modern high performance systems.

One of the best ways to keep up to date with the latest developments in the standards is to become actively involved with the committees that develop them! That way, you know what is coming up in the drafts and you can influence their development before they become set in stone. Standards bodies have lost a number of key experts and their valued expertise due to retirement and are seeking a new generation of experts to take things forwards.

ONE LAST THOUGHT...

Have you considered whether this article has been generated by AI and assessed whether or not it is trustworthy? ■

RICHARD EDNAY

Richard Ednay is technical director at OTT. He has more than 40 years' experience in fibre optics and has served on many national and international standards bodies. His in-depth expertise in fibre optic infrastructure, testing and optical networking systems underpin OTT's certification programmes.

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How An Innovative Fibre Routing System C The Cabling Headache is a blog by Peter Thi **Siemon.** **CLICK HERE** to read it.

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A white paper from the **European Data Centre Association (EUDCA)** explores whether microgrids are the ideal solution for adaptive and reliable software defined power for next generation data centres.
CLICK HERE to download a copy.

Word on the wire

For over two decades Gary Bernstein has operated at the sharp end of the network infrastructure sector and is now helping to shape its future within the data centre space. Rob Shepherd spoke to him about his life and career and the lessons he's learnt along the way

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

GB: I am the senior director of global data center sales at Siemon. I started with the company three years ago but have been working in the cabling industry for 25. Over the last 15 years I have been focused on data centres.

My role at Siemon is multifaceted. As part of the leadership team, I help develop and execute the company's global data centre strategy. Another large part of my role is working alongside our global sales team, helping customers solve problems by educating them on new and emerging applications and recommending best practice solutions.

RS: What motivated you to join the digital infrastructure industry and what excites you about it now?

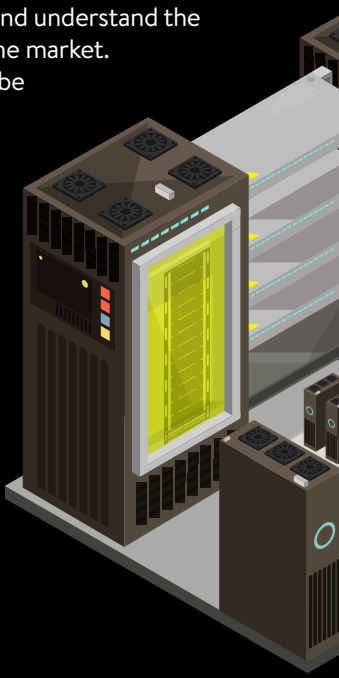
GB: When I started my career, the IT infrastructure industry was so fast growing, and it constantly seemed to be adjusting and changing. This is what excited me about this space because it allowed me to grow with it and expand my career over time.

Fast forward to today and I am currently more excited to be in this industry than I have been in a quite some time – this is largely due to the developments surrounding artificial intelligence, which have happened very quickly. It is probably the biggest game changer that our industry has seen in years because of how it affects IT and the impact that building AI networks has on the physical IT infrastructure.

RS: What challenges do vendors of copper and optical fibre based cabling solutions face at the present time?

GB: In the data centre industry technology changes very quickly. Therefore, cabling manufacturers must be closely tied in and understand the requirements of the market. They also need to be flexible and agile enough to adapt and

'Physical layer manufacturers have an opportunity to educate end users on AI technology, applications and the impact AI has on infrastructure design and choice of cabling.'

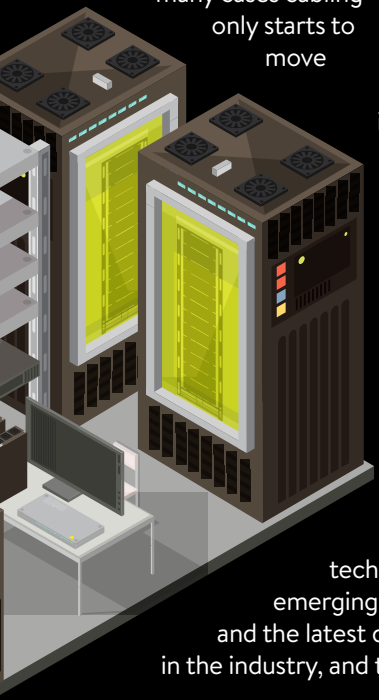


change their strategies, if needed. This also applies to the types of products and solutions they offer their customers.

In data centres, most new applications require fibre cabling or high speed direct attach copper (DAC) solutions. Manufacturers must therefore be able to offer a complete end to end fibre solution set to support these applications.

RS: Do end users give enough consideration to physical infrastructure and what could be done to engage with them more effectively?

GB: Generally speaking, the answer is no. In many cases cabling only starts to move into the focus of the end user when IT equipment needs to be connected. The key to changing this approach is to educate end users on new technologies, emerging applications and the latest developments in the industry, and to create awareness on how this will impact the cabling.



With the introduction of AI networks, end users are having to learn all the new requirements that they need to run effectively. This is due to the sheer complexity and impact that AI has on the IT infrastructure, and this has changed the focus back on those vendors that pursue an educational approach. Physical layer manufacturers have an opportunity to educate end users on AI technology, applications and the impact AI has on infrastructure design and choice of cabling.

RS: What single piece of advice would you give someone looking to purchase a cabling system?

GB: Anyone looking to purchase a structured cabling system should really understand the applications that the cabling is intended to support. Only then

can they ensure that they design and install the best cabling solution to support current and future needs of the business. I would encourage end users to work with a stable and established manufacturer that understands your needs, that can be a trusted advisor and provides excellent customer service before, during and after the purchase.

'Reducing the amount of waste material is one of the most immediately impactful steps toward environmental sustainability. This includes order batching and bulk pack systems to avoid unnecessary small or individual pack cartons.'

RS: Is the battle for the energy efficient data centre being won and can they ever truly be sustainable?

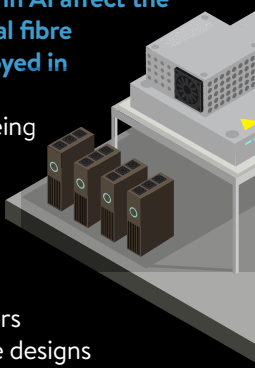
GB: Although a lot of progress has been made in reducing a data centre's carbon footprint, the battle for the energy efficient data centre is a long way from being won, unfortunately. This is especially the case with emerging applications such as AI and new equipment requiring more and more power.

Having said this, great measures have been taken in the past to make data centres more energy efficient. This includes moving away from coolers and utilising free air and liquid cooling to reduce dependence on power. Another way to help reduce power consumption at the physical layer infrastructure level is to deploy DACs and active optical cables (AOCs), since these options require less power compared to pluggable transceiver equipment.

When we talk about data centre sustainability, we must also take a closer look at the products that are being installed. How much material is being used and how much waste is produced? Installing pre-terminated cabling, for example, reduces both the amount of material and the amount of waste, leaving no scrap and less packaging compared to individual cabling and connectors that must be terminated on-site.

Reducing the amount of waste material is one of the most immediately impactful steps toward environmental sustainability. This includes order batching and bulk pack systems to avoid unnecessary small or individual pack cartons.

RS: How will the growth in AI affect the way that copper and optical fibre cabling solutions are deployed in data centres?

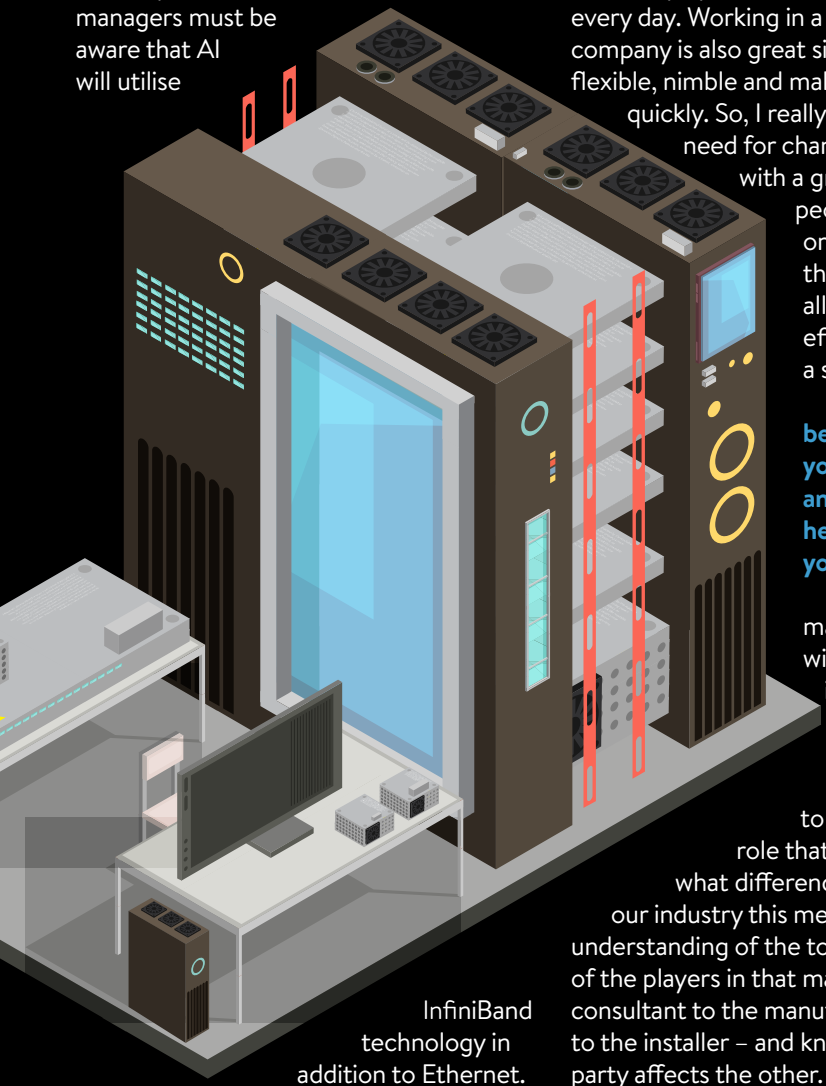


GB: We are currently seeing that AI impacts networks in major ways. Firstly, AI applications lead to increased power and cooling needs. This forces data centre managers to rethink their data centre designs which, in turn, impacts the cabling design.

AI also requires extremely high bandwidth, which requires a much higher volume of cable to support higher bandwidth AI applications. New designs primarily utilise fibre cabling, DACs, AOCs

and copper connections for out of band management. To help meet the low latency requirements of AI, ultra-low loss (ULL) cabling and connectivity will have to be utilised, as well as low latency DACs and AOCs.

Finally, data centre managers must be aware that AI will utilise InfiniBand technology in addition to Ethernet. They must ensure that they have products in place that that meet both the needs of InfiniBand und Ethernet.



RS: If you could change one thing about your job, what would it be and why?

GB: I really like my job. I enjoy the goal of growing a data centre business with all the challenges and opportunities that it brings. The industry that I work in is so incredibly dynamic and this excites me every day. Working in a privately owned company is also great since we can be flexible, nimble and make decisions quickly. So, I really don't see the need for change. I am working with a great group of people across the organisation and the globe – we all collaborate effectively to create a successful business.

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

GB: A very smart man I used to work with once said that it is important to see and understand the bigger picture, to be aware of the role that you play in it and what difference you can make. In our industry this means having a solid understanding of the total market and of the players in that market – from the consultant to the manufacturer all the way to the installer – and knowing how each party affects the other. Understanding the total picture and not getting too focused on just your piece of the puzzle is what will ensure the best outcomes in your work. ■

Trend setting

Andrew Stevens of CNet Training shares his thoughts on employee education and development strategies across the digital infrastructure industry

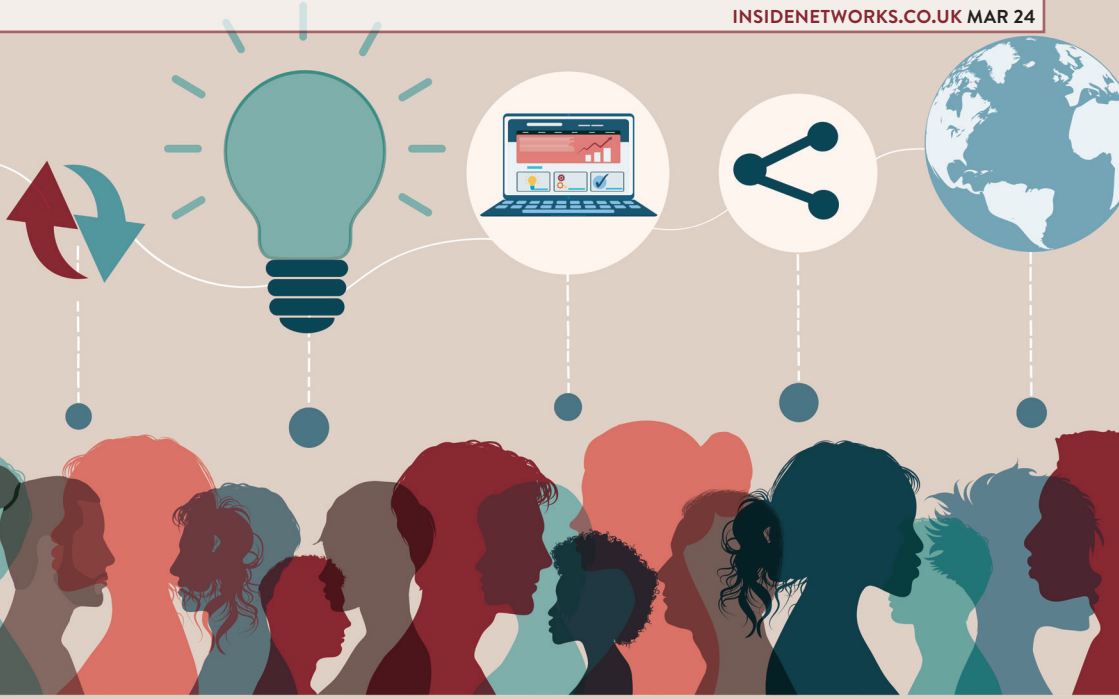
For me, being an education provider has always been about connecting talent with opportunity, ensuring every learner gets what they need to thrive in their chosen field of expertise, and is able to utilise what they learn with us as a stepping stone to success. Having spent almost 30 years in industry education, I have seen employee education and development strategies evolve and become a higher priority for businesses as they fight to retain existing staff and recruit new talent. This evolution is not only welcome but necessary to upskill and reskill employees to meet the evolving needs of the digital infrastructure industry. Here's a summary of the key trends that I've seen rise in prominence.

LET DATA DRIVE DECISIONS

Data driven learning is a strategic decision to align education with business priorities. To be effective in meeting the needs of a business, a data driven education strategy must consider the goals of the organisation, what is required to get there and what the current state of affairs is, as well as considering individual learners and what their needs are. The data that these decisions are being based on must be reliable enough for stakeholders across the business to have confidence in the direction of the education strategy.

Analytical tools are available that can be applied across all teams within an organisation to track and analyse employee performance in real time. These tools utilise ongoing assessments to evaluate employee skills and knowledge to provide unprecedented insights into where employees are excelling, where they need additional support and to make personalised recommendations for appropriate actions to address any gaps. These tools are best used on a continuing basis to ensure that any knowledge fade is quickly identified and they can even be used to predict future skills gaps based on historical data, enabling organisations to proactively address education requirements.

The results can also be used to measure the effectiveness of training programs. Data driven decision making is becoming



the norm as more and more companies look to refine return on investment (ROI) across their learning and development spend. Far from being a tick box exercise to train staff, a business centric education framework that appropriately reflects the business' goals gives the best opportunity to calculate actual business impact and report ROI.

MAKE IT PERSONAL

The demand for personalisation in corporate education has been steadily increasing, as nearly every aspect of modern digital life now contains some degree of personalisation – from what we watch and listen to, to the news stories we are shown. Businesses are recognising a one size fits all approach is no longer effective. Personalised learning pathways provide an opportunity to tailor education plans for employees based on an assessment of each individual's existing skills and knowledge.

Working hand in hand with data driven learning, personalised learning pathways utilise the data that comes out of business wide assessment tools and analytics. This enables the education function within the organisation to construct a development plan for each individual employee based on real time information.

Such personalised learning has multifaceted benefits beyond simply ensuring that employees have the skills and knowledge they need to execute their roles effectively. They increase employee

'To be effective in meeting the needs of a business, a data driven education strategy must consider the goals of the organisation, what is required to get there and what the current state of affairs is, as well as considering individual learners and what their needs are.'

motivation and commitment to learning, nurture the feeling that an employer is invested in seeing each employee achieve their best, and have been shown to increase job satisfaction and wellbeing levels. This is a win-win scenario, with customised pathways driving increased effectiveness of training programs, elevating employee engagement and creating a better ROI for the business.

KEEP IT FLEXIBLE

Collaborative and social learning, specifically within teams or across several teams within the same business, creates opportunities for employees to share knowledge, exchange ideas and learn from their peers. This can be facilitated by engaging an education provider to deliver a private education program within your organisation, so participants can freely connect, discuss company specific scenarios, and benefit from colleague input and experience.

Such private education programs also inspire mentorship opportunities within companies and encourage the growth of a stronger sense of community. An additional benefit is the convenience for employees of learning within the normal day to day workplace, and the minimal travel time and costs associated with this.

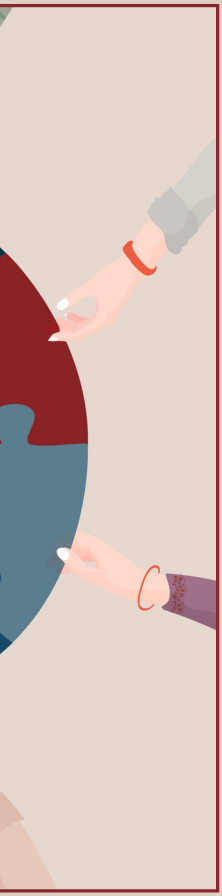
ENGAGE WITH EDUCATION

As industry employers, our responsibilities for the development, education and training of the digital infrastructure workforce are not limited to our own employees. Something I have been trying to encourage for years is employers collaborating with schools and colleges to create clear education pathways for young people to forge careers in the industry, through initiatives such as the Activate Learning Education Trust (ALET) University Technical College (UTC) Digital Futures Programme.

Industry engaged education is the concept of businesses working with the education sector, so that young people are given routes to build career readiness. Relevant to every industry where a talent or skills shortage is present, creating

opportunities for employers and education providers to work together to improve the performance efficiency and effectiveness of the curriculum being taught to the next generation is essential in addressing the shortfall. How will education providers know what to teach unless we share with them what industry needs?

Such opportunities also give businesses the chance to become involved in delivering the specialist skills and knowledge required. They can also mentor young people through their education journeys, and forge connections that can lead to the recruitment of newly skilled and loyal employees.



POSITIVE IMPACT

Despite efforts across the industry to date, there remains an increasing talent/skills gap and we must work purposefully to address it. An initiative such as UTCs and partnering, which enables targeted and continuous engagement with the next generation, is one of the best ways that businesses can invest in strengthening the future of the digital infrastructure industry, while encouraging diversity and inclusivity. With the right focus and funding, this could be replicated elsewhere around the world in order to make a serious contribution to the tens of thousands of new recruits this industry is anticipated to need to meet demand. ■

ANDREW STEVENS

Andrew Stevens is president and CEO of CNet Training – an Uptime Education Company. He has been involved in the digital infrastructure industry for almost 30 years and is deeply passionate about creating opportunities for individuals throughout the industry. He enjoys encouraging and exercising collaboration to address the skills shortage and to build a strong, sustainable future for the industry. Stevens has been instrumental in numerous projects that directly benefit the industry including creating The Global Digital Infrastructure Education Framework, playing a large role in the launch of the very first UTC in Heathrow and successfully launching the UK's first government funded Network Cable Installer (NCI) Apprenticeship.

HellermannTyton

The HellermannTyton Academy runs a range of training courses for all levels of installer and engineer. Our courses cover both optical fibre and copper installation, with practical and theory elements to most available training modules.

Our Cat 6A and Cat 6 Practitioners course has been specifically designed with our HTC product range in mind. This is a one-day course conducted at HellermannTyton Connectivity's headquarters in Northampton. Completion of this course is an integral part of the HellermannTyton 25-year system warranty.

We are also pleased to announce that we can now offer a number of other industry standard and certified training courses through our training partner, Lucid Optical Services. These include a wide range of City & Guilds and Open Awards qualifications from fibre optic cabling through to optical network and design.

In addition to these face-to-face training courses, HellermannTyton is now CPD accredited for our first training course – A Guide to Shielded Systems, Power and Data Separation. This course is delivered as a short online module and, upon completion, CPD credits can be awarded to participants.

More information on our training courses can be found by **CLICKING HERE.**
www.htdata.co.uk

CNet Training and Fluke Networks

CNet Training has strengthened its partnership with Fluke Networks with an electrical installation and appliance testing training program.

The one-day program, which is delivered at CNet Training's dedicated facility or on-site at a customer's premises, equips learners with the skills and knowledge to test electrical installations. This ensures that they are safe and guaranteed to work, and compliant with BS 7671. The program utilises the latest Fluke equipment to enable participants to carry out practical exercises in a hands-on environment, so that they can apply this new knowledge immediately in the workplace.

The number of highly knowledgeable and experienced electrical installation test technicians in the UK has seen a significant decline in recent years. Factors such as experienced staff approaching retirement age and being replaced by technicians learning their trade, as well as the increased deployment of temporary workers, mean that training and skills development are more important than ever before.

Working in partnership, CNet Training and Fluke Networks are providing businesses with an opportunity to address these challenges and offer operators the action based learning needed to acquire the skills and knowledge to work accurately and safely. The training also enables businesses to prove that installations have been carried out safely and comply with industry regulations and standards, reassuring all parties and demonstrating quality.

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

Corning

Whether you need formal training or are just looking to grow your knowledge base, Corning provides ongoing sessions to give installers, consultants and distribution personnel the necessary technology and business know how on Corning products, installation techniques and services.

Running throughout 2024, Corning's Everon Installer Fundamentals training provides a sound foundation on the basics of optical fibre communications and copper technologies, through a blended learning approach that mixes online theory and practical hands-on training. Delivered by Corning experts via eight online modules and a one-day in-person session, students work directly with equipment and materials ideal for installation, termination, troubleshooting and system design, and build the fundamental skills to install and test a passive communication network.

The training serves as a key component of Corning's Network of Preferred Installers (NPI) membership programme, which provides Corning loyalty partners with regular training opportunities to stay up to date on the latest Corning products and solutions.

For more information **CLICK HERE.**

www.corning.com

Stand and deliver

Jon Healy of Keysource looks at how the ongoing skills shortage is affecting project delivery and why increased collaboration across the supply chain is needed

This industry has had a skills shortage for as long as I can remember. However, as demand continues to grow there are growing concerns about its impact on the data centre sector's ability to deliver the necessary capacity moving forward.

MORE NEEDS TO BE DONE

Industry bodies, sector companies and individuals are doing some fantastic things to help address the skills shortage and attract talent early. However, our experience from attending a number of career and graduate fairs this year is that 'data science' dominates students' subject learning.

Data analytics, mining, cybersecurity and artificial intelligence (AI) are all subjects that are piquing young peoples' interest and will play a key role in technology innovation and the journey to Industry 5.0. However, Engineering UK reported that only 60 per cent of engineering graduates are choosing to stay in the industry, which supports the need for more effort to retain the other 40 per cent, which is surely a good place to start.

CAUSE FOR CONCERN

In Keysource's sixth annual State of the Industry Report - The Datacentre Trilemma: Balancing Speed, Substance and Sustainability, which gathered views from over 250 IT directors and senior data centre professionals, it was clear that the data centre and related sectors continue to grow despite these resourcing challenges. That said, respondents are also clear that the skills shortage spans multiple disciplines and roles, with competing demand both client side and within the supply chain for the same people.

As a result of this battle for resource, nearly half of the respondents chose to

subcontract more projects or services than they had planned, highlighting that the industry is turning even more to supply chain partners or relationships to keep to programme timescales. According to the majority of respondents, this approach had a positive impact including better quality and quicker delivery, with the inevitable trade off of a higher cost.

Given the increasing reliance on contractors, it is perhaps surprising that over two thirds of respondents rely only upon reputation and recommendations. Whilst this is a key aspect of any working relationship, maintaining a level of expertise and capability to validate and measure the quality of the supply chain's output should help protect this necessary operating model.

LACK OF CONFIDENCE

One of the most concerning findings in the report is the negative impacting on organisations' ability to make informed decisions, as there are limited skilled professionals to advise. It is extremely worrying that only a third of respondents are confident in the quality of the information that is being provided.

This might also explain the hesitancy in decision making and greater level of governance being applied that we are currently seeing. Yet, once these decisions have been made, over half of the respondents stated that they were under pressure to speed up project delivery. This is being made even more challenging by supply chain delays and skills shortages, with nearly two thirds of those surveyed citing this as having a real impact.

SPEED MAY RISK QUALITY

The pressure to speed up project delivery is perhaps the most concerning finding of the report. The majority of projects in this sector are currently largely programme driven and the ability to deliver a solution or service quicker than the competition to secure a growing market share and drive business value is undoubtedly the priority. This manifests itself in pressure to reduce the time of established project phases, which creates a less commercially competitive supply chain environment, compromises quality and increases the risk of defects of some kind.

It further compounds the impact of escalating costs and, in some cases, quality. This latter point is a real concern, with over 75 per cent of respondents stating that they are finding quality issues with solutions and services that could have reasonably been identified or better managed earlier.

There is a fine line between delivering at speed and making rushed decisions and cutting corners. Certainly, we are seeing some organisations prioritising speed above all else, which is at best risky considering respondents' strong concerns about getting the correct advice as the

‘One solution is to look at changing the way projects have been traditionally done, with increased collaboration across the supply chain. As an industry we have proven to be good at adapting and reinventing ourselves to cope with the fast moving environment we operate in.’

skills shortage continues to bite. In previous years these energy and sustainability challenges, like the race to lower Power Usage Effectiveness (PUE), have benefited from there being enough available time for innovation to help. This is time that the sector or customers arguably don’t have, or aren’t willing to give. In reality, you can only compress a project so much without risking a costly mistake.

DEEP IMPACT

Another issue is that this sector has seen a significant increase in merger and acquisition (M&A) activity as operators acquire capacity and market share. The inrush of available capital that we have seen enter the data centre market is reflective of its promising returns and the comparative performance of other markets.

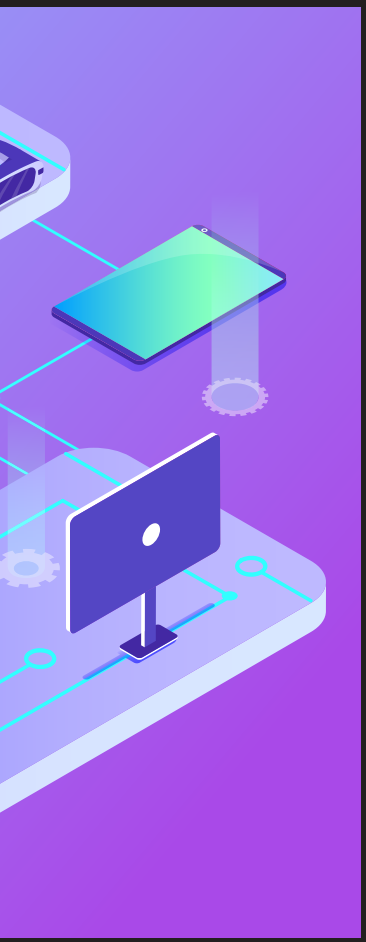
This is coupled with a relatively low risk given its resilience through recent years, which is overall very positive for the short- and medium-term of the industry. That said, these conditions can quickly change given the influences this sector has from a range of areas such as technology, regulation, energy resource and corporate governance, and a lack of skilled people.

This is a specialist industry, currently with little regulation, and so without the right people and the right advice there could be

some very expensive mistakes being made. Will this uncertainty mean that investments in M&A are put on hold? Can organisations trust that the feasibility studies for growth potential are correct? Can they be sure that the designs will deliver the availability or performance level expected? There is no doubt that getting it right first time is key, whilst also delivering at a pace to support the deal timeline.

WE MAY NEED TO CHANGE

Looking ahead, it is once again a challenging and exciting time for this sector and there is certainly work to do to address these issues. This may simply not be possible for some organisations given the limited resource pool and supply chain issues. One solution is to look at changing the way projects have been traditionally done, with increased collaboration across the supply chain. As an industry we have proven to be good at adapting and reinventing ourselves to cope with the fast moving environment we operate in. But this approach would involve getting people to work together in a way they never have before, potentially sharing sensitive information with their competitors. Can we change? I hope so. ■



JON HEALY

Jon Healy is chief operating officer at Keysource. With a background in engineering and extensive experience in the data centre and critical environment industry, he has led a range of award winning solutions and services for a host of companies – from global enterprises to major government organisations.

Telehouse combines growth, performance and sustainability at its new data centre in Frankfurt

Telehouse has officially opened a fifth data centre at its Frankfurt campus in Germany. Building M launched in October and has increased capacity at the digital hub by a total of 4.5MW.

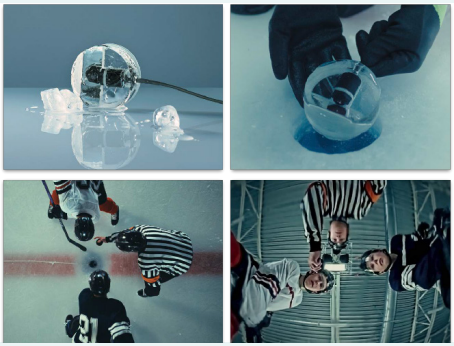
The building adds a further 2,200m² of data centre space across three floors to the campus, which now totals more than 50,000m² of data centre space for all requirements – from single racks to dedicated data centre areas.

The waste heat generated by all buildings on the Frankfurt campus will be used to supply the neighbouring newly created residential quarter with district heating. At approximately 51,000m², the quarter offers space for around 3,000 people with 93,000m² of living space in 1,300 residential units.

This heat recovery process can provide more than 60 per cent of the annual energy requirement for heating homes and water in the community, using around two per cent of the waste heat from the Telehouse data centres. The additional demand is fed into the district heating network from the combined heat and power plant of the Frankfurt based utility company, Manova.

Axis network camera frozen below an ice hockey rink to capture an angle never seen before

In a new experiment, Axis Communications has demonstrated how its camera can withstand all kinds of conditions by freezing it below the ice in a hockey rink, catching a prieviously impossible angle. The experiment was carried out by engineers from Axis in collaboration with a film team and ice hockey players, resulting in footage that pushes the boundaries of traditional security camera technology.



The discrete modular camera, usually seen in automated teller machines, onboard vehicles and other small spaces where a tiny camera needs to fit, was frozen inside the ice, offering a completely new angle of the action taking place above. To capture this, a modular set-up was chosen. An Axis F2135-RE fisheye sensor was frozen in the ice together with a cable connecting it to the Axis F9114 main unit, which powered the camera sensor and processed the video feed coming from the sensor.

Octopus Energy invests £200m in Deep Green's data centre heat reuse technology

Octopus Energy's generation arm has announced a £200m investment in Deep Green to help it rapidly scale its technology across the UK.

The business model pioneered by Deep Green means that data centre heat doesn't go to waste and instead is used to provide free heat for energy intensive organisations like leisure centres.

By teaming up with Deep Green, a public swimming pool in Devon was able to slash its pool heating bill by over 60 per cent.

In return, Deep Green gets free cooling, which provides it with a significant competitive edge over traditional data centres. This allows it to offer more affordable, highly energy efficient computing to businesses across the UK. Installed on-site, Deep Green data centres don't require additional grid upgrades or planning permission, so can be up and running in a matter of weeks.

Freshwave lights up Lucent W1 with connectivity from all four mobile network operators

Lucent W1, a new mixed use development behind Piccadilly Lights, is working with Freshwave so its tenants and visitors can enjoy in-building connectivity from all four mobile network operators (MNOs). Freshwave is deploying the 4G distributed antenna system (DAS) as an ongoing managed service.

Lucent W1 is located at the crossroads of some of London's most famous areas including Soho, Regent St and Mayfair. It's built around a central open air atrium and includes offices, retail and residential space.

Freshwave will be providing connectivity across the landlord areas, with tenants able to connect to the DAS under Freshwave's pay as you go occupy model.

With up to 80 per cent of mobile data traffic generated indoors, people need to be able to use their mobiles wherever they are. An in-building connectivity system such as a DAS connected by a neutral host to all four MNOs means no matter which network someone is on they'll be able to use their phone. And with the in-building system connecting directly into the MNOs' core networks, the quality of service is guaranteed.

Host-IT keeps the wheels turning at tmWare

Host-IT has been selected by tmWare to host its disaster recovery systems, following a review of its current and future IT needs. The migration of tmWare's disaster recovery back-up systems from its in-house location to a more secure and modern data centre environment was seen as a major priority. Host-IT's Birmingham based data centre will now support tmWare's main IT stack.

tmWare has been providing warehouse management software and transport management solutions to the logistics industry for over 30 years. The firm's tmWare software as a service platform offers customers a comprehensive solution for 24/7 warehouse and transport management, ensuring orders are efficiently picked, packed and scheduled for collection and subsequent on time delivery. With thousands of pounds of business at stake with every order fulfilment and delivery, tmWare is mission critical to the performance of itslogistics customers.

Bulk unveils plan for expansion following unprecedented demand

Bulk Data Centers has started the construction of a new 42MW facility scheduled for completion this year. The new facility will offer 42MW of IT space, designed to accommodate the latest generation of high density graphics processing unit (GPU) and central processing unit (CPU) infrastructure. It will include air cooling and direct liquid cooling capabilities of up to 100kW+ per rack.

This is on the back of the successful launch of a 12MW data centre facility at the N01 Data Center Campus, which was ready for service in 2023 and is now fully contracted due to high demand. The new 42MW facility will be constructed at the 300 hectare site and connect to the existing 125MVA dual onsite sub-stations. In addition to the current construction ready levelled land area of 265,000m², Bulk will also undertake the preparation of an additional 300,000m² to facilitate future expansion of the data centre facilities.

Beijing Daxing International Airport partners with CommScope on integrated cabling system

Beijing Daxing International Airport is a huge, comprehensive international transportation hub. However, for it to become the most modern, automated and intelligent airport in China, and offer exceptional travel experiences, it needed to deploy a smooth and reliable communication network.

CommScope was chosen for the deployment of the network cabling system. The project encompassed its new airport terminal building and field communication optical fibre cabling, as well as the airport's Information Technology Centre.

CommScope developed solutions specifically for the airport's network cabling challenges. For example, the distances between the data centre infrastructure and cable termination points could be very long, requiring long distance cabling. In addition, hazardous liquids are a clear challenge for traditional PVC sheathed cables and may pose fire risks.

For these reasons, CommScope planned the physical layer network architecture with a keen eye on the reliability of multi-connection pre-terminated fibre systems, high flame retardant communication systems, high density fibre distribution systems, and optical raceway systems for fibre routing, management and protection.

PROJECTS & CONTRACTS IN BRIEF

Nokia has been selected to modernise the circuit switched core network of du, from Emirates Integrated Telecommunication Company (EITC). As part of the project, Nokia will expand and modernise the existing IP multimedia subsystem voice core network in order to extend voice over long-term evolution (VoLTE) services.

Thousands more businesses throughout Europe will be able to access up to 100Gb/s connectivity thanks Zayo Group's expansion. This development will enhance connectivity options for businesses across the UK, Ireland, The Netherlands, Germany and France, providing robust and high speed network solutions to meet customers' evolving IT infrastructure needs. This allows Zayo to quickly and easily connect organisations in close proximity to its optical fibre infrastructure.

Telcom has been selected as a strategic partner to deliver its Preconnect connected building solution to the commercial office space at St Michael's Manchester – a £400m mixed use development in the heart of the city. Preconnect will deliver dedicated full fibre internet connectivity with symmetrical speeds up to 10Gb/s. This will be delivered on Telcom's own fibre and rooftop wireless network across the city, making a 100 per cent uptime guarantee available for businesses with a back-up connection in place.

Excel Networking Solutions

Excel Networking Solutions has launched a range of racks designed specifically for data centres. The Environ DCR Rack is a new design and includes numerous features and benefits. Racks are available in heights of 42U, 47U and 52U, widths of 600mm or 800mm, and a choice of 1000mm and 1200mm deep in either grey-white or black. Features include:

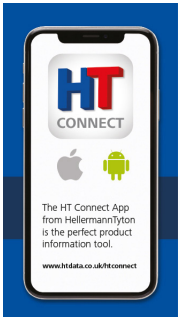
- Increased ventilation on the front door and wardrobe rear doors
- New airflow management kit
- Side panels fitted with rack to rack overlapping full height brush strips
- Options for plain side panels, or no side panels
- Full height finger cable management
- Full length front to back brush strips in the roof
- Improved cable access in the roof for large diameter plugs
- Cable management trays with multiple cut-outs
- Mechanical handles for easy access and the option to upgrade to electronic handles
- Two point locking on the front door and three point locking on the rear doors
- Optional 4U blanking plates that can be split into individual 1U plates
- A configurable base to allow for additional access space if required
- Two side panels per side that can be individually locked

To find out more **CLICK HERE,** to contact the sales team call 0121 3267557 or to send an email **CLICK HERE.**

www.mayflex.com

HellermannTyton

The HT Connect app from HellermannTyton includes our new range of local area network (LAN) connectivity products. Designed to bring products to life in a live environment, HT Connect uses augmented reality (AR) through your mobile phone or tablet, allowing you to see a wide range of products on your desk, on a wall or even out on-site.



Take a closer look at our products, with many of the selected models having moving parts such as opening doors, removable covers or lifting trays. Use your touchscreen to rotate the products and zoom in up to 500 per cent.

HT Connect also provides additional product information including data sheets, installation guides and videos. This gives installers and engineers in the field everything they need at their fingertips when it comes to optical fibre network installation.

The app is available to download on both Apple and Google Play stores. To find out more **CLICK HERE.**

www.htdata.co.uk

HyTEPS

Get a grip on your data centre Power Usage Effectiveness (PUE)!

Data centres need to operate in an increasingly sustainable way. Governments, customers, investors and society are placing stringent demands on energy efficiency. Of course, smart energy use results in cost savings.

Reducing non-IT related energy consumption leads to optimal PUE. This requires in-depth insights, analysis and advice. For years, HyTEPS has been helping to significantly reduce energy consumption at some of the world's largest data centre companies. We do this through measurements, monitoring, simulations, experience and knowledge.

Get more out of existing installations without adversely affecting speed, reliability and uptime!

CLICK HERE to find out more.

HyTEPS will be attending Data Centre World London on March 6th-7th. To make an appointment and meet us for a chat CLICK HERE.

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Get the balance right

George Ashwin of AddOn Networks explains why navigating sustainability and demand is the key to addressing data centre challenges

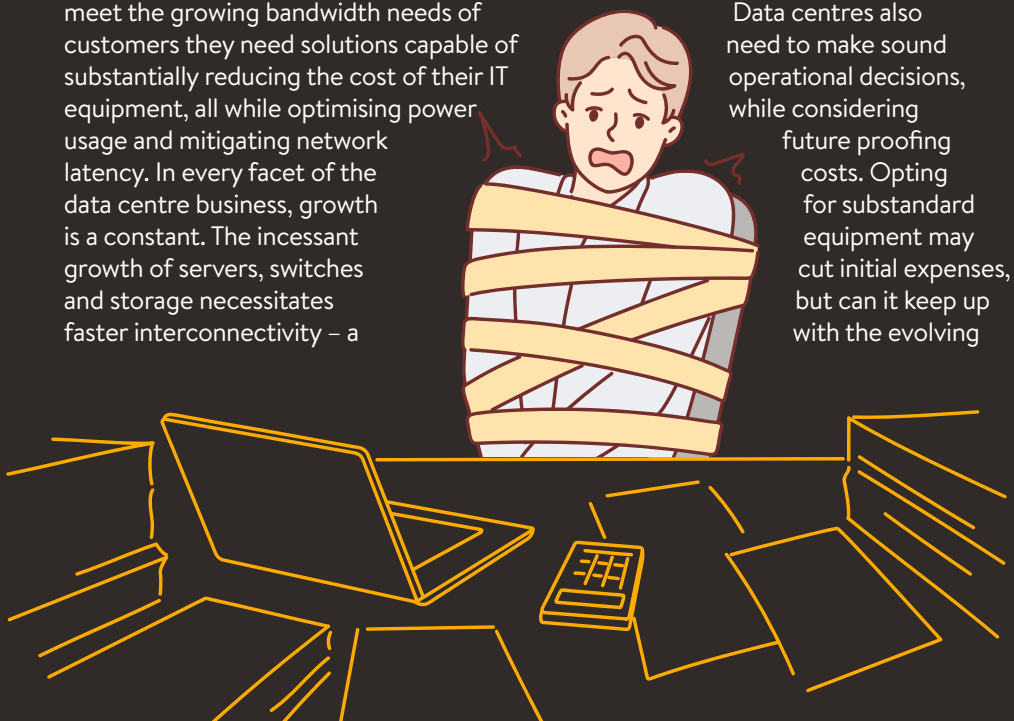
Modern data centres are facing a unique set of challenges as they strive to meet the growing bandwidth demands of their customers, while remaining environmentally conscious and cost efficient. As such, they need solutions that can substantially reduce IT equipment costs, optimise power usage and minimise network latency. In an ever-evolving data centre landscape, selecting the appropriate solutions to achieve this balance can prove to be a challenge in itself.

ESSENTIAL SELECTION

Achieving a balance between essential network upgrades and sustainability is a persistent challenge. If operators are to meet the growing bandwidth needs of customers they need solutions capable of substantially reducing the cost of their IT equipment, all while optimising power usage and mitigating network latency. In every facet of the data centre business, growth is a constant. The incessant growth of servers, switches and storage necessitates faster interconnectivity – a challenge that persists. The web of connections between buildings, customers and providers is ever expanding, both in numbers and data rates.

At the same time, reliability is non-negotiable. Your servers and computer systems must maintain uninterrupted operation to meet the insatiable high bandwidth needs of your clients. The 13th Annual Global Data Center survey from Uptime Institute shows more than half (55 per cent) of operators reported they have had an outage at their site in the past three years – the lowest number yet recorded. This continues a trend of steady improvement, yet power outages continue to be cited as the single biggest cause of downtime.

Data centres also need to make sound operational decisions, while considering future proofing costs. Opting for substandard equipment may cut initial expenses, but can it keep up with the evolving



‘Achieving a balance between essential network upgrades and sustainability is a persistent challenge. If operators are to meet the growing bandwidth needs of customers, they need solutions capable of substantially reducing the cost of their IT equipment, all while optimisin power usage and mitigating network latency.’

landscape? In this dynamic environment data centres must tackle these challenges head on to remain the backbone of our digital world. However, as the relentless evolution of data centre technology continues, choosing the right solutions to attain sustainable network scaling can be a formidable challenge.

ENHANCING YOUR OPERATIONS

Sustainability in networking isn’t just about being environmentally friendly – it’s about enduring and lasting performance, even as demands increase. Building a new network every time demand grows is neither efficient nor effective. A trusted fibre optic connectivity partner can develop your network and help you meet rising demands. However, the smarter solution is to future proof your network from the start, anticipating and preparing for growth by building in capacity before it’s urgently needed.

Understanding the critical role networking plays in maintaining seamless operations is key. A comprehensive catalogue that encompasses cutting edge optics empowers you to establish and maintain interconnections that align with the ever evolving requirements of your data centre.

EXPERT HELP

There are optical connectivity experts with a complete range of products, not tied to a single original equipment manufacturer (OEM), which assist customers in constructing networks designed for longevity. Whether it’s cables or transceivers, forward thinking network builders are focusing on future demand, not just the current state.

Why not leap straight to 400Gb/s to stay ahead of the curve? You may think that being at 100Gb/s today means the transition to 400Gb/s is a long way off. But if you add up the number of 100Gb/s ports you’re responsible for supporting, you’ll see that the need to move to 400Gb/s and beyond is really not that far away and is much more sustainable.

Today’s networking upgrades embrace core technologies that consider time sensitive networking. Data centre operations – including those in 5G edge computing, hyperscale data centre interconnects, high frequency trading and financial technologies – are adopting these innovations to build sustainable data centres, while reducing latency in high speed, data dense network links.

SAFE BET

It’s great to have speed and scale but without reliability they mean nothing. That’s why it’s vital data centre operators minimise downtime. The average cost of

downtime is $5,600 per minute, and this can accumulate further during a prolonged outage. There is a need to host uninterrupted cloud services with 24/7 customer support from a trusted partner. Whilst it's all too easy to assume that data that is stored on both a personal device and with a cloud provider is protected from data loss, it is worth remembering that all storage media – even that which is used in data centres – can suffer data loss.

Therefore, in order to create a back-up system that can truly be described as robust, operators must ensure they scrutinise any provider of cloud storage on their security and back-up systems before signing up for their services. They must also ensure any products have been thoroughly tested end to end and know that they are compatible with your existing systems.

DECISION TIME

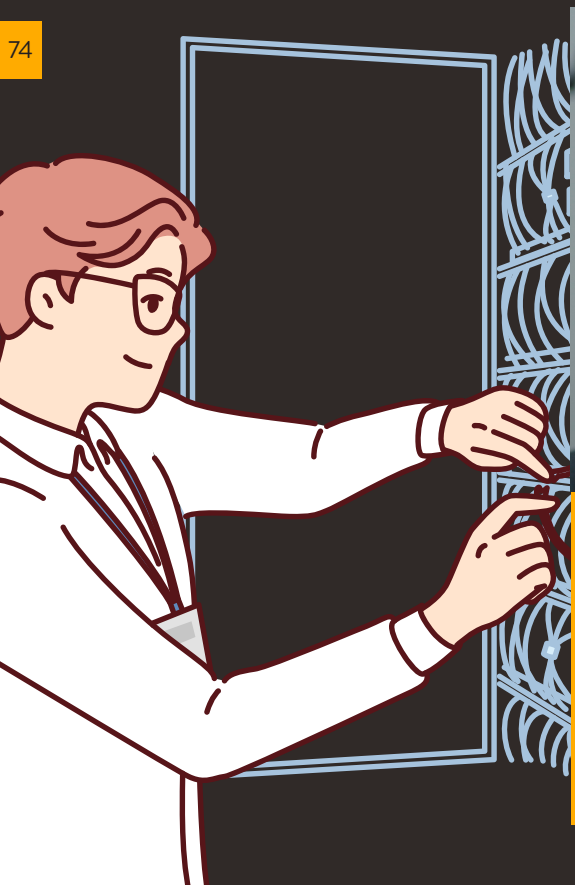
At the same time, making the right operational decisions is essential, not only for sustainability, but also profitability. While there may be trade-offs between network technologies and future proofing costs with OEM providers, some optical connectivity providers offer the highest quality optics at a fraction of the OEM

price tag, giving you the performance and reliability you need without compromising on budget. Compatible optics are key to improving capital expenditure (CapEx) and operating expenditure (OpEx), while allowing for future growth.

In today's competitive multi-OEM environment, breaking barriers and ensuring interoperability is crucial. Operators must source transceivers, direct attach cables (DACs), and active optical cables (AOCs) that are fully interoperable, allowing them to capitalise on the full breadth of compatible transceivers and network cabling without the OEM mark-up. Third party components are as good, but much cheaper and can work seamlessly with all other hardware from the OEMs.

BIGGER PICTURE

Taking a holistic approach to sustainability is vital, which means extending the scope beyond energy consumption to include component selection. This will enable operators to overcome the pressing demands on growth, reliability and cost, and utilise solutions perfect for the unique demands of modern data centres. This focus on high quality components and engineering principles ensures minimal latency and optimised power consumption, aligning perfectly with sustainability goals. ■



GEORGE ASHWIN

George Ashwin is channel development director at AddOn Networks. He has eight years' experience in the IT industry, defining channel business strategies and driving revenue across a wide number of markets. Before joining AddOn Networks, Ashwin sold hardware maintenance services into the IT channel.

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