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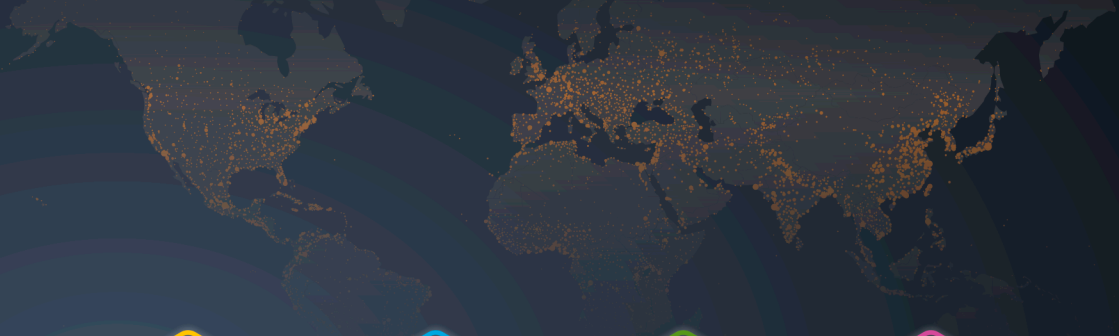


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2022 was a mixed bag in many ways. Although much of life returned to normality after the coronavirus pandemic, the economic repercussions are still being felt. For the most part the enterprise and data centre network infrastructure sector has continued to thrive, as more of us come to rely on it for every aspect of our lives, but supply chain issues and construction costs are continuing to rise.

In our annual Question Time review of the year, we've assembled a panel of industry experts from across all parts of the sector to review the events of the last 12 months. One of the most frequently cited subjects from our respondents concerns the ongoing skills shortage and the need to attract new talent. With the University Technical College (UTC) Heathrow's Digital Futures programme celebrating a successful first year, it's clear that progress is being made, but we can all expect to hear more on this issue during 2023.

In order to highlight the diversity of job roles in the data centre sector, #DCDayinTheLife has been initiated by Carrie Goetz. To get involved, simply make a short video about what you do and post it on #DCDayinTheLife along with your job title and company name. The best one will receive a $500 prize on International Data Center Day. Oh, and if you haven't already got a copy, don't miss out on Carrie's new book called Jumpstart Your Career In Data Centers. This issue has an exclusive extract from it.

This issue also contains special features on cable management and labelling and connectors and connectivity, with experts from Dunasfern, Corning, R&M and Siemon examining a range of subjects. These include looking at how modern cable management solutions create a win-win situation by allowing faster installation while reducing cost, and the case for plug and play connectivity.

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.

Finally, on behalf of the Inside_Networks team I'd like to wish you and yours all the best for 2023!

Rob Shepherd
Editor

Gets you all wired up!

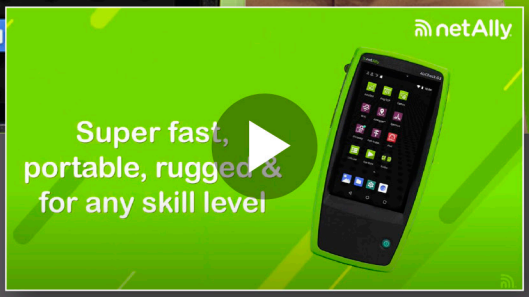
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Tech skills challenge accelerated by pace of digital transformation

According to the Equinix 2022 Global Tech Trends Survey, 67 per cent of IT decision makers in the UK view a shortage of personnel with IT skills as one of the main threats to their businesses, compared to 62 per cent globally. The 2,900 survey respondents acknowledged how the speed at which the tech industry is transforming has left companies struggling to find people with the right skillsets to meet present and future challenges.


Gary Aitkenhead

Globally, the most common concerns identified by 44 per cent of respondents were candidates with the wrong skillsets applying for jobs, and retention of current talent. In the UK, the results were slightly higher, with 45 per cent of IT leaders highlighting applicants' skillsets not matching vacancies, while 49 per cent felt retaining talent was an increasing challenge. In addition, half of UK respondents said shifting expectations of employees towards hybrid and flexible working models had added further pressure.

Across the globe, the most in-demand tech employees are IT technicians (27 per cent), cloud computing specialists (26 per cent) and those with an artificial intelligence (AI)/machine learning aptitude (26 per cent). Other skills shortages include data analysis (21 per cent), data protection (21 per cent), security software development (19 per cent) and security analysis (18 per cent).

In response to skills shortages, many global businesses are working hard to reskill people from other areas. Indeed, 62 per cent said they reskill workers from similar industries, while 34 per cent are trying to bolster their workforce with recruits from unrelated sectors. It is a similar story in the UK, with 57 per cent of businesses reskilling workers from the IT sector and related industries, while 39 per cent seek to reskill applicants from completely different industry sectors.

Meanwhile, businesses are also seeking to recruit through higher education and apprenticeship programs. IT leaders globally said their companies' main ways of partnering with higher education institutions include offering student internships (42 per cent), running collaborative training programs with higher education institutions (41 per cent), taking part in college/university career fairs (37 per cent) and partnering on degree apprenticeship programs (34 per cent).

Gary Aitkenhead, senior vice president EMEA IBX operations at Equinix, noted, 'The skills gap is present across the entire tech industry, but is particularly acute in operations roles where the rapid pace of change means the workforce needs to be constantly upskilled and expanded. Ultimately, not enough people are aware of the career opportunities within the data centre industry.'

Thousands of black women 'missing' from the IT industry

Over 20,000 black women are 'missing' from the IT profession in the UK, according to a new report from leading industry groups. Black women remain under-represented and face barriers to progression, such as a lack of flexible working, career development support and a strong 'tech bro' culture in some organisations, according to the study.


Charlene Hunter

The research by BCS, The Chartered Institute for IT and Coding Black Females found that whilst black women make up 1.8 per cent of the UK workforce, they only make up 0.7 per cent of IT professionals. That means for black women to be truly represented in IT there would need to be 20,000 more within the sector. The percentage of all women in IT has increased only slightly over recent years from 17 per cent of the IT workforce in 2017 to 22 per cent in 2021.

Charlene Hunter, BCS board member and CEO of Coding Black Females, said, 'Successful black women – and women in general – working in tech are often where they are despite the prevailing culture and limited flexibility in their working options, and lack of inclusive working culture. The fact is that a diverse tech profession produces much better products and outcomes.'

Kao Data joins UTC Heathrow's Digital Futures Programme to support the next generation of data centre engineers

Kao Data has joined University Technical College (UTC) Heathrow's Digital Futures Programme to help support and educate the next generation of data centre engineers. Kao Data will help support the professional education of students between ages 14-19, sharing its technical expertise across the spectrum of data centre design, engineering and operations.



UTC Heathrow is committed to helping advance the lives of its students, many of whom have come from disadvantaged backgrounds, and create a science, technology, engineering and mathematics (STEM) learning environment in which they can excel. Mike Tamblingson, operations director at Kao Data, said, 'Kao Data is proud to support UTC Heathrow's Digital Futures Programme. We are excited to help its students take that all important first step into the data centre industry.'

Keysource publishes its State of the Industry Report 2022

Keysource has published its State of the Industry Report 2022, which gathered views and insights from over 250 IT directors in UK and Europe. It showed once again that the data centre and technology sectors continue to grow, despite the current global economic and political uncertainties.


Jon Healy

Over half of the respondents see security as the biggest challenge, with sustainability a close second. However, the survey highlights multiple concerns, with more than a third also citing pressure to adopt new technology and services, budget, access to skills and speed of change as major challenges.

78 per cent of respondents believe that their existing investments are preventing IT transformation – a figure similar to last year, showing little or no progress in this area. This suggests that organisations are failing to understand the money savings change could bring, as they are focused on the investment and/or don't want to admit they may have got it wrong.

Jon Healy, operations director at Keysource, said, 'We are operating in a world with rapidly expanding social and economic consumption. This relies on processing, data and transfer to be both secure and sustainable, alongside a skills shortage and severe supply chain issues. As an industry we are used to change and challenges but these might be our greatest ones yet.'

Nutanix examines potential impact of data centre models on energy efficiency and carbon footprint

The current energy crisis has led to soaring energy costs across Europe, making energy efficiency vital. In response, Nutanix has sponsored an in-depth report to help business decision makers not only minimise energy costs but radically cut the carbon footprint of their data centre assets.


Sammy Zoghlami

It found that the transformation of traditional three tier architectures towards next generation models like hyperconverged infrastructures (HCI) will be key to realising the savings potential in data centre energy consumption and carbon footprint. Next generation HCI architectures could potentially reduce energy consumption and carbon footprint by roughly 27 per cent per year.

Sammy Zoghlami, senior vice president at Nutanix EMEA, said, 'In EMEA alone data centres consume over 90TWh per year, with an emissions level equivalent to roughly 5.9 million vehicles. Action here can have a huge impact on climate change but has to be tempered against the need for businesses to compete effectively in increasingly digital marketplaces.'

Engineering services sector optimism tempered by staff shortages

The latest Building Engineering Business Survey, backed by ECA, BESA, SELECT and SNIPEF, has revealed that 75 per cent of engineering services businesses expect to perform better in Q4 2022 than one year ago.

74 per cent of respondents also expect their turnover to stay the same or increase by the end of Q4 this year, while 78 per cent saw their turnover stay the same or increase between April and September (Q2 and Q3) this year. Most expect the trend to continue in the short-term.

However, the survey revealed widespread recognition of the challenges ahead, as 51 per cent listed staff shortages as their number one or number two worry for their business. 52 per cent highlighted shortages in electrical skills as a particular concern. Closely following was overriding concerns about price inflation of materials, as there continues to be a global shortage of semi-conductors.


Rob Driscoll

ECA director of legal and business, Rob Driscoll, said, 'Continued labour shortages and growing worries about delivering fixed priced contracts continue to keep business owners up at night. This could indicate a near future where order books appear healthy but work is delivered at negative margins.'

NEWS IN BRIEF

Epsilon has launched three points of presence (PoPs) to provide customers with direct access to South Korea. Epsilon's customers gain direct connectivity to South Korea's digital infrastructure and ecosystems spanning data centres, cloud providers and internet service providers.

Rackspace Technology has appointed of Shashank Samant as lead director of its board of directors.

Equinix has joined Gaia-X to support its ambitious plans to develop a trusted, sovereign digital infrastructure for Europe. Gaia-X aims to build a framework of open information technology standards to support a comparable and decentralised regional, federated digital infrastructure.

Robin Jose of wefox has been named Chief Data Officer (CDO) of the Year in this year's Digital Masters Awards.

Gordon Dolven has joined CBRE as director of Americas data centre research. Dolven will lead the development of the company's data centre research and thought leadership in the region and support its data centre professionals in business development efforts.

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How AI could change in

Hi Rob

Sci-fi movies and books have influenced many of us to picture a world with artificial intelligence (AI) technology as a dystopian concept. The truth, however, is quite dissimilar. In fact, AI is already being used in a variety of fields including education. For example, schools are currently making good use of software, games and programs that adapt to each student's particular needs. If they struggle with a specific topic or subject, the system can highlight this and encourage further studying.

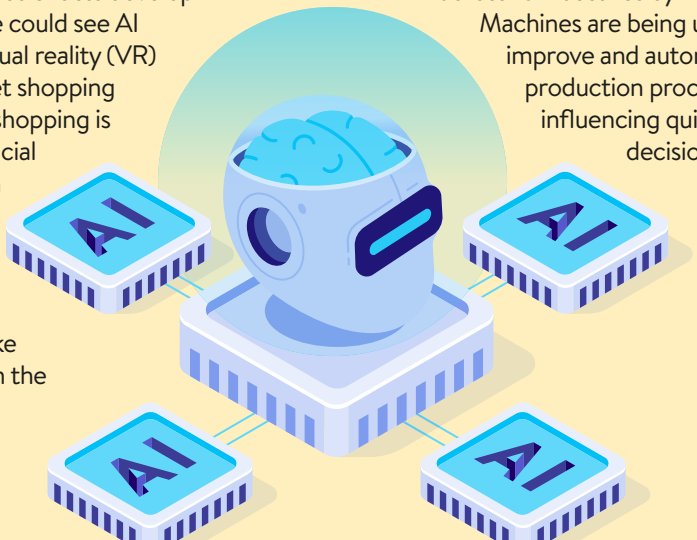
As this technology progresses, we can expect AI to continue streamlining the education process and make learning an easier, more enjoyable activity for students of all ages. We could one day be faced with robotic teachers, real time language translation and personalised learning algorithms.

Smart technology will continue to shape the retail sector too, and the use of AI is expected to grow by 34.4 per cent from 2020 to 2027. As scientists develop AI technology, we could see AI assistants and virtual reality (VR) replace high street shopping by 2050. Online shopping is already such a crucial aspect of modern day life, so it's not outrageous to think that one day we might make all purchases from the comfort of our home.

Using a VR headset, shoppers could try on clothes in virtual dressing rooms and consult AI shop assistants when in need of guidance or advice. As well as this, it's thought that online deliveries could be revolutionised by flying robot drones that drop parcels into back gardens.

When it comes to the healthcare sector, AI is already at work to produce lifechanging results. It is is used to analyse large amounts of data to identify patterns and gather vital insight. From simple laboratory robots to comprehensive surgical robots, countless lives are being saved every day with the help of AI, and this will only grow as more time and money is spent on developing different technology.

The use of AI will grow rapidly in the manufacturing sector, as strong outcomes and results have already been proven. Experts predict AI will boost economic growth by an average of 1.7 per cent across 16 industries by 2035. Machines are being used to improve and automate production processes, influencing quicker decision



dustries in the future

making, better safety precautions and high quality improvements.

The finance sector is already being transformed by AI, making relevant tasks and duties much easier for those working in the industry. From fraud detection and credit decisions to risk management and algorithmic trading, there's a certain expectation for AI technology to continue shaping the way the world handles finances.

Humans can imagine, anticipate, feel and judge changing situations, and therefore the use of AI in sectors around the world should supplement human intelligence, not replace it. As a society, we must embrace this technology and take advantage of each system to better our working lives – that's what it's made for, after all.

Lianne McLaughlan
Heriot-Watt University

Editor's comment

Lianne paints a fascinating picture of the ways AI is beginning change so many aspects of our lives and the potential it offers for the future. The idea that AI should be viewed positively as something that can enhance rather than replace humans is particularly relevant.

Inside Networks
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Live Scoring sponsorship is available.

Golf will be preceded by tea, coffee and bacon rolls at registration and will be followed by a 3-course private dinner and prize giving with charity raffle.

There will also be opportunities for sponsorship of all aspects of the day – all raising money for Macmillan Cancer Support – since 2005 this industry event has raised just under £90,000 through our charity golf events!

The cost of a 4-ball team will be £750 (+VAT).

There will also be discounted accommodation at Hanbury Manor Hotel & Country Club, which will include breakfast and use of the extensive leisure facilities. Price to be confirmed.

As in previous years – teams will be asked to provide a raffle/auction prize on the day in support of the charity.

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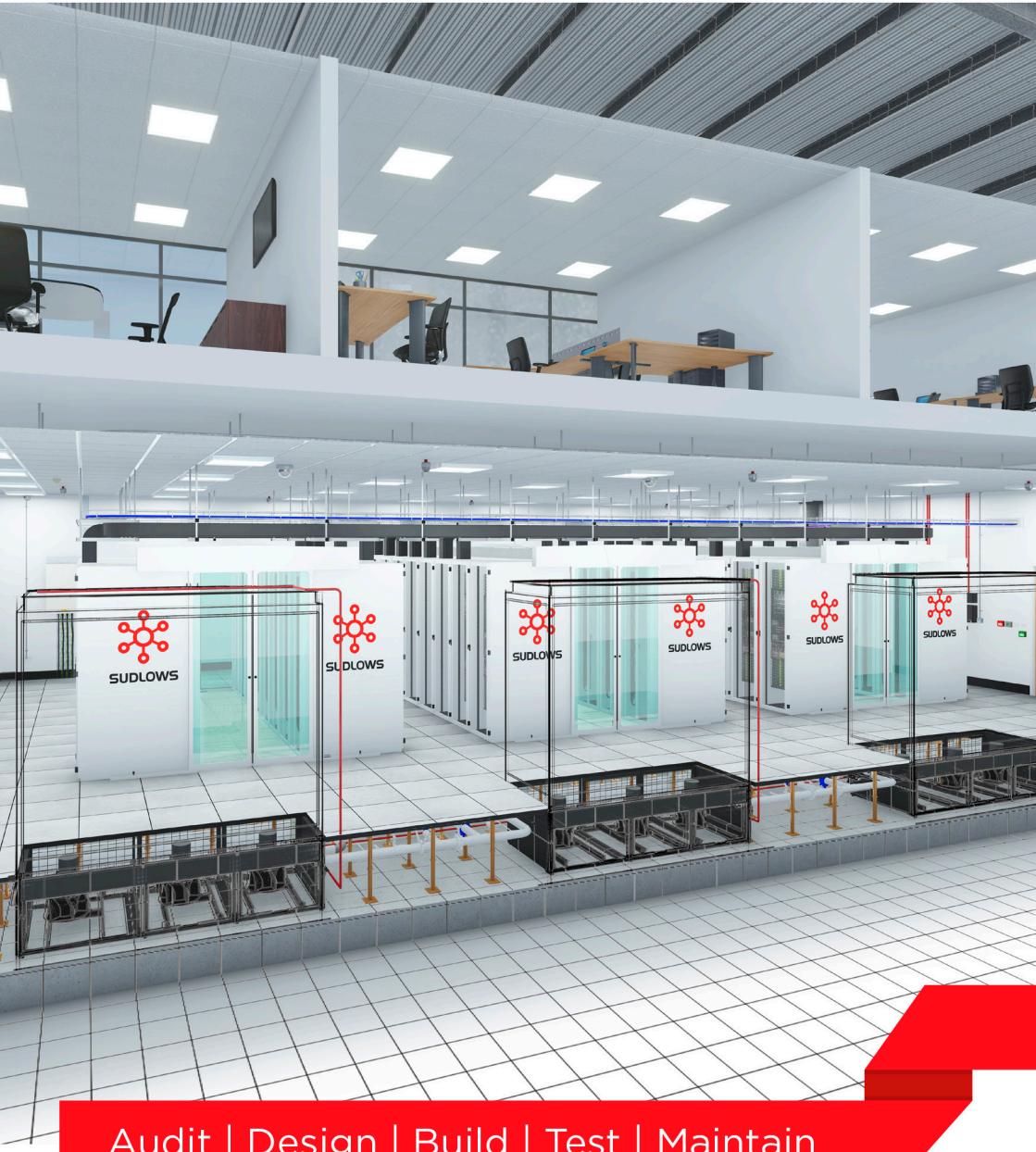


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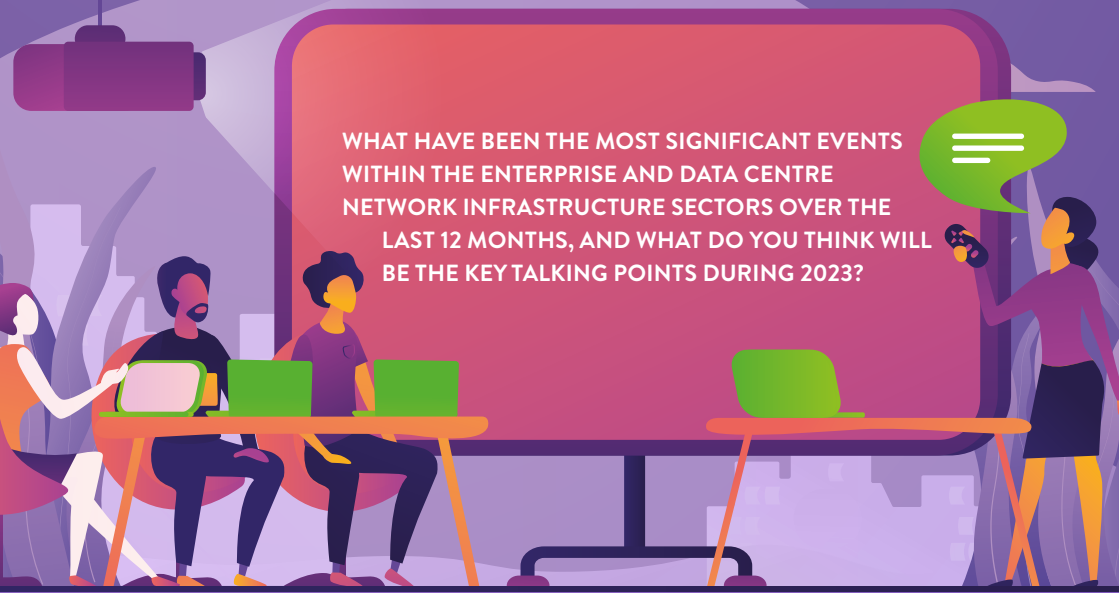
With 2022 coming to a close, Inside_Networks has assembled a panel of industry experts to review the events of the last 12 months and suggest what 2023 might have in store

It's been another fastmoving 12 months and with 2022 nearly over we can turn our attention towards what next year might bring. As the world finally emerged from the coronavirus pandemic, companies across all areas of the enterprise and data centre network infrastructure sectors remained innovative by creating and implementing solutions that will stand us all in good stead during 2023.

Once again, edge data centres dominated discussion throughout the year, while Industry 4.0, the industrial internet of things (IIoT), machine-to-machine (M2M) communications and the development of autonomous vehicles will ensure that the edge continues its growth. Meanwhile, 5G, the cloud, artificial intelligence, Wi-Fi 6 and the need for greater levels of sustainable practices remained key talking points.

The need to address the industry skills shortage continues to be recognised and there is a definite sense that things are moving in the right direction, with University Technical College (UTC) Heathrow celebrating a successful first year. This will inspire a generation that might have never previously considered data centres as a career option, and which the rest of the world can learn from.

Inside_Networks has assembled a panel of experts to discuss the highlights of 2022 and predict the big talking points of 2023. Don't forget, if you have a question that you would like answered in Inside_Networks, **CLICK HERE** and we'll do our best to feature it.



STEVEN CARLINI

VP OF INNOVATION AND DATA CENTRE ENERGY MANAGEMENT AT SCHNEIDER ELECTRIC



In 2022 we saw massive data centre drivers emerge including the digitising and automating of almost everything including transportation, energy, communications, education, gaming and more. Digitising of industries has created a technology dependent lifestyle – and not just for millennials. We are seeing a 'boomer tech' trend with almost three-fourths of Gen X and baby boomers owning smartphones.

This has put tremendous focus on the need to construct data centre capacity faster than ever. We have staggering absorption rates, with almost all data centres under construction or planned in the next three years being scooped up and reserved. Many colocation facilities that were traditionally multi-tenant are now (or will be) occupied by a single tenant, even in the largest 100MW facilities!

The industry is responding to this need for speed with new digital tools and processes, such as layout tools for IT, power and cooling, digital twin power system design, and digital tendering and construction phase software management. The industry is also seeing much greater acceptance of prefabricated solutions that are built and tested in factories and dropped into place.

In 2023, we will continue to witness momentum in moving to the edge and the distributed cloud, as internet giants get closer to the user. We'll also continue to see distributed clouds and legacy telco edge converge at the network edge, and start seeing more of a move towards cloud native applications where applications can run on multiple instances of the cloud.

More personalised applications with be the hot topic in 2023. As higher capacity and edge data centres proliferate and new 5G and Wi-Fi 6 networks allow for more internet of things (IoT) and artificial intelligence (AI), levering not only sensors but high definition video, a much more personalised experience is achievable.

In the new year, everyone will be talking about the 'multi-experience' – creating a seamless user experience with one application across a variety of digital touchpoints including websites, mobile apps, chatbots, and augmented reality/virtual reality (AR/VR). This includes moving from device to device continuously or having the device remember where you left on your mobile, tablet, wearables, car or computer.

'IN THE NEW YEAR, EVERYONE WILL BE TALKING ABOUT THE "MULTI-EXPERIENCE" – CREATING A SEAMLESS USER EXPERIENCE WITH ONE APPLICATION ACROSS A VARIETY OF DIGITAL TOUCHPOINTS INCLUDING WEBSITES, MOBILE APPS, CHATBOTS AND AR/VR.'

MIKE HOOK
EXECUTIVE DIRECTOR AT LMG



Among the most significant events of the last 12 months are those that have compromised international supply chains, such as ongoing Brexit disruption, the war in Ukraine and Covid-19 – which is still affecting parts of the world but especially China due to its zero covid policy. More recently, the declining value of the pound has also made it more expensive to import network components into the UK, adding further complications.

On a more optimistic note, technology continues to evolve to meet the needs of this growing sector, with internet of things (IoT) sensor networks maturing over the last 12 months. This opens up entirely new possibilities for the next generation of cutting edge network infrastructure that is more efficient, sustainable and secure.

These trends will remain key talking points in 2023. In addition, we should expect to see sustainability continue to rise up the agenda, particularly with respect to the costs associated with energy consumption and supply chain ethics – Environmental Product Declarations (EPDs), for example. More than ever, people care about how their technology is produced, where it comes from, and what carbon footprint it leaves behind.

Finally the sector-wide talent shortage will be felt as keenly as ever. Recent research by Uptime Institute suggests that up to half of all data centre engineers may be retiring in the next three years, despite the number of engineers needed globally rising by approximately 300,000 over the same period.

While many of us in the industry are mobilising to combat this – working with partners like UTC Heathrow to deliver the country's first data centre curriculum – 2023 will see yet more effort spent bringing the best and brightest into the sector.

'AMONG THE MOST SIGNIFICANT EVENTS OF THE LAST 12 MONTHS ARE THOSE THAT HAVE COMPROMISED INTERNATIONAL SUPPLY CHAINS, SUCH AS ONGOING BREXIT DISRUPTION, THE WAR IN UKRAINE AND COVID-19 – WHICH IS STILL AFFECTING PARTS OF THE WORLD BUT ESPECIALLY CHINA DUE TO ITS ZERO COVID POLICY.'

ANDREW STEVENS
PRESIDENT AND CEO AT CNET TRAINING

The industry's ongoing skills shortage escalated throughout 2022, with staffing issues becoming increasingly apparent in all sectors. The swelling demand for our industry's services means the pool of skilled workers is smaller than ever, driving up wages and, subsequently, costs.



Experienced installers not returning post-pandemic, or taking early retirement, has intensified the issue and people are often joining the industry without the required skills. This lack of technical understanding and 'picking it up on the job' means that poor practices can spread like wildfire due to a lack of basic understanding. This, in turn, leads to issues such as increased time and material costs because of poor installation, and the requirement to keep returning to carry out repairs.

With fibre to the premises (FTTP) gathering pace over the last 12 months, and set to continue throughout 2023, the demand on resources, labour and money will exacerbate this strain, as our industry strives to deliver faster and more reliable connectivity. The only way to efficiently address these issues is to ensure that industry professionals are equipped with recognised certifications and qualifications throughout their career lifecycle, and that this education evolves with the industry so it continues to be relevant, required and rewarded.

With talent attraction and retention high on the agenda, the wheels are in motion to address the skills shortage, with industry leaders investing in initiatives both individually and in partnership to attract new talent. University Technical College (UTC) Heathrow's first of its kind Digital Futures programme, supported by 10 industry leading partners, is designed to give young people the best possible start to long-term, fulfilling careers within the digital infrastructure industry.

Its first year has been a resounding success and showcases what true industry collaboration can achieve. It also won the Education and Employment Project 2022 at the prestigious Global Datacloud Awards. Off the back of all this, a second digital infrastructure industry focused UTC will open in September 2023. In addition, a number of new apprenticeships are springing up throughout our industry and we will no doubt see these gathering traction during 2023.

'WITH TALENT ATTRACTION AND RETENTION HIGH ON THE AGENDA, THE WHEELS ARE IN MOTION TO ADDRESS THE SKILLS SHORTAGE, WITH INDUSTRY LEADERS INVESTING IN INITIATIVES BOTH INDIVIDUALLY AND IN PARTNERSHIP TO ATTRACT NEW TALENT.'

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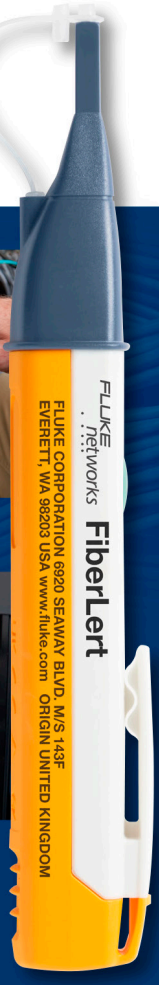
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DAN KLIMKE

DIRECTOR OF PRODUCT MARKETING AT NETALLY

We are seeing projects planning for the next generation Wi-Fi technology – Wi-Fi 6/6E – ramping-up now even as supply chain issues continue to plague infrastructure upgrades. Wi-Fi 6 is attractive for its much higher bandwidth over previous technologies, along with enhancements to network security.



This higher bandwidth is made possible through the use of multiple technologies – multi-user multiple input, multiple output (MU-MIMO) transmissions, the use of up to eight spatial streams, 1024 quadrature amplitude modulation (QAM) – up from 256QAM in Wi-Fi 5 – and orthogonal frequency division multiplexing (OFDMA) packing more data into the available spectrum.

This increase in bandwidth at the edge is causing infrastructure managers to rethink their access layer switching architecture as they look to these future projects. While 10Gb/s uplinks from access points would be overkill, many choose to future proof their Wi-Fi by utilising multi-gigabit speeds of 2.5Gb/s or 5Gb/s.

But even this can be a challenge if the facility's cable plant is not up to the challenge. A handy, and potentially huge cost saving tip – bandwidth testing of a legacy cable plant may reveal that the capacity and quality are sufficient to run at these higher speeds, even if that cabling may not meet specific category standards. Be sure to know what your network's capacity is before signing up to a costly upgrade!

If new cabling is in order, it is worthwhile pulling two cables to every access point now, not just for the sake of redundancy, but to take advantage of link aggregation control protocol (LACP), enabling the possibility of dual 2.5Gb/s or dual 5Gb/s uplinks. Imagine pushing all that data traffic from your Wi-Fi 6 devices on to a single Gigabit Ethernet connection. With Wi-Fi 6 it is certainly possible to oversubscribe a Gigabit Ethernet uplink.

'WE ARE SEEING PROJECTS PLANNING FOR THE NEXT GENERATION WI-FI TECHNOLOGY – WI-FI 6/6E – RAMPING-UP NOW EVEN AS SUPPLY CHAIN ISSUES CONTINUE TO PLAGUE INFRASTRUCTURE UPGRADES.'

NICK EDWARDS

PRODUCT MANAGER FOR INTERNAL CONNECTIVITY AT HELLERMANNTYTON

One of the most significant events within the enterprise and data centre industry has been the recovery from the coronavirus pandemic and emergence of a post pandemic world. With the rise in remote working, this will have tested the robustness of IT systems – infrastructure weak points identified by the change in the way we work have allowed IT technicians to re-evaluate the use of their networks.



The pandemic has accelerated not only the implementation but also the acceptance of hybrid working within society. The combination of less personnel physically on-site and the requirement to reduce energy consumption will help meet the target to become a net zero nation. Also, reducing overheads means that IT departments within enterprises can now realistically consider moving their networking needs to colocation data centres, or at the very least have a much leaner, more dynamic physical infrastructure.

This has encouraged the use of hybrid IT, which is a combination of physical networking infrastructure either located in-house, or space leased in a colocation data centre. It can be a cost effective way to provide a workforce with the tools they need, as many components within an IT system are run on a cloud based platform, which provides plenty of bandwidth flexibility and is scalable for future needs. The outages that occurred during the pandemic highlighted the reliance on having well educated IT technicians available on-site to fix any issues.

Based on this shift in approach to working, and looking forward into 2023, I feel we will see a real rise in education on physical layer requirements. There will be a need to ensure more engineers are trained in the most up to date optical fibre and copper solutions through accredited courses such as City & Guilds.

We will also expect to see an accelerated increase in solutions that provide larger bandwidth and transmission speeds, as the enterprise market looks to strengthen and future proof networks. Therefore, there will be a sharper rise in Category 6A, passive optical LAN and fibre to the desk. These, in addition to networking solutions such as zone cabling for use in smart buildings, will all be major talking points for specifiers and engineers.

‘REDUCING OVERHEADS MEANS THAT IT DEPARTMENTS WITHIN ENTERPRISES CAN NOW REALISTICALLY CONSIDER MOVING THEIR NETWORKING NEEDS TO COLOCATION DATA CENTRES, OR AT THE VERY LEAST HAVE A MUCH LEANER, MORE DYNAMIC PHYSICAL INFRASTRUCTURE.’

GLENN WARD
GENERAL MANAGER AT DUNASFERN

We have been seeing a growing influence and migration from social networks into the business community concerning the sustainability of the businesses we operate and their impact on the global environment. Many have focused, quite rightly, on their operational efficiencies in order to save energy, but we also need to focus on the recyclability and reduction in unnecessary waste, particularly within site installations. Both of these can create a significant by-product, which is a reduction in costs, which we all desire.



Operational efficiencies in power usage and cooling can produce great rewards, so a focus on not just the performance of a product but its efficiencies in power usage will be of even greater importance. Cooling will become focused not just on how it operates, but on how energy efficient a solution is.

Many manufacturers are supplying more and more products in component form, to be pre-assembled on-site, with each component delivered in its own boxes with plastic packaging inside. This is not just causing increased time on-site but is adding to the plethora of packaging waste, much of which goes straight to landfill. Think of the environmental impact this causes.

By minimising waste, we minimise the environmental impact and the cost of waste disposal. As we enter 2023, these pressures will continue to increase. As an industry, we need to continue to develop our responsibilities in this area and promote a greener and more socially responsible environment to our clients, end users and the wider public.

The rise in energy costs is pushing the need to be more efficient. More and more efficient solutions are coming on to the market, but we need to be aware of the environmental impact as well. This focus will help ensure our industry responds proactively to the social care pressure we are facing today and tomorrow.

‘THE RISE IN ENERGY COSTS IS PUSHING THE NEED TO BE MORE EFFICIENT. MORE AND MORE EFFICIENT SOLUTIONS ARE COMING ON TO THE MARKET, BUT WE NEED TO BE AWARE OF THE ENVIRONMENTAL IMPACT AS WELL. ’

MATT GEORGE

DIRECTOR OF SEGMENT MARKETING AND ENTERPRISE TRANSFORMATION AT EQUINIX

Despite facing a diverse set of challenges including economic instability, inflation and supply chain issues, businesses across multiple sectors are investing in digital infrastructure to accelerate digital transformation and increase business resilience and success.



According to our 2023 Global Interconnection Index, global interconnection bandwidth is predicted to reach 15,172Tb/s by year end 2023 and will continue to grow at over 35 per cent CAGR in each region and major metro for the next five years. IT leaders are prioritising investment in improving cybersecurity, complying with data regulations, enhancing customer experience and future proofing their businesses through digital transformation, as indicated by Equinix's 2022 Global Tech Trends Survey (GTTS).

Other key trends include the adoption of hybrid and multi-cloud architectures to better facilitate hybrid working, and investment in the internet of things (IoT) and artificial intelligence technologies to drive more efficient, resilient operations in the face of supply chain and energy shortages. The move to the digital edge has also accelerated, with businesses recognising the need to improve the user experience and enable real time analytics by moving and storing data in close proximity to end users.

Businesses are also focused on expanding sustainably. The GTTS found that 73 per cent of global IT decision makers believe reducing the carbon footprint of their digital infrastructure is critical. In 2022, Equinix – which already operates on 95 per cent renewable energy globally – launched a co-innovation facility to test sustainable data centre technologies including fuel cells and liquid cooling, adding to efforts the industry is making to cut emissions.

As part of this, data centre companies in Europe are progressing initiatives under the EU Climate Neutral Data Centre Pact, of which Equinix is a founding member. Included are proposals to limit the water consumption of data centres to 400ml per kWh of computer power by 2040.

As we move into 2023, we expect many of these trends will continue to evolve as businesses double down on improving the resilience and sustainability of their digital operations.

'DESPITE FACING A DIVERSE SET OF CHALLENGES INCLUDING ECONOMIC INSTABILITY, INFLATION AND SUPPLY CHAIN ISSUES, GLOBAL BUSINESSES ACROSS MULTIPLE SECTORS ARE INVESTING IN DIGITAL INFRASTRUCTURE TO ACCELERATE DIGITAL TRANSFORMATION AND INCREASE BUSINESS RESILIENCE AND SUCCESS.'



Faster installation whilst reducing cost and waste - now that's a win/win

Bespoke customisation as standard
At Dunasfern, bespoke customisation comes as standard. You don't have to accept the standard norm where lots of boxes arrive on site for pre-assembly, when we can do this for you.

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From our facilities in Milton Keynes, we offer a bespoke service where each CDR, Cabinet, Rack or Wall Box can be configured to your exact requirements and delivered straight to site, ready to install.

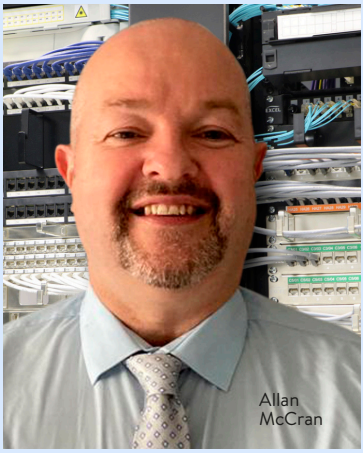
Reduce your Environmental impact
This saves time on the installation at site and significantly reduces costly waste packaging to reduce your environmental impact as well.

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www.dunasfern.com

DUNASFERN

Mayflex appoints Allan McCran to its security sales team

Mayflex has appointed Allan McCran to the role of account manager for converged technology, with an emphasis on IP security for Scotland and the north east. He joins Mayflex from DVS where he was an area sales manager and, prior to that, he worked for leading security installers including IC Fire & Security, Chubb, Hyfire Sterling Safety and Secom in various business development and sales management roles.


Allan McCran

Simon Steer, director of sales for security at Mayflex, commented, 'We are delighted to welcome Allan to the team. He has a strong security background and will be looking after customers, together with internal support from Adam Edmonds, to ensure our customers receive the very best service and support, particularly around our key security brands.'

Altnets expands its team as it helps achieve full fibre networks

Altnets has made two significant hires as the UK gears up to deliver on the government's promise to bring full fibre networks to the whole of the nation by 2025. The company is expanding to keep up with customer demand and assist internet service providers (ISPs) in reaching this vital milestone.



L-R: Leigh Buckwell, Paul Britnell and Jordan Collins

Leigh Buckwell joins as technical sales manager and will be using his extensive expertise in telecoms infrastructure products to support customers throughout their procurement journey. Meanwhile, Jordan Collins is Altnets' new business development director.

Altnets' director, Paul Britnell, said, 'We are delighted to add Leigh and Jordan to our already strong team. Leigh brings with him 20 years of fibre optics experience and will support our communication partners with his wealth of knowledge around standards and compliance. Jordan has vast experience working to support multiple major accounts in the European data centre market. His ethos and conviction to offer first class account management to our customers is the reason we were so keen to bring him in to lead our team of business development managers.'

Dave Mansfield raises funds for the treatment of his son Jesse as he battles acute myeloid leukaemia

On the 16th August 2022, well known network infrastructure industry figure Dave Mansfield's 10 year old son Jesse was diagnosed with high risk acute myeloid leukaemia (AML). Around 100 children a year in the UK are diagnosed with AML, making it one of the rarest forms of leukaemia in children.


Jesse Mansfield

To make matters worse, Jesse has a rare gene rearrangement (FLT3) that affects less than 10 per cent of children with AML. This means standard treatments available on the NHS may not be successful.

Dave Mansfield said, 'The news of Jesse's illness has come as a shock to our whole family. Jesse has always been fit and healthy boy and very rarely poorly, so this news has left us absolutely devastated and our lives have been turned upside down. The news that we received is something that you never expect to hear about your own child – it is simply incomprehensible. We need to work hard and fast to ensure we have the funds ready to ensure he receives the right treatment if he needs it.'

Please join Dave's colleagues and friends in sending support to Jesse by donating to Jesse's Journey 22. You can donate by **CLICKING HERE.**

CHANNEL UPDATE IN BRIEF

Vertiv has opened a new office and state-of-the-art Customer Experience Centre in Nairobi, Kenya. With increasing demand for high efficiency critical infrastructure in East Africa, this centre supports Vertiv's efforts in offering digital infrastructure solutions to local customers.

BCN Group has appointed Mark Braund as its new non-executive chairman. As a leading expert in the technology space, Braund will help BCN Group to synergise its strategic growth goals.

Piero Gallucci has joined NetApp as its new vice president and general manager UK & Ireland. He replaces Chris Greenwood, who is moving to a new role as vice president Western Europe enterprise.

Ivanti has launched its new fully enabled Partner Portal and Campaign Central. The Partner Portal is a personalised, role based experience that provides automation of the partner lifecycle and streamlines business processes. Campaign Central is a marketing platform that enhances partner marketing efforts by co-branding professionally packaged marketing campaigns at zero cost.

PoE Pro is the premier da
verifier and troubleshoote

TREND Networks has launched a new Bluetooth enabled power over Ethernet (PoE

In the past, affordable cable verifiers with PoE testing have not been able to capture the data needed to create test reports that document performance. However, TREND Networks' research with test equipment users found that there were benefits to businesses when every technician and installer can document their work.



Present and correct

With access to detailed test reports, businesses can easily verify that technicians have completed an install correctly. Dan Barrera, director of product innovation for TREND Networks, says, 'Occasional termination mistakes are inevitable but, previously, issues would only become evident later when the project was handed over. This results in customer dissatisfaction, as well as costly call-backs. Documenting even simple installations provides confidence that the job has been carried out properly.'

Advanced PoE load testing confirms that the power available at the end of an installed link meets the IEEE 802.3bt standard by detecting the class of the PoE supply and drawing the required amount of power, up to 90W. Delivered power is automatically compared to the standard with a clear pass/fail result. The test proves the cabling is not causing excess power loss that could lead to intermittent or inoperative PoE devices.

The resulting test report clearly demonstrates that delivered power is sufficient for the installed devices. As data cable verifiers and PoE testers do not typically offer this level of testing and reporting, installers are able to provide a value added service with no additional effort.

Make the connection

PoE Pro connects to the TREND AnyWARE Cloud app using Bluetooth to store tests on a smartphone. Users simply create a job folder in the app, connect the tester to a cable and

ata cable
er

TREND NETWORKS

) tester that supports advanced test reporting via TREND AnyWARE Cloud



send the result to the app. There is also an option to add a photo to each test result for complete documentation of the installation.

From here, users simply hit 'upload' to transfer the results to the TREND AnyWARE Cloud internet based test management system. The test results can then be organised into an intuitive folder structure, identifying the building, floor, room, rack and panel of each test, ready for PDF reports to be generated. Existing users of TREND AnyWARE Cloud will be able to use the same highly secure environment to manage test results and reports for PoE Pro as they already use for their LanTEK III/IV/IV-S cable certifiers and SignalTEK 10G bandwidth testers.

The new PoE Pro model retains all the features that allow users to eliminate guesswork when installing, maintaining and troubleshooting network cabling, including all the functions of the VDV II Pro data cable verifier. However, it has been updated with increased service detection capabilities to display the latest network connection speeds of 2.5Gb/s, 5Gb/s and 10Gb/s.

Support and validation

'An increasing number of building communication systems are migrating to Ethernet, which means more technicians need a tool like PoE Pro,' concludes Barrera. 'We've invested in the latest updates to PoE Pro as we know that new installers, or installers working with Ethernet for the first time, will need to depend on us for greater support and validation that the cabling is installed and working correctly.'

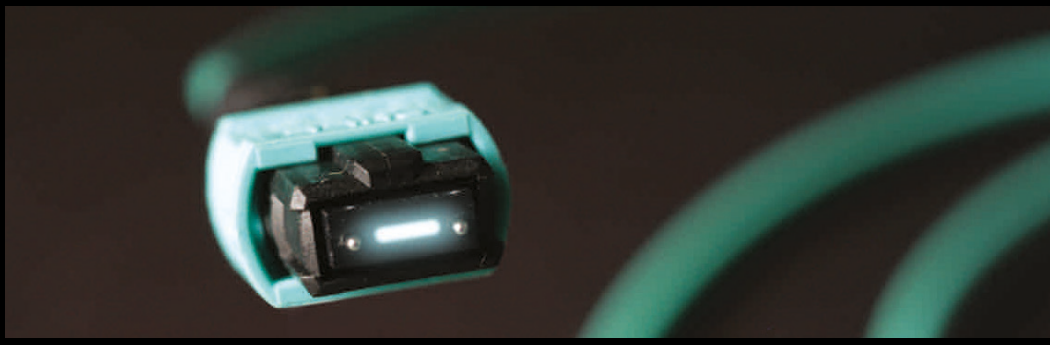
CLICK HERE to order the new PoE Pro now from TREND Networks distributors, or direct from the online shop.

www.trend-networks.com



Cutting your losses

Whilst enterprise data centres are trending towards the adoption of singlemode optical fibre to support higher speed applications, they are having to deal with much more stringent channel insertion loss and return loss requirements to guarantee performance. Gary Bernstein of Siemon investigates the implications this has on selecting the right fibre connectivity



Multimode fibre has long been the media of choice for enterprise data centres. This is due to its ability to sufficiently support shorter link lengths at significantly lower costs compared to a singlemode fibre alternative. However, with transmission speeds in enterprise data centres rapidly increasing to 25/50Gb/s at the edge and to 100/400Gb/s in the backbone, the channel lengths supported by multimode fibre have decreased significantly. For example, for 40Gb/s 40GBASE-SR4 parallel optic applications that use multiple fibres with multi-fibre push-on (MPO) connectivity, supported lengths are reduced to only 150m over OM4 multimode, whilst for 100Gb/s multimode applications and beyond the length for OM4 is limited to 100m.

ONE STEP BEYOND

The development of short reach

Application	Standard	Distance	Signalling / lane speed	Number of lanes	Transmis
100GBASE-PSM4	PSM4 MSA	500m	NRZ 25Gb/s	4	Parallel O (MPO
100GBASE-CWDM4	CWDM4 MSA	2km	NRZ 25Gb/s	4	CWDI
100GBASE-DR	IEEE 802.3ba	500m	PAM4 100Gb/s	1	Duple
200GBASE-DR4	IEEE 802.3bs	500m	PAM4 50Gb/s	4	Parallel O (MPO
200GBASE-FR4	IEEE 802.3ba	2km	PAM4 50Gb/s	4	WDM
400GBASE-DR4	IEEE 802.3bs	500m	PAM4 100Gb/s	4	Parallel O (MPO
Application	IEEE 802.3cu	2km	PAM4 100Gb/s	4	WDM

singlemode applications has now made it possible to support 100Gb/s, 200Gb/s and 400Gb/s speeds to distances well beyond 100m. The IEEE introduced data centre reach (DR) and fibre reach (FR) singlemode applications with distances of 500m and 2,000m respectively.

In addition, PAM4 signalling has laid the foundations for cost effective 100Gb/s duplex and four lane 200Gb/s and 400Gb/s short reach singlemode applications. Power conserving singlemode lasers for short reach data centre deployments are now also available. They cost significantly less compared to long distance singlemode options, which further drives the adoption of these short reach singlemode applications in the data centre.

Application	Distance	Max Channel IL
Multimode		
SR/SR4	100m	1.9dB
SRBD (BiDi)	100m	1.9dB
Short reach singlemode*		
DR/DR4	500m	3 dB
100GBASE-CWDM4	2km	5dB
FR4/FR8	2km	4dB
Long-reach singlemode		
DR/DR4	DR/DR4	DR/DR4
DR/DR4	DR/DR4	DR/DR4

*Includes 0.2dB fibre loss for 500m and 0.8dB for 2km

sion	# of fibres
ptics D)	8
M	2
ex	2
ptics D)	8
M	2
ptics D)	8
M	2

COMPARE AND CONTRAST

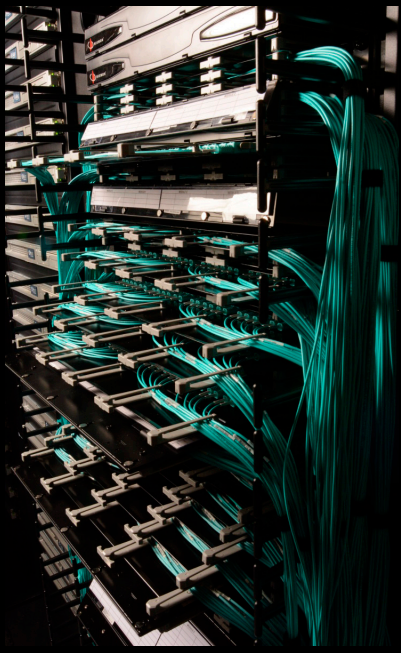
Data centre designers need to be aware that newer short reach singlemode applications come with much more stringent insertion loss requirements compared to long distance singlemode applications, and they also include some return loss considerations. Defined as the amount of power that a signal loses (attenuates) as it travels along a cable link, insertion loss is the most important performance parameter in fibre optic applications. For short reach singlemode DR/DR4 applications to 500m, the maximum insertion loss is 3dB and for short reach singlemode FR/FR4 applications to 2,000m it is 4dB.

Return loss, on the other hand, refers to the amount of light that is being reflected by a connector compared to the amount of light rejected. To calculate insertion loss budgets, data centre designers must add the insertion loss values for all fibre components within a channel. This includes the loss of the cable for a given length, as well as the loss of any cable assemblies, jumpers, connectors and splices within the channel.

CONTRIBUTING FACTORS

Designers also need to be aware that insertion loss budgets must provide additional margin to facilitate factors such as the bend radius of the cable, the level of misalignment of the fibre or the level of contamination of the fibre connector end face, poor installation quality, the transceiver age and other factors, as they all contribute to insertion loss. Considering that all of the above contribute to signal loss in a fibre cabling channel, it is safe to say that these newer short reach DR and FR singlemode applications can no longer rely on standard or low loss fibre connectivity. For optimum

‘The benefits of an A2A data centre configuration that is supported by cross-connects are undeniable. Not only is it possible to create a much more dynamic network design, but MACs are also much easier to perform.’



performance, they will have to be supported by ultra-low loss (ULL) connectivity alternatives instead.

In addition, the design of a data centre also plays a vital role in calculating insertion loss and this points further towards the deployment of ULL connectivity. This is because designers need to carefully consider the number of connections and loss values needed to support their preferred data centre configuration. For example, to achieve a flexible, scalable and easy to deploy infrastructure in the data centre, cross-connects can be a viable option. In a cross-connect configuration, fibre patch panels replicate switch ports to provide an any to all (A2A) configuration, where any switch port can be connected to any other switch port using fibre jumpers at the cross-connect.

BENEFIT CHECK

The benefits of an A2A data centre configuration that is supported by cross-connects are undeniable. Not only is it possible to create a much more dynamic network design, but moves, adds and changes (MACs) are also much easier to perform. An A2A configuration reduces the number of unused active ports, as any active spine switch ports can be connected to any leaf switch port. Also, an A2A configuration speeds up data centre deployment and expansion, as it is easy to connect new leaf switches to unused spine switch ports at the cross-connect.

Implementing a cross-connect within a switch to switch link adds additional connection points to a two connector channel, resulting in a four connector channel. Even low loss connectivity can

Application	Max Channel IL	Fiber Loss*	# of MTP-LC Modules			
			Standard Loss 1.0 dB	Low Loss 0.6 dB	Ultra Low Loss 0.5 dB	Standard Loss 0.65 dB
400GBASE-DR4	3 dB	0.2 dB	2	4	5	4
400GBASE-FR4	4 dB	0.8 dB	3	5	6	4

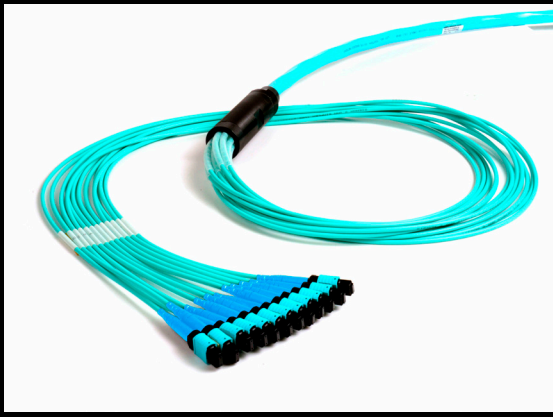
prevent implementing a cross-connect and/or providing sufficient margin. Supporting the number of connections needed to accommodate convenient cross-connects in a channel, while also providing additional margin to ensure performance and reliability in short reach singlemode DR and FR applications, can only be guaranteed with ULL connectivity.

It's also important to note that loss values vary from vendor to vendor, with many offering a mix of standard loss, low loss and ULL connectivity. Due to the variability, data centre designers need to specify required values for each component or specify vendors that they know meet those values. They also need to ensure that they are using maximum loss values in their loss budget calculations versus typical loss values that are not guaranteed.

WATCH OUT

When selecting components to support new short reach singlemode applications it is important to keep a close eye on insertion loss, and the available margins you have to work with. ULL fibre connectivity could provide the ideal solution given the significant insertion loss and return loss margins it offers, while also supporting the flexibility, manageability, scalability, speed of deployment and reliability that cross-connect configurations can provide. At the same time, ULL connectivity also ensures sufficient margin to accommodate common installation variables such as bend radius and fibre end face contamination, giving data centre designers the ability to better control their losses. ■

# of MTP Adapters		
	Low Loss 0.45dB	Ultra Low Loss 0.3 dB
	6	9
	7	10

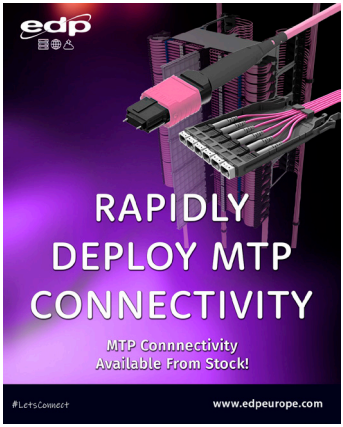




GARY BERNSTEIN

Gary Bernstein is global data centre solutions specialist at Siemon. He has more than 25 years of industry experience and extensive knowledge in data centre infrastructure, telecommunications and copper and fibre structured cabling systems. He has been a member of the TIA TR42.7 Copper Cabling Committee, TIA TR42.11 Optical Fiber Committee and various IEEE 802.3 taskforces and study groups.

EDP Europe



EDP Europe is a stockholding distributor of fibre optic solutions from Huber+Suhner, enabling our clients to rapidly deploy MTP connectivity to future proof their network infrastructure.

Pre-terminated MTP trunk cables are now available with US Conec MTP Pro connectors. Providing greater flexibility by enabling quick and effective polarity and gender reconfiguration in the field, they help lower expenditure by reducing the number of cables needed to be kept on hand. Used in SR4 40Gb/s and 100Gb/s networking, MTP Pro connectors have a longer insertion and extraction sleeve, reducing the risk of damage to the ferrules and making connector mating easier and safer.

This, coupled with the Huber+Suhner IANOS system, enables a fast, flexible and modular solution that future proofs fibre networks. It provides a quick, simple and inevitable upgrade path from 10Gb/s to 100Gb/s and beyond. IANOS offers best in class density, speed of installation, handling and scalability.

CLICK HERE to find out more, call our sales team on 01376 501337 or **CLICK HERE** to send an email.

www.edpeurope.com

HellermannTyton



HellermannTyton is continuing to reshape its LAN product range. Throughout 2022, the UK manufacturer launched a new Category 6A solution with a whole host of exciting products.

The Category 6A solution includes the Cat6A Jack, patch panels, cable and patch leads. The Cat6A Jack is designed to be toolless and does not require any specialist termination tools, while the Cat6A panels come in both flat and flat angled versions.

The new field termination plugs are used to create modular plug terminated links (MPTL) on-site for direct connection to fixed location devices. Similar to the Cat6A HTC jack, the MTPL is a toolless product, providing engineers with a quick, flexible on-site solution. HellermannTyton will also be introducing a new range of Category 6 panels and outlets, along with a selection of LC and Euro modules, faceplates and backboxes.

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

To find out more **CLICK HERE.**

www.htdata.co.uk

R&M

Limited space makes working on connectors on high node density patch panels or active components difficult. R&M's patented Quick-Release (QR) concept offers maximum packing density and convenient manipulation without compromising on connectivity. Here are the key features:

- Plugging and unplugging via QR boot.
- A simple connect-disconnect principle allows connectors to be used where trained personnel are not available, such as in-home applications.
- A simple polarity change of two or more optical fibre connectors without special tools saves time and cost.
- No interference with neighbouring plugs when handling patch cords.
- Fully compatible with all commercially available LC duplex transceivers.



- No additional space required for QR function on the connector.
- No 'chopsticks' required to release the lever, for example, LC connector.
- R&M LC-QRs don't have unplugging issues when connected to LCD SFP transceivers.
- R&M QR connectors allow stacking of adaptors without space in between – with other connectors this would result in overlap.
- An easy mating process qualifies QR connectors for other applications.

CLICK HERE to find out more.
www.rdm.com

Siemon

Third-party testing, recently performed by Intertek Testing Services, confirmed that Siemon's new ultra-low loss (ULL) singlemode MTP cabling system exhibits considerable margin over IEEE 400 Gigabit Ethernet channel limits. It is the first solution in the industry successfully tested to these parameters.



The system was tested in IEEE 802.3bs 400GBASE-DR4 and IEEE 802.3cu 400GBASE-FR4 400 Gigabit Ethernet applications, and utilised Siemon's newly launched LightVerse fibre optic cabling system. Siemon's singlemode ULL industry leading component specifications provide a maximum IL performance of 0.30dB for MTP connectors, 0.50dB for MTP-LC modules and 0.20dB for LC BladePatch cords. The channel testing showed actual results well below the maximum specifications.

By utilising Siemon's ULL components, users can deploy a future ready system capable of being a robust foundation that delivers flexibility over a range of distances and configurations. These include the use of convenient cross-connects that facilitate management, upgrades and reconfigurations, while remaining within their loss budget.

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

Ready, steady, go!

Cindy Ryborz of Corning Optical Communications makes the case for plug and play connectivity



It's no secret that bandwidth demand is skyrocketing as our world becomes ever more connected and data intensive applications like artificial intelligence grow in maturity. In response, the data centre industry has needed to adapt and grow. Today's data centres must be capable of storing and managing massive amounts of information, while being reliable and flexible to support customer needs 24/7 – and be up and running as quickly as possible.

SIZE AND SCALE

The types of data centre we see today range in scale from small edge and private enterprise data centres to multi-tenant and hyperscale or huge campuses. Data centre interconnect applications have emerged as an important and fast growing segment to support large scale deployments, which can often see as many as 10,000+ optical fibres connecting large data halls across a campus.

The traditional approach in the outside plant environment is to splice these fibres. With counts of 1,728, 3,456 – or even higher – it can take weeks to do the necessary preparation, connect these quantities of fibre and bring them inside the building. We've also seen a shift inside the data centre to higher speed and higher

density network infrastructures, moving from a three tier architecture to leaf-spine networks supporting increased east-west data traffic.

Compounding this challenge, the industry is also experiencing a shortage of skilled workers. Even with a skilled labour force, lots of splicing can be challenging and it's very easy to misalign a splice or to splice the wrong ribbon. When it comes to large scale data centre projects, time is money – and operators know they can ill-afford to allow delays in network installation to stand in the way of meeting ever-increasing demands for bandwidth. How can operators solve this?

TIME IS OF THE ESSENCE

One of the most effective approaches is to explore pre-terminated solutions, which cut out the need for field splicing entirely. Rigorous testing of the cabling can be done off-site, in a controlled environment, and the complete package can then be shipped to the job site for installation into a myriad of pathways and spaces.

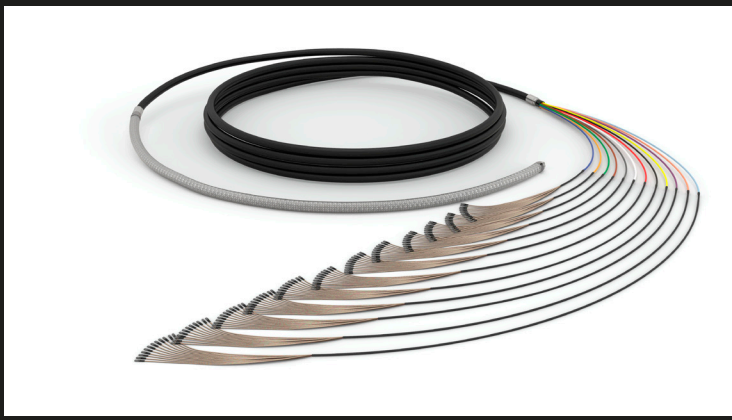
Both vertical and horizontal cable management can be addressed and simplified using pre-connected cable systems for trunks, cable assemblies and connector modules – often referred to as plug and play systems.

Because cables aren't spliced on-site, time spent by installation engineers is reduced, bringing instant cost savings, and a simpler and easier process means less chance of mistakes and less dependency on skilled labour. When new build construction schedules overrun – as they commonly do – and other unpredictable elements such as adverse weather or shortages in raw materials dramatically shorten project timelines, the rapid installation offered by pre-terminated cabling is invaluable. It could be the one critical component that ensures a project is completed on time.

When implemented correctly, in data centre interconnect applications we've seen installation times slashed by as much as 70 per cent – this can see a six week project cut down to as little as two. The scalability of pre-terminated systems is also important in supporting cabling projects as they mature. As a data centre grows or develops, being able to take a blueprint and recreate a project multiple times allows for a cost effective solution to increasing demands.

WHAT'S THE CATCH?

When it comes to performance, the expectation may be that the link is compromised but today's pre-terminated solutions offer quality that meets or exceeds cabling standards on network link insertion loss when compared to spliced solutions. There is, however, a deeper requirement for a more detailed planning



phase that pays close attention to the data centre environment and floorplan – making adjustments on the fly will be less easy when the splicing has already taken place in the factory.

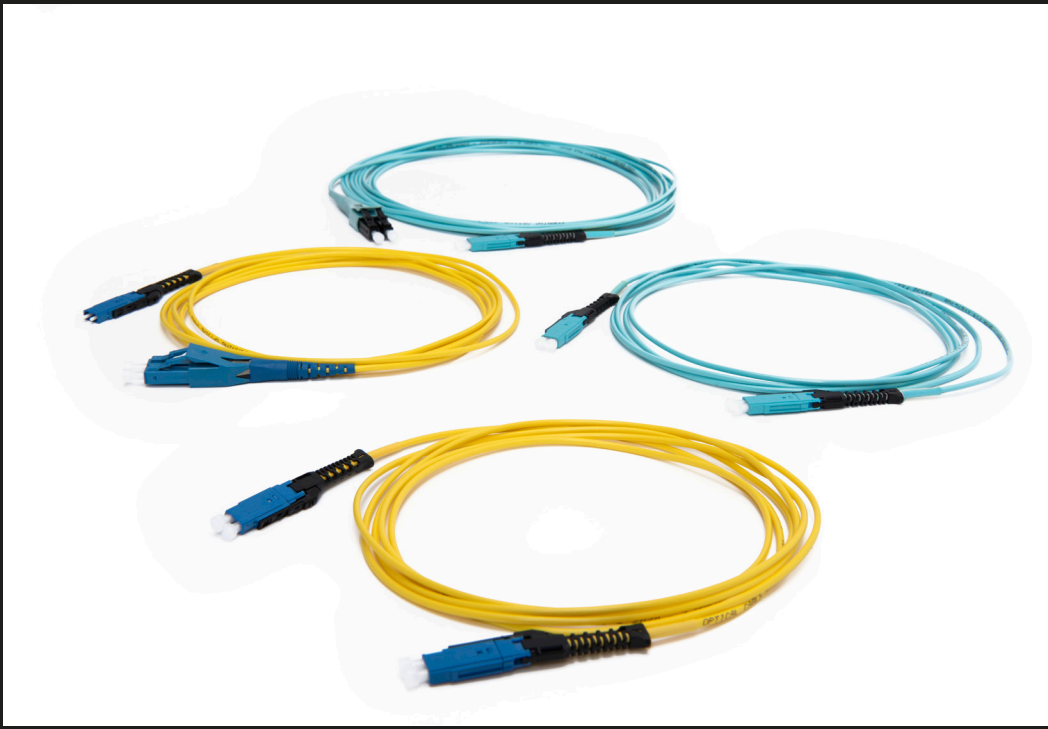
Another thing to consider is fibre polarity across the network, which is a topic that has provided headaches in many installation projects. This became more critical with the introduction of the multi-fibre push-on connector (MPO) in the 1990s, as different vendor systems use different polarity methods (Type-A, B or C), all defined within the ANSI/TIA-568-B.1 standard.

The challenge with existing infrastructures then is to make sure legacy installed products and new additions operate correctly with matching polarity. Plug and play solutions utilising universal polarity can bring relief for customers in always having the correct polarity in the network link.

WHAT TO LOOK FOR

One key issue that contractors can face with pre-terminated solutions is accurate measurement of cable length, with the connectorised trunk cables and harnesses mostly made to order. System polarity also needs to be taken into account, but this can easily be resolved with universal polarity components, as already discussed. Working with solution providers that offer additional support services to ensure accuracy and complete peace of mind is beneficial.

Pre-terminated cabling is also playing a key role in overcoming density challenges by supporting the advancement of high fibre count assemblies, both with small size duplex or multifibre connectors. Structured



'When implemented correctly, in data centre interconnect applications we've seen installation times slashed by as much as 70 per cent – this can see a six week project cut down to as little as two.'

cabling systems can be bundled and pre-terminated at the factory. This can allow for more tightly packed fibres to be installed into trunks and help manage future growth with superior fibre access, while providing high quality pre-polished and ready to install products.

TAKING THE ADVANTAGE

Some manufacturers can provide pre-terminated solutions that enable the disaggregation of high speed parallel optic ports (40Gb/s to 800Gb/s) into lower speed ports servicing the end devices, through harnesses or port breakout modules. This provides significant density advantages both in terms of the attached electronics, and therefore costs, as well as the housings in the wiring areas, along with savings in power and cooling.

One final consideration is that, depending on location and for large orders, pre-terminated cabling can initially result in longer lead times for customers. Having a good handle on diversified and local manufacturing availability within target regions to shorten transportation time can be vital for bringing lead times down from weeks to days.

RULES OF ATTRACTION

Advanced developments in pre-terminated cabling solutions are making everything faster and easier for data centre managers and their installers to reliably perform important cabling tasks. Considering the growth of data centres in numbers and size and the additional benefits – including cost savings and a reduction in wastage – pre-terminated systems are an increasingly attractive proposition for installers. ■



CINDY RYBORZ

Cindy Ryborz is the marketing manager data centre EMEA for Corning Optical Communications. Starting her Corning career with the customer care group in 2008, she joined the marketing team in 2012 and took on the execution of Corning's local area networks strategy across the EMEA region. She moved into the strategic marketing manager role for IBN/LAN in 2016 and marketing manager data centre EMEA in the regional marketing team in 2018.

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Vertiv has released its Guide to Data Centre Sustainability, an online resource for data centre owners and operators seeking to reduce the environmental impact of their facilities.
CLICK HERE to find out more.

Wi-Fi 6/6E – The Nits And Grits is webinar series from **NetAlly** that provides an opportunity to learn all abou the good, the bad and the ugly around Wi-Fi 6/6E and how to validate and troubleshoot it.
CLICK HERE to find out more.

IT Efficiency: The Critical Core Of Digital Sustainability is a report by **Uptime Institute.**
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DC Resistance Unbalance Testing For PoE is a white paper from **Trend Networks.**
CLICK HERE to download a copy.

800G Is Coming: Here's What Data Center Operators Need To Know is a blog by **Corning Optical Communications.**
CLICK HERE to read it.



Keysource's Data Centre Industry Report 2022 gathers views and insights from over 250 IT directors in UK and Europe.
CLICK HERE to download a copy.

Over and out

After over 30 years at the frontline of the data centre sector, Ian Bitterlin is getting ready to enjoy his retirement. Before he goes, Rob Shepherd spoke to him about his career, his achievements and the legacy he leaves behind

RS: You've decided to retire – why now?

IB: I am 72 next birthday and have worked continuously since 1968, when I started as an apprentice draughtsman in London. That is quite long enough.

It was a heart valve replacement followed immediately by the first Covid-19 lockdown that pushed me to the realisation that time is in short supply. Before that I was saying that I never wanted to retire, but Covid-19 and working from home online for two and half years changed my mind. I always knew I enjoyed working with people but underestimated the value of face to face. I would gladly never use Zoom again – although I have said that about social networking for years and haven't done anything about it yet...

RS: Has data centre power and cooling developed in the way that you thought it would and what have been the biggest surprises along the way?

IB: Interesting surprises have arisen. On the power side there have been two issues – susceptibility of ICT hardware to a break in voltage and eco-mode uninterruptible power supplies (UPS).

The original 1992 CEBMA Curve gave the 0V immunity of ICT loads at 10ms but in 1999 the successor standard, the ITIC Curve, revised it to 20ms. By 2013 many of us expected that it should increase again to 30ms, which would enable lower specification UPS, but it was a surprise when Dell said that its latest hardware was back to 10ms on the grounds of trying to increase the efficiency of the internal power supplies.

No other original equipment manufacturer (OEM) contradicted Dell, but the ITIC Curve, and 20ms, is still in the publication and has never been revised. To top it off The Green Grid and EPRI tested 20 servers in 2018 and six were found to only achieve 6ms. So, just like the demise of Concord, our industry has regressed, and with no chance that the importance of UPS will reduce any time soon.



The other surprise has been eco-mode as an optional feature in most static UPSs. If you had asked me 10 years ago, I would have said (and remember saying so in public) that eco-mode was 'the future of UPS'. Here we are in 2022 with no record of failures, an undisputed energy saving of three per cent in overall data centre energy use, and few customers who fancy enabling the eco-mode feature.

I can now see their point, which is based around swapping a

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perceived risk for saving money. However, I have been surprised that the cacophony of greenwash about our industry being at the forefront of energy stewardship doesn't bear much scrutiny when it comes to things that cost nothing but are not used.



In the cooling system the biggest surprise to me has also been around energy saving. Again, 10 years ago I was convinced that evaporative/adiabatic indirect air cooling would dominate the large out of town data centre market. Compared to chilled water in Europe (with a pPUE around 1.25) a commercially available evaporative/adiabatic system can achieve 20 per cent energy saving, with a partial Power Usage Effectiveness (pPUE) of 1.05. However, despite the high energy saving, and lower capital expenditure, the market leading OEM pulled a very good product out of the marketplace due to a lack of sufficient orders to fill a factory for more than 40 per cent of the year.

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Again, a clear energy saving but a reluctance to adopt it. To get to anywhere close to sustainability we need to change our thinking, not cling to established ideas. I do get why we behave as we do – the value of the ICT load passing through the data centre swamps the cost of the associated energy. Even with a doubling of energy costs due to the Russians, the ICT business value is 500 times the cost of the energy. So why take risks? Someone else will clean up after us.

RS: If you could change one thing about the industry that you've worked in, what would it be and why?

IB: I have spent the last 32 years in the data centre arena but the greenwashing that has grown over the last five years has tipped me over the edge. I like a debate and I love an argument, but I can't stand hearing half-truths (or half-lies as I prefer to call them) in so called white papers and presentations. Very little of it is an outright lie, but there is always another side of the coin.

The biggest issue that I find really difficult to justify is virtual power purchase agreements that encourage operators to claim to be renewably powered but actually consume energy in any shade of black, brown or green that is available locally.

RS: Has there been anyone in particular that has made a significant impact on you during your working life?

IB: I have changed jobs a few times in 54 years but have always chosen good products to work with and inspirational leaders to work for. I am a sucker for an exciting leader.

Sometimes (more than once) the formula broke down when, after joining, the inspirational leader left, but I regret nothing and have always learnt from

experiences, good and bad. I could answer your question by naming Graham Crouch and Stewart Watt – both sadly gone long before their time, but they were my very best friends that kept me on track to be a better person – but no reader will know them.

If I had to choose only one in our industry (I had 22 years in drives and controls before data centres but will exclude that here) it would be Gerry Manders – who taught me a lot about myself, a lot about other peoples' motivations, and a lot about selling capital plant. He didn't make it much fun at times (if ever), and that was a big part of the impact.

> 'As a culmination of my work, I have written a book on data centre power systems that will be published in the new year. The students and the book should outlive me, which I would regard as my legacy.'

I remember one example – when a contractor asked for a discount because we were 20 per cent higher than the nearest competitor on a big project. Gerry asked me if I had covered all bases with the consultant and the end client. I said that I had, so Gerry told me to increase the price by five per cent, not discount it. I got the order, at the premium, but Gerry screwed down my annual bonus to 'teach me'. He was a piece of work, and could be a cruel manager, but taught me more than I care to remember. Those 'contractor' days in the early 90s may never return, thankfully.

RS: You're a very forthright person – has being so candid ever put you in a difficult position professionally?

IB: Definitely. But I never regretted telling the truth, although I have embarrassed myself by saying things that may have been better left unsaid. One of my managing directors once referred to me as the company's chief sales prevention officer, as opposed to chief technology officer, when I told the truth in a client meeting and ended up getting us a reduction in order value. However, that was the same year we were listed in 21st place in Deloitte Touches' Sunday Times Top 100 Tech Companies, so I didn't do too much damage.

RS: What is your proudest achievement?

IB: My wife and children, but I guess that you don't mean that. I have enjoyed (even loved) my whole career but if I had to choose it would be a photo finish between chartered engineer status, fellowship of the IET, two 'outstanding contribution' awards to the data centre industry and being appointed a visiting professor at University of Leeds. Not bad for a school leaver at 16 that never went to full time university but studied remotely for most of my life and managed to get two good degrees.

RS: You must have witnessed many humorous and/or bizarre things over the years. Could you share one?

IB: In Italy, a while back when data centres were still cold places, a few hundred bottles of wine were found stored under a raised floor to keep them at 14°C±1°K and 50 per cent relative humidity, 24/7/365. This was only discovered when investigating poor air distribution in the room...

RS: What do you consider to be your legacy?

IB: I have been lucky to have been writing and delivering data centre power and energy training courses for DCPro for more than a decade, and I hope that I have informed and inspired many hundreds of students around the world. I hope to have taught them to challenge what they read and hear. As a culmination of my work, I have written a book on data centre power systems that will be published in the new year. The students and the book should outlive me, which I would regard as my legacy.

RS: It's that crystal ball moment – how do you see the world of data centre power and cooling developing over the next few years and what would you like to see happen?

IB: The power and cooling systems have had enough attention. To prove it, any improvement in PUE has largely stalled for the past 4-5 years and even Google and Meta haven't improved. What I would like to see is the ICT load get the same attention and solve the data centres' dirty little secret of low processor utilisation. We need to revert to classic sustainability theory – reduce consumption, improve the process effectiveness, and (only then) power with renewables.

'The biggest issue that I find really difficult to justify is virtual power purchase agreements that encourage operators to claim to be renewably powered but actually consume energy in any shade of black, brown or green that is available locally.'

RS: How are you hoping to spend your retirement – do you have any ambitions left to fulfil?

IB: Draw, paint (not rooms), read and maybe write a book. Indulge my grandchildren and ferry them around in my dream car, which I purchased this year – a 1957 Porsche 356 Speedster – and a 100 per cent electric replica version that will join her next year. Venice every winter, Goodwood Revival and Ascot every year, and visit old colleagues around Europe whilst I still can. Perfick, just perfick. ■





Don't waste your time

Dunasfern's Glenn Ward explains how modern cable management solutions create a win-win situation by allowing faster installation, while reducing cost

Nowadays it seems that everywhere you go, you see masses of packaging – you can't even buy a chicken fillet in a supermarket without it being on a plastic tray and covered in a plastic film. Just imagine the amount of waste created, let alone the huge environmental impact in terms of landfill. For many years I have been on-site and seen the vast swathes of packaging waste all over the place – not only cluttering up the space and tripping people up, but having to be collected and skipped for landfill. All of this adds time and significant cost to an installation.

A BETTER WAY

Many of the products being used are consolidated and part assembled on-site before they get to be installed. Cable distribution racks, data cabinets, wall boxes and cable tray brackets are all installed with cable, patch panels, chassis conduit, fan trays, power distribution units (PDUs), cable management bars and network switches. The list goes on and on.

It pays to work with a company that aims to add real added value to the supply chain – not just shift boxes for a price – and distributors need to use common sense to find ways to help installers and end clients with their project installs. This, in turn, helps the project get delivered on time to the client's satisfaction.

For many years we have been taking several parts, assembling them and delivering them straight to site, so that

when they arrive they are more of a complete product and much closer to being installed straight away. By combining products in our warehouse, we eliminate all unnecessary packaging, thus significantly reducing packaging at site, reducing waste, saving costs and helping to make the install faster due to not needing to assemble components on-site. We then recycle the waste as packaging infill.

GOOD MOVE

This all saves time and cost, creates a faster install and minimises environmental impact. That's a responsibility that we should all aspire to and by creating a more bespoke item, products can be assembled exactly to the installation specification. Let's consider what some products could look like.

• Cabinets and racks

A cabinet has two PDUs, two shelves, a fan tray and a cable management bar. We take all of these and load them into the cabinet exactly where the client wants them. This immediately eliminates six boxes and associated plastic packaging.

When on-site, the cabinet is loaded with five patch panels, a telescopic tray for a keyboard/laptop and two switches. We load these in exactly the right place and this eliminates another eight boxes and associated plastic packaging. With just one cabinet, we have eliminated 14 carboard boxes and all of the infill plastic packaging with them.

• Cable distribution racks

A cable distribution rack has conduit, two breakout bars, a cover plate, six chassis units, a routing channel, a trough, lots of cable markers and an accessory pack. Combining all of these saves an enormous amount of packaging and would take at least an hour to assemble on-site – that's if the installer has the right equipment for it to rest on, the space to do the work, sufficient lighting and, most importantly, the time to do it. Even then, they will have to dispose of all the packaging.



‘Forging partnerships within the whole supply chain is key and enables companies to work and co-operate more closely together. These partnerships achieve improvements in sustainability and ensure that the processes we adopt are maintained and continuously improved.’

• Wall boxes

A wall box is a small data cabinet and this will typically have two patch panels, a PDU and a switch, so even with a 9U wall box we can still save cost and eliminate three or four boxes and associated plastic packaging with each unit.

A DESIGN SOLUTION

A number of manufacturers now have design software that helps installers and clients design their own cabinets and racks specifically to their requirements. The software programme takes the customer through the whole cabinet design process and allows them to select from all of the various options – what type of front door, side panels, base, roof, rear door, locking, handle design, cable management, cable entry points, PDUs, shelves, cooling etc.



Once the design is complete, it produces a drawing of the cabinet and a bill of materials and costing at trade level. This can then be sent to us and we will assemble the cabinet exactly as per the design and drawings. So, after a few days when it arrives on-site, it's exactly as required and ready to be installed. With the addition of internal parts, whether it be a shelf, PDU or fan tray, these can all be installed to save on all that packaging and waste disposal.

CLOSER TOGETHER

Forging partnerships within the whole supply chain is key and enables companies to work and co-operate more closely together. These partnerships achieve improvements in sustainability and ensure that the processes we adopt are maintained and continuously improved.

Clients, consultants, installers, distributors and manufacturers – we all have a responsibility to each other to help support and deliver a project as cost effectively and efficiently as possible. We also need to minimise any potential negative environmental impact we have on others and the world around us.

LEADING BY EXAMPLE

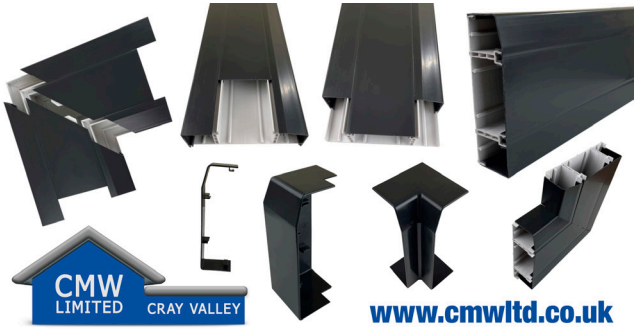
With the world in turmoil, business leaders need to be at the forefront in driving sustainable development and find ways in which we can continuously improve the way we do things. It is up to business leaders to lead by example and demonstrate the need to have the environmental impact of our business activities at the forefront of our mind, whilst we balance tricky commercial pressures. Minimising the environmental impacts of what we do, whilst saving cost and improving install times, has got to be something worth considering. ■



GLENN WARD

Glenn Ward has spent the last 30 years in in various sales and business management roles. He was worked with contractors and installers, consultants, distributors and end clients across cabling, switchgear, lighting, cable accessories, cable management and data networking products across industry sectors including construction, wholesaling, distribution, oil and gas, original equipment manufacturing (OEM), rail, maritime and enterprise data networking.

Cable Management Warehouse (CMW)



Available from CMW, Marco Apollo charcoal PVC trunking is available in both dado and skirting profiles. Three separate compartments are available, making this trunking ideal for accommodating power and data, as well as telecoms cables and wires.

The outer compartments have been specifically designed to make the installation of accessories quick and easy. A full range of fittings is available, enabling a full charcoal grey system to be installed.

This trunking is suitable for regular installations, as well as for applications that require more wiring space. There are two different sizes available – a standard 35mm deep option and a 25m deep option.

A charcoal coloured trunking is ideal for those installations where a standard white trunking solution just won't do. This new colour provides a functional, stylish and discreet solution that can blend in with its surrounding environment.

To find out more about this trunking solution **CLICK HERE** or get in touch by calling 01234 848030.

www.cmwltd.co.uk

Excel Networking Solutions

Environ SR racks are the flagship products in the Excel Networking Solutions' Environ range. With a load bearing capacity of 1500kg and split side panels, together with mesh design front and rear doors providing maximum airflow within the rack, they are perfectly suited for housing high density server and equipment installations, particularly in data centre environments.

Excel SR racks can be delivered assembled or flat-packed. When installed by an Excel partner as part of a total Excel installation, they are covered by the 25 year warranty. Environ SR racks have a full range of compatible accessories including the Environ locking solutions, which provide a choice of radio frequency identification (RFID) and biometric locks.



CLICK HERE to learn more or call our team on 0800 757565 to discuss your requirements.

www.excel-networking.com

Networks Centre



Available from Networks Centre, RapidID from Panduit is a network mapping system that is designed to reduce the time and cost spent on patch cord documentation by up to 50 per cent. This reduction in place and trace time also means that there is less network downtime and fewer errors.

The RapidID system works through each patch cable having a unique barcode label. The companion app is downloaded on to an Apple iOS or Android tablet, and a Bluetooth enabled scanner is used to scan and document the location of the cable. With the labour intensive and error prone processes of cable labelling and documenting now automated, downtime during an outage is drastically reduced, as the engineer has clear and accurate information to work from.

The advantage for network engineers is that RapidID is applicable to legacy Panduit sites. Existing cabinets using Panduit barcoded cables can be added to the RapidID system without having to replace any existing equipment.

CLICK HERE to find out more.

www.networkscentre.com

Panduit

Panduit's Adjustable Depth 4 Post Rack is tailored to network equipment in data centre and telecommunication environments. Each rack has 39 different depth options – from 584mm-1066mm in 13mm increments. The rack can be assembled in minutes and is self-squaring when assembled, with the option of eight different masked grounding locations.



Upgrading active equipment in telecommunication rooms and data centres often requires a deeper rack than standard supplied units, which the Panduit 4 Post Rack system offers. It combines the stability of a cabinet with the accessibility of an open rack to provide maximum flexibility when designing a network layout.

Increased mountings allow for accessories, such as power distribution unit (PDU) brackets, vertical patch panel brackets and vertical tie-off brackets, to create greater application flexibility. Available in black and white, the rack has a UL load capacity of 907kg, offering a highly adaptable rack and cable management system.

To find out more **CLICK HERE.**

www.panduit.com

Leading from the front

Carsten Ludwig of R&M explains how making the right choices at the outset of a project means smarter cable management

Cable management and labelling are no longer an afterthought that can be considered as separate from the network as a whole. Cabling needs to be part of an integrated, future ready single solution approach right from the beginning.

GROWING CONCERN

The current use of data hungry technology solutions and convergence between previously disparate systems will continue to grow, but a cabling backbone can't simply be replaced every few years. High density cabling and network infrastructure will remain essential to meeting current and future challenges related to bandwidth and interoperability.

It's vital to realise that cabling doesn't just connect equipment – it is also essential for asset management. Correct cabling allows you to know exactly what devices and ports are available, from servers to switches and panels, while also helping you know exactly how everything is connected at any given



moment.

Optimising cabling for this purpose starts in the planning phase, by intelligently linking planning to operations. In this way, links, lengths, bend radii and weight can be optimised, and space availability can be taken into account. Planning needs to consider imminent demand increases and the potential need for more optical fibre cables at access points, as well as in and between data centres. It makes sense to specify cables that offer a very high fibre count, while retaining the handling attributes of smaller cables, and are easy to terminate.



EASE AND SPEED

Once planning is carefully completed, cable installation becomes faster and easier, and it becomes possible to continuously track the entire installation, including every move, add and change. That means troubleshooting, adaptations and optimisation are always fast and easy.

As densities increase and connecting equipment across multiple facilities becomes more commonplace, cabling becomes far too complex to keep track of with spreadsheets and paper labels. You need to automate as much as possible and bring as much information together on a single platform as you can. The dynamic environments of today and tomorrow require ongoing, precise and efficient asset management. Automated asset management and tracking makes this significantly easier and more cost effective.

Changes to a physical network – including switches, servers and patch panels – can be monitored and traced in real time. Functions for mapping, managing, analysing and planning cabling and network cabinets can be merged with asset management, planned and unplanned changes, and alarms. Such systems improve operational efficiency and facilitate management of passive infrastructure. An integrated hardware and software system automatically detects when and where cables are inserted or removed and documents the resulting infrastructure status including connected equipment.

SINGLE SOFTWARE TOOL

One of the key benefits is the fact that everything can be monitored and administrated from a common software tool. The entire infrastructure is represented in a consistent, up to date database, offering precise, real time



information on the current state and future requirements of the data centre. Without this, developing expansion plans and carrying out risk analyses are impossible, let alone complying with legislation and introducing best practices.

An integrated overview of all cabling is also essential for managing the fast growing number of remote edge data centres. Keeping trained staff on call near every site simply isn't an option. A fully automated view of each individual cabling link is crucial. Operators can obtain real time digital information about the status of each patch panel, as well as a complete digital profile of the network infrastructure. This helps precisely locate performance losses and prevent failures, and, in the event of a loss of performance, identify the cause. This shortens the time to repair and optimises performance for end users.

Of course, even in the most forward looking data centre environment, all the traditional wisdom regarding cabling management still applies. Always double check measurements, make sure terminations are top quality, test wherever necessary, label and colour code, watch out for cramped conduits and make absolutely sure no cables or bundles rest upon others. Bad cable management can result in signal interference and crosstalk, damage and failure, resulting in data transmission errors, performance issues and downtime. Introducing operation management systems provides a seamless



'A fully automated view of each individual cabling link is crucial. Operators can obtain real time digital information about the status of each patch panel, as well as a complete digital profile of the network infrastructure.'

24/7 performance status for each location.

MANAGEMENT DECISION

An integrated solution incorporating all relevant cabling parameters offers automated, end to end, real time, on-demand physical asset inventory and management for your data centres at the touch of a button. This can support risk mitigation, compliance, capacity planning and security needs, whilst making error prone, time consuming manual work obsolete.

Audits that once required folders full of spreadsheets and took weeks to complete can now be performed in hours. Apart from drastically reducing the time spent on creating inventories, capacity is freed up to spend on core tasks, which contribute to the bottom line. Management reporting improves significantly, as does the documentation on which strategic choices and hardware purchases are based.

TRACK AND TRACE

Dynamically tracking and digitally labelling assets using cabling allows a more proactive approach to infrastructure management, showing up potential improvement areas and difficulties. Connections can be modelled and examined and solutions proposed before they are physically carried out on-site. However, this does require intelligent planning and designing of cabling and monitoring solutions from the very first steps of network design. ■



CARSTEN LUDWIG

Carsten Ludwig has been market manager data centre at R&M since 2020. Prior to this, he held senior sales positions with Siemens AG, Nokia and Huber+Suhner. Over the years, Ludwig has led a variety of multinational cross-functional teams with a focus on several key topics including the internet of things (IoT), smart cities, 4G/5G and data centres.

Saft lithium-ion batteries provide critical back-up for TotalEnergies' Technical Centre in India

Saft has delivered a Flex'ion lithium-ion battery system to ensure continuity of critical systems at TotalEnergies' Technical Center for Asia Pacific (TCAP). This research facility in Mumbai develops, analyses and tests lubricants, special fluids and fuel additives for the automotive, off-road and industrial sectors, and also provides technical advice.



The site's researchers wanted to improve efficiency and reliability by upgrading the existing decentralised uninterruptible power supply (UPS) with a single centralised system. They turned to Saft for a system to deliver 250kW for up to 15 minutes. Partners were able to integrate their technologies smoothly and produced a system for TotalEnergies within less than four weeks.

Flex'ion batteries were developed for high performance UPS applications where space and safety are vital. Housed in five cabinets, the battery system is compact enough to fit into the limited space available. Also, Saft's patented lithium-iron-phosphate electrochemistry and battery design ensure the safest battery solution.

Meeza deploys 4.9MW data centre capacity in Qatar by leveraging Vertiv solutions

Vertiv has supported Meeza to design, build and install its new data centres in Qatar. Vertiv was selected as Meeza's vendor of choice due to the company's expertise in providing end to end data centre solutions that adhere to industry guidelines.



To continue Qatar's progress in its digital transformation and remain a country of choice for international hyperscalers, Meeza required a significant increase in computing power, deployed in a short timeframe. To achieve this, Vertiv helped Meeza add 4.9MW of data centre capacity in just 14 months from design to installation, instead of about 22 months or more required for a similar capacity in a brick and mortar solution.

It also gave Meeza access to infrastructure and domain experts, including local partner provided resources. Working with Vertiv meant having technical experts both on and off-site, with engineers working to ensure a design and build tailored to specific business needs while technicians managed the installation and integration.

Lantronix helps power the Hotel Marcel net-zero energy hotel

Lantronix's Smart Managed Gigabit Power over Ethernet++ (PoE++) SM24TBT2DPB switch has been utilised in powering the net-zero energy Hotel Marcel. Built in 1970, the hotel is designated as a historical building and is part of the Tapestry Collection by Hilton, a group of historical boutique hotels.



Hotel Marcel is the country's first net-zero energy hotel that operates completely on its energy efficient DC microgrid. The hotel's renewable energy solution is powered in part by Lantronix's PoE++ switch. The hotel owner had an ambitious goal of creating a model for environmental sustainability by building a net-zero energy hotel that would operate entirely on the energy it creates.

To provide power to support its renewable on-site energy generation solution, Hotel Marcel chose Lantronix's PoE++ switch. The only UL-certified switch with true 24x90W power and direct high voltage DC power, it supports the latest PoE standard, ensuring the highest possible integration with the other smart building solutions. The Lantronix team worked with its partner to customise the functionality to ensure that it would meet Hotel Marcel's unique power needs.

PROJECTS & CONTRACTS IN BRIEF

Vantage Data Centers has announced the delivery of three new facilities in Berlin and Frankfurt. In addition, the company will open a new German office in Raunheim.

Riverbed has launched a partnership with EDF in the UK. EDF has deployed Riverbed's Alluvio Aternity Digital Experience Management (DEM) across its corporate, customer and generation business units.

Abu Dhabi Global Market (ADGM) has formed a partnership with Rackspace Technology to collaborate on a number of strategic technology initiatives. Cloud migration will enable ADGM to drive cost efficiencies and agility in IT operations, as well as providing a modern, secure technology footprint for the deployment of enhanced business services.

A new report commissioned by CityFibre estimates that over a 15-year period the positive impacts of its £32m investment in Portsmouth and Havant will include £335m in productivity and innovation gains, £74m from a widened workforce, £13m in local authority efficiency savings and £263m in increased housing value.

HellermannTyton

The HT Connect App from HellermannTyton has been updated to include 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 can see a wide range of products on your desk, on a wall or even out on-site.



Using the app, take a closer look at our products, with many of the selected models having moving parts such as opening doors, removing 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 where available. 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

Fluke Networks

FiberLERT from Fluke Networks is the first live optical fibre detector for resolving the cause of communications failure in fibre optic networks. The pocket sized tool enables the effective troubleshooting of invisible near infrared (850nm-1625nm) wavelengths used in fibre optic communication, with the quick identification of failures in a port, polarity and transceivers.



There is no need for complicated set-up or interpretation of the measurement data by technicians and engineers. Simply place the tool in front of an active fibre optic port or patch cord and the tester will emit a continuous light and optional tone if a signal is present.

Key features:

- Detects optical power in singlemode and multimode fibre (850nm-1625nm)
- No set-up or interpretation – light and sound indicate signal
- Non-contact detector reduces risk of contamination and damage
- Suitable for ports and patch cords, singlemode, multimode, angled physical contact (APC) and ultra-physical contact (UPC)
- LightBeat indicates operation and battery status
- Two year product warranty

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

Schneider Electric

Schneider Electric's APC Smart-UPS Ultra is a 3kW and 5kW 1U single phase uninterruptible power supply (UPS). Designed to deliver more power, flexibility and intelligent monitoring in the smallest footprint, the APC Smart-UPS Ultra enables IT professionals to address many of the challenges associated with deploying IT infrastructure in distributed edge computing environments and at the edge.



The proliferation of digital technologies and smart applications is driving the need for compute, network and storage resources that are localised and in close proximity to enable business critical processes and experiences that rely on network connectivity to the cloud. Yet, configuring, deploying and maintaining the supporting IT infrastructure for multiple, geographically dispersed sites comes with unique challenges.

With the APC Smart-UPS Ultra, Schneider Electric is bringing to market its smallest, most advanced single phase UPS that provides the flexibility to install anywhere and save on total cost of ownership (TCO) without compromising businesses' power protection needs.

To find out more **CLICK HERE.**

www.se.com

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Watch this space

In this extract from her book, Jumpstart Your Career In Data Centers, Carrie Goetz of StrategITcom looks at the issues surrounding white and grey space design

In all areas, the data centre isn't a short-term investment. It will support multiple iterations of electronics and, as such, should be designed with the future in mind.

BUILT TO LAST

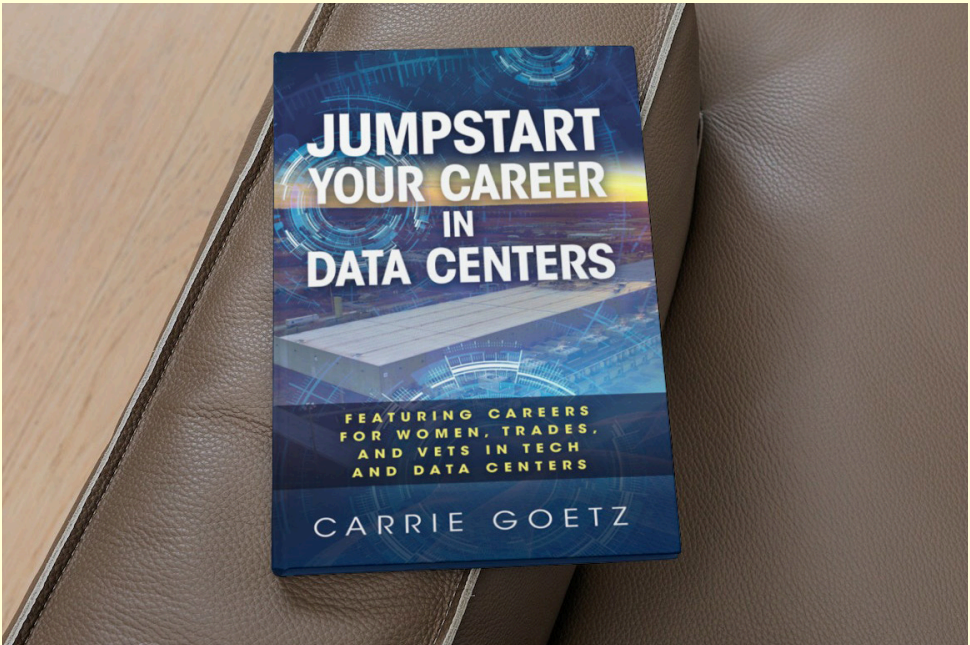
Racks, cabling, power whips and the like should have a long installed life. Moves, adds, and changes are inevitable but carry costs and risks. In reality, the cabinets don't change. Instead, changes happen to the equipment inside.

Typical lifecycles for active equipment vary from manufacturer to manufacturer, but data centres generally refresh their active components every three to five years. As sustainability becomes more of a decision factor, some companies keep their equipment as long as seven years or until a manufacturer announces end of life for that gear. Capital equipment components have significantly longer lifespans with proper maintenance. Most of this equipment depreciates over time, making replacement before full depreciation difficult at best due to tax recapture burdens.

RISKY BUSINESS

Downtime is a risk. Part of any design is determining risks and justifying the costs to avoid them. When a data centre goes down for any reason, work stops. Therefore, downtime costs in the data centre are far greater than, for instance, if one user loses a laptop. Some downtime costs are tangible – some are not.

If there is an outage, users can't work,



‘Mean time to repair estimates are available from most manufacturers and help with duration calculations. Average downtime costs for a data centre are estimated to be $5,600 per minute, although industry estimates vary widely. The point is downtime is expensive!’

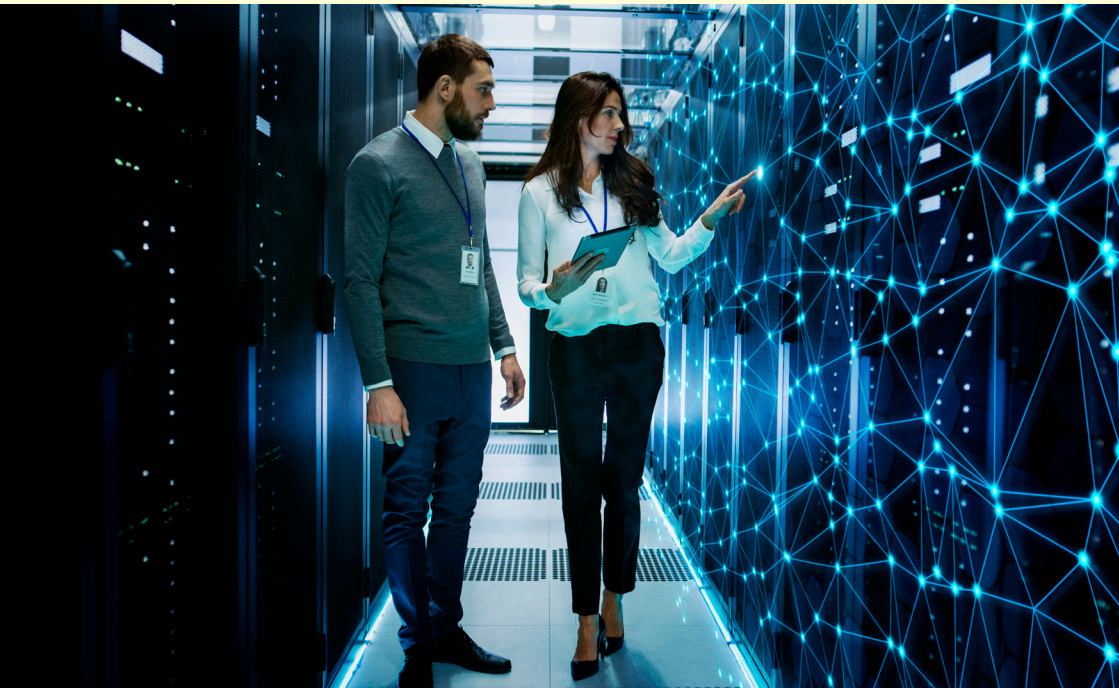
the company will likely lose revenue and its reputation will suffer. If the data centre happens to be a colocation or cloud facility, the impacts exacerbate further, as multiple companies are affected. For this reason, the latter generally have service level agreements in place to monetarily protect tenants during an outage. The higher uptime required, the higher the fees for the space.

Some cloud applications operate on a ‘best effort’ basis. Carefully negotiate based on actual risk. Although estimates say that if one read all end user license agreements they come in contact with in their life it would take 13 years on average, this is not a time to skip that important step. Sample justifications may look like the following:

- Number of users x weighted salary = salary cost of unproductive time
- Revenue/# of employees/2080 = hourly revenue burden per employee (use total employees)
- Salary burden + revenue burden x hours down = internal downtime costs

MONEY MATTERS

Mean time to repair estimates are available from most manufacturers and help with



duration calculations. Average downtime costs for a data centre are estimated to be $5,600 per minute, although industry estimates vary widely. The point is downtime is expensive!

Companies spend vast amounts of money on redundancy and resiliency to avoid those costs. Many have alternative suppliers on speed dial to handle supply chain problems. Some chose to have one manufacturer at one site with others at other sites to mitigate supply chain risks. Supply chain can impact any step from construction through operations.

Labour is also a consideration for any installation in the space. Labour to install is a given at the outset. Avoid equipment and labour costs associated with ripping out and replacing equipment whenever possible. With abatement and removal, there may also be fees associated with recycling. When running calculations comparing solutions, be sure to think long-term.



DESIGN CONSIDERATIONS

The data room floor is designed based on multiple consideration factors, but one of the most critical is the amount of power per cabinet. Bear in mind that the amount of power per cabinet will probably not be consistent across the data centre floor during operation and may not be during design. The reason that the amount of power per cabinet is critical is due to the following:

- Planning equipment placement
- Planning power and cooling capacity
- Planning any power load sharing
- Determining what equipment will have primary and secondary power
- Designing the power distribution systems and assuring that the right equipment can carry the load
- During operations to ensure there will be enough power and cooling capacity in the room
- Determining the amount of active equipment that any cabinet can support
- Assuring circuits do not get overloaded and fail

BOXING CLEVER

Data centre cabinets can vary in size, but a data centre cabinet generally is 48 inches (1.2m) deep with 19-inch mounting rails. Mounting rail distances are standard across most cabinets. Standard data centre racks and cabinets can range from 42RU up to 60RU. A rack unit (RU) is 1.75 inches (4.4cm) and applies to both open racks and cabinets. These two terms are sometimes used interchangeably. Technically racks are open frames without doors. Cabinets are enclosed. But know that not everyone adheres to that definition, using the terms interchangeably.

Note that the elevator and other clearances may limit usable cabinet height. Cabinets assembled on-site provide relief from clearance issues but add to installation time. Additionally, some seismic areas do not allow using non-welded (constructed on-site) cabinets. For seismic rated locations, some data centres deploy pads that absorb movements to protect equipment and cabling. Always check seismic requirements before designing any space.

SPACE RACE

Networking and storage area racks may be (and should be) wider to accommodate the volume of network cabling required. Cabling must be able to be dressed so that it does not block the air intake of the active electronics, remain dressed and not introduce the risks associated with

cable spaghetti. Without proper cable management, accidental disconnects can occur. In addition, cables can be pinched or crushed, destroying their performance. Room for the cabling plant is often under designed. If the cabling is substandard for any reason, the network performance will suffer or fail.

The cold aisle side of the cabinet will have vented air openings, and the percentage of air that enters varies by manufacturer. The hot aisle may be solid or vented. If hot aisle containment or room cooling is used, they are vented. For cabinets with a solid rear door, chimneys direct the hot air through the top of the cabinet to the ceiling plenum. The chimney is ductwork from the top of the cabinet like the chimney in a hot aisle, but cabinet width and specific, extending into the ceiling plenum. Chimneys are losing favour to hot aisle containment configurations but still have a purpose in some applications. Brownfield installation will probably stick with the same design when expanding.

IN THE CLEAR

The spacing of the aisles behind and in front of cabinets must be sufficient to allow equipment installation and removal. Larger equipment installations use server lifts requiring adequate clearances. In some countries, there are life safety considerations for hot aisles, which may sway a design to a cold aisle configuration.

Cabinets will be equipped with rack power distribution units (PDUs) to distribute power within the cabinet. Rack PDUs should be sized based on power design parameters. There will be one for primary and one for secondary in most configurations. Power distribution to the PDUs could be in the form of busways, power whips from remote power panels, on-floor larger PDUs, or a combination in some older facilities. Some owners/occupants prefer to use the raised floor for power. Some chose to put high/medium voltage under the floor and low voltage (structured cabling) above the cabinets or vice versa.

THINK AHEAD

It's advantageous to preselect cabinets and power routing before the white space layout starts. Power knowledge is needed to determine the number of cabinets and density – both power and cabinet selections factor in cooling decisions for the room. Likewise, room cooling may impact cabinet selection.

To order a copy of Jumpstart Your Career In Data Centers from Amazon **CLICK HERE.** ■



CARRIE GOETZ
Carrie Goetz is principal and chief technology officer at StrategITcom, with nearly 40 years of global experience in designing, running and auditing data centres, IT departments and intelligent buildings. She is an international keynote speaker and holds an honorary doctorate in mission critical operations.

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