

THE NETWORK INFRASTRUCTURE E-M

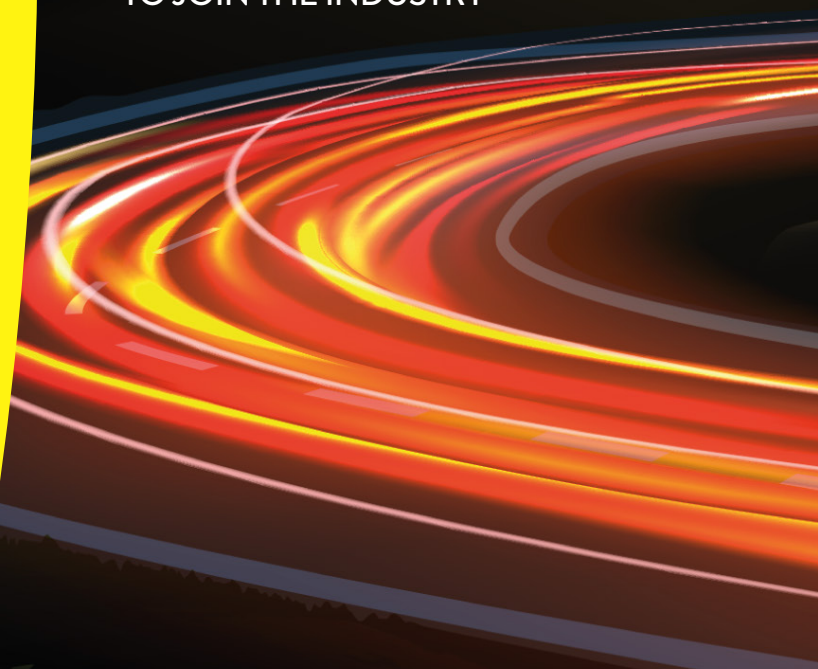
Inside_Networks

Life in the

HOW CREATING THE
STARTS WITH

New blood

WHY IT'S SO IMPORTANT TO
ENCOURAGE THE NEXT GENERATION
TO JOIN THE INDUSTRY



the fast lane

THE DATA CENTRES OF THE FUTURE
HIGHER SPEED MIGRATION

Get with
the times

2023 REVIEWED AND A
LOOK AHEAD TO 2024

INDUSTRY LEADING PERFORMANCE, BY DESIGN.

WITH SIEMON FIBER, YOU DON'T HAVE TO COMPROMISE.

At Siemon, we don't believe that our customers should settle when it comes to their optical performance. That's why we've developed our plug and play solutions in line with the most stringent industry standards, which allows our customers to have peace of mind that they will have the flexibility they need over a range of distances and configurations, all while remaining within their loss budget.

Our Best Is Better

We like to keep things simple, so we only provide two performance options.

1. Our **Standard Loss** components are in line with many other industry leaders' "low loss" offerings, which means that our standard is the same as their "best".
2. Our **Ultra-Low Loss (ULL)** components offer the pinnacle of performance and provide you with the ideal foundation to support high bandwidth, low latency applications

Discover more in our Plug and Play Solutions Guide

www.siemon.com/fiber



6

ROB'S BLOG

Onwards and upwards

9

NEWS

All that's happening in the world of enterprise and data centre network infrastructures



26

CHANNEL UPDATE

Moves, adds and changes in the channel

30

CONNECTORS AND CONNECTIVITY

Ken Hall of CommScope explains why the data centres of the future start with higher speed migration

35

CONNECTORS AND CONNECTIVITY SOLUTIONS

State-of-the-art connectors and connectivity based solutions profiled

12

MAILBOX

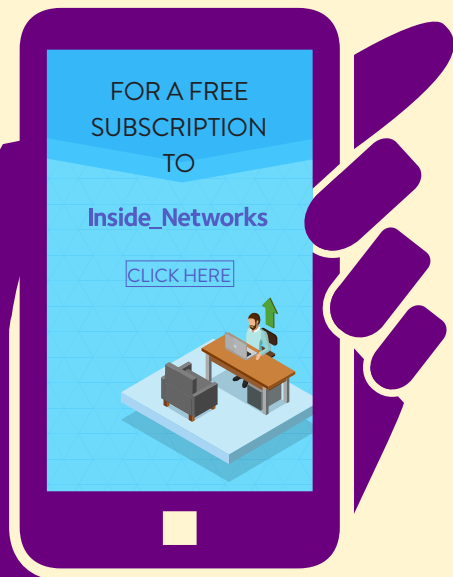
The pick of the recent emails to Inside_Networks



17

QUESTION TIME

Industry experts review the events of the last 12 months and look at what 2024 might have in store



38

CONNECTORS AND CONNECTIVITY

Michael Akinla of Panduit looks at optical fibre connectivity in the rack and the importance of reducing human error disconnects

52

CABLE MANAGEMENT AND LABELLING SOLUTIONS

A selection of the very best cable management and labelling solutions currently available



42

APPRENTICESHIPS

Rob Shepherd talks to Dave Buchanan of Onnec about the company's apprenticeship programme and why it is so important to encourage the next generation to join the industry



54

CABLE MANAGEMENT AND LABELLING

Joe Bowden from Brady Corporation talks about smart label technology that can transmit unique, digital identities to quickly locate physical data centre assets

46

QUICK CLICKS

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



58

PROJECTS AND CONTRACTS

Case studies and contract wins from around the globe

48

CABLE MANAGEMENT AND LABELLING

Michael Moore of Chatsworth Products (CPI) examines the role of next generation vertical cable management solutions for digital transformation

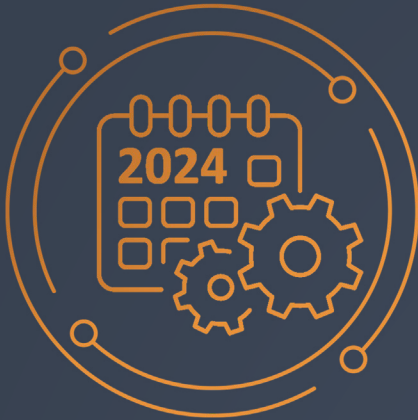
61

FINAL WORD

Chris Coward of BCS explains why ongoing supply chain issues continue to take their toll on the sector



Plan Your Data Centre & Network Infrastructure Technical Education



2024 Program Schedule

Our technical education programs span the entire digital infrastructure industry and are delivered in classroom locations or via remote attendance in time zones across the world.

[View UK/Europe](#)

[View North America](#)

[View Middle East](#)

[View Africa](#)

[View Asia Pacific](#)

[View Worldwide](#)

Taking Technical Education Seriously



[cnet-training.com >](https://cnet-training.com)



The Global Leader in Technical Education
for the Digital Infrastructure Industry

cnet-training.com | +44 (0)1284 767100 | info@cnet-training.com

The real deal

EDITOR

Rob Shepherd
07708 972170



SUB-EDITOR

Chris Marsland

ADVERTISING

MANAGER

Kate Paxton
01603 610265



CREATIVE

DIRECTOR

Vishnu Joory

TECHNOLOGY

CONSULTANT

James Abrahams

CIRCULATION

MANAGER

Debbie King

ACCOUNTS

Billy Gallop



All rights reserved.

No part of this publication may be used, transmitted or produced in any form without the written permission of the copyright owner. Applications for written permission should be addressed to

info@chalkhillmedia.com

The views and comments expressed by contributors to this publication are not necessarily shared by the publisher. Every effort is made to ensure the accuracy of published information.

© 2024 Chalk Hill Media



What a difference a year makes! At the end of 2022 few of us had heard of OpenAI's ChatGPT but within just a few months that had all changed, as it became the fastest growing app in internet history. It was estimated to have reached 100 million monthly active users in January 2023, just two months after launch, with 13 million unique visitors using it that month. ChatGPT kicked open the door to ensure that 2023 will be remembered as the year of artificial intelligence (AI). According to a report by Bloomberg Intelligence (BI) it will grow to \$1.3tn over the next 10 years from a market size of just \$40bn in 2022.

The rise of AI has led to an increase in data centre demand. However, the rise in computing power brings challenges to existing facilities, with the rack power density required by AI generating significant heat, presenting energy efficiency and sustainability challenges. As we move in to 2024, it will be fascinating to see how the sector responds, especially in light of the Energy Efficiency Directive (EED) and Corporate Sustainability Reporting Directive (CSRD), which will kick in soon.

Not surprisingly, AI is mentioned extensively by the panel of experts we've assembled for our Question Time review of the year and 2024 preview. The edge, energy efficiency, the skills shortage, sustainability, 5G, high performance computing and cooling are just some of the other subjects covered, as well as quantum networking, which we can all expect to hear more about during the coming months.

This issue also contains special features on cable management and labelling and connectors and connectivity, with experts from Panduit, CommScope, Brady and Chatsworth Products (CPI) providing fascinating insight into a range of subjects. These include looking at why the data centres of the future start with higher speed migration, how smart label technology can transmit digital identities to quickly locate physical data centre assets, the role of next generation vertical cable management solutions for digital transformation, and optical fibre connectivity in the rack.

With lots more besides, I hope you enjoy this issue and on behalf of the Inside_Networks team I'd like to wish you and yours all the best for 2024!

Rob Shepherd

Editor



Make sure the
HT Connect App
is at the top of
your Christmas
list this year



IN-AD-CHRISTMAS-APP-R10

IT teams remain confident about hitting net zero targets despite persistent challenges

In light of mounting global pressure to curb emissions and the increasing importance of energy efficient operations, 81 per cent of IT decision makers are optimistic about meeting their set net zero target dates. However, the path towards sustainability is proving less than smooth. Only 19 per cent of organisations have already achieved net zero, while 44 per cent are in the position where they are not net zero but plan to reach it in the future.

These insights are the findings of a report titled *Vision 2030: Your Guide To Addressing Sustainability In Digital Infrastructure* from Telehouse Europe. 250 UK IT decision makers were surveyed to understand their perspectives on digital infrastructure challenges, opportunities and their interplay with sustainability goals for the next decade.

A closer inspection of the hurdles reveals cost as a predominant concern for 60 per cent of IT decision makers who aren't confident their organisation will meet net zero goals by their target year. Half of these professionals highlight the lack of requisite technological infrastructure as a primary impediment, while 30 per cent face resistance from stakeholders in adopting sustainable practices.

A distinct challenge surfaces around Scope 2 emissions targets, related to indirect greenhouse emissions. 92 per cent of organisations surveyed focusing on Scope 2 emissions report they are grappling to identify energy sources that align with renewable standards and regulatory compliances.

The research further delves into

the IT infrastructure procurement process, uncovering that 84 per cent of organisations perceive sustainability as an important consideration. 43 per cent of respondents actively seek out providers

and solutions with strong environmental credentials, while 23 per cent only consider providers/solutions with proven sustainability credentials and transparent reporting on their environmental impact.

Mark Pestrige, executive vice president and general manager of Telehouse Europe,

said, 'Organisations are committed to creating more sustainable digital infrastructure despite facing challenges in reducing and demonstrating their environmental impact. Leveraging the right digital infrastructure, nurturing sustainability initiatives and fostering diversity are pivotal to advancing these objectives more swiftly.'

Telehouse Europe has also found that 61 per cent of IT decision makers are planning to ramp up their data centre investment in the coming decade. This strategic shift is largely due to the mounting requirements to bolster security measures and stay compliant with tightening regulatory standards.

Emerging technologies such as artificial intelligence and the internet of things are creating newer and broader vulnerabilities, turning cybersecurity into a priority. Notably, a third (33 per cent) of IT decision makers identify cyberthreats as the paramount concern affecting network uptime. Looking into the next decade, 30 per cent believe that upholding security and ensuring regulatory compliance will be their biggest challenge by 2030.

Mark Pestrige



UK unveils £118m AI skills funding package

The UK has announced a £118m funding boost for artificial intelligence (AI) skills to cement its global AI expertise and lead the next generation of research and development. The funding will support postgraduate research centres, scholarships, a new visa scheme and a universal encouragement for students to pursue AI and data focused education courses.

The government has named the locations and researchers of 12 new UKRI Centres for Doctoral Training in the development and



Josh Boer

application of AI, created an AI Futures Grants scheme to facilitate the relocation of AI leaders, and the funding of 15 scholarships for international students.

Josh Boer at VeUP, commented, 'High potential start-ups are a huge part of the AI charge and it is great to see the government supporting AI development through funding and training programmes to produce a new generation of AI experts. Equipping these businesses with skilled

technical staff is vital to their continued success.'

Vantage Data Centers completes €2.5bn investment partnership to accelerate growth in EMEA

Vantage Data Centers and a consortium of investors led by MEAG and Infrantry, along with funds affiliated with the investment management platform of DigitalBridge Group, have completed an investment partnership. It initially consists of six data centres across Europe and is valued at approximately €2.5bn. The data centres span more than 1.8 million gross square feet and 177MW of IT capacity, and are located in key strategic markets.

Vantage's management team, led by president and CEO, Sureel Choksi, will



Sureel Choksi

continue to manage and operate these assets as part of its global data centre portfolio. The additional capital raised from the consortium will be used to support the continued growth of Vantage's EMEA data centre platform.

'This investment partnership provides Vantage with multiple partners with deep expertise in digital infrastructure,' said Choksi. 'This transaction provides us with additional capital to continue our expansion in new and existing markets across EMEA, capitalising on the extraordinary growth opportunities, driving innovation and delivering state-of-the-art sustainable data centres.'

72 per cent of women in tech have experienced sexism

Research from The Fawcett Society has revealed that 72 per cent of women in tech roles have experienced some form of sexism. It was also revealed that 20 per cent of men working in the technology sector believe that women do not have a natural fit with the industry. The sexism they have experienced includes being paid less than male colleagues, sexist 'banter' and questioning of their abilities or skills.

The report highlighted that 32 per cent



of women believe that there is gender bias during recruitment, while 14 per cent said they felt uncomfortable during the recruitment process. More than a quarter of women outside of tech believe that the industry involves more sexist behaviour than other industries.

Sheila Flavell, chief operating officer of FDM Group, said, 'The technology industry is facing a very serious skills shortage, so it is disappointing to see that sexist stereotypes are still lingering within the sector. Women play a key role in solving the skills crisis, so we need an increased focus on breaking down barriers that discourage them from entering tech.'

Data centre sector eyes key emerging markets to deliver on soaring demand

Data centre construction in emerging markets is driving up costs, according to Turner & Townsend. Analysing 46 global markets, its research analyses data centre benchmarking costs from over 200 projects in over 20 countries, alongside insight from 246 industry experts.

The top five locations by cost – Tokyo, Zurich, Silicon Valley, New Jersey and Singapore – remain unchanged overall from 2022, though different in order. Tokyo, at US\$13.7 per watt, has displaced Zurich, now US\$13 per watt, to take the top spot. The more striking trend is of rapid

cost escalation in emerging markets. The average cost of data centre construction globally has risen by six per cent over the last year, softening slightly from eight per cent in 2022. By comparison, cost increases of between 11-22 per cent have been seen in seven markets across Asia, Africa and Latin America.

Rebecca Best, head of UK data centre cost management at Turner & Townsend, said, 'Demand for data storage is booming. However, on the other side of the coin there are growing challenges to delivery. Power availability, supply chain issues, skills shortages and increases in construction cost, alongside an urgent need to be more sustainable are converging to place hurdles in front of construction delivery.'



Equinix and Alice & Bob partner to help businesses enter the quantum computing era

Equinix is collaborating with Alice & Bob to offer its customers secure access to Alice & Bob's cutting edge quantum technology through Equinix Metal and Equinix Fabric, and from Alice & Bob's quantum strategy services for businesses to unlock opportunities.

Quantum computing allows users to complete computationally intensive tasks such as simulation, optimisation, machine learning and cryptography. It has the potential to revolutionise several industry processes, change our understanding of the universe and even help slow down climate change.



Bruce Owen, managing director at Equinix UK, said, 'Quantum computing is revolutionising the technological landscape with speeds 158 million times faster than current supercomputers. With 23 of 69 European quantum computing start-ups and contributing more than half of the funding towards this project in Europe, the UK leads in quantum innovation, and our work with Alice & Bob will be key to allow our customers worldwide to experience the unprecedented possibilities of quantum computing.'

NEWS IN BRIEF

Schneider Electric's Natalya Makarochkina has won the Silver Stevie Award for Female Executive of the Year in the Business Services category in the 20th annual Stevie Awards for Women in Business.

nLighten has acquired Gyro Center, a high performance data centre in Amsterdam.

Colt Data Centre Services (DCS) has opened its latest Frankfurt data centre. This is its third hyperscale data centre in the region and was designed for a leading cloud service provider. The facility will provide 32.4MW of 100 per cent renewably sourced IT power capacity, ensuring exceptional data storage capabilities and scalability for the tenant's IT infrastructure.

Frost & Sullivan has awarded Epsilon the 2023 Global Company of the Year Award in the global data centre connectivity industry.

AFL Telecommunications has filed a patent infringement complaint in the US District Court of Delaware against Sterlite Technologies for infringement of US Patent No 11,287,591 related to improved high density, reduced diameter fibre optic cables for installation into ducts and conduit.

Colt Technology Services has completed the acquisition of Lumen EMEA for \$1.8bn.

Ready steady go!

Hi Rob

It's sobering to think that there are still highly inefficient IT environments throughout the world with Power Usage Effectiveness (PUE) levels in excess of 2.0 in the public, commercial and industrial sectors. This does not sit well against the industry shift towards net zero.

The solution must be in transitioning these to efficient cloud environments, faster and more smoothly. Such efficiency is impossible to replicate in a normal business environment and what comes with these cloud migrations is not just raw efficiency in terms of lower power usage. There are substantial benefits in how organisations can choose to manage their services and growth, as well as fundamentally robust service level agreements (SLAs) guaranteeing 99.98 per cent service availability.

However, achieving this calls for a concerted effort on standardisation in the data centre. My bet is on high performance computing (HPC) being the catalyst to drive this forward. Necessity, after all, is the mother of invention.

Enterprises, cloud hosting providers and their colocation data centre partners/operators are under growing pressure to respond ever faster to escalating demand for more space and power to house HPC environments. At the same time, they must ensure optimised cooling and energy efficiency. That's a tall order.

This is where the Open Compute Project (OCP) Foundation comes in with its OCP Ready certification program. Launched five years ago, it is starting to gain traction in the market. Its goal is to help end users

such as solutions architects to identify colocation data centre providers and facilities where OCP IT equipment can be deployed without complications. Because the program's standards are open source, operators will know what a given rack needs to do in terms of size, capability and power before it arrives on-site, and ensure the design and layout is ready to support this class of equipment.

The majority of hardware is deployed as a fully populated rack. OCP Ready data centre facilities must be able to easily accommodate racks of these weights and dimensions, and be able to deploy multiple racks of such equipment at scale. As a minimum the racks can weigh 500-1500kg, and be 47U in height. The workloads can be



anything from 6.6kW to 36kW and beyond.

In addition, the density of compute to meet scale demands and efficiency goals raises the bar for power and cooling specifications for racks. Cooling of the racks will potentially require a range of solutions – immersive, chilled water/air, chip cooling. For the higher densities the expectation is for PUE to be sub 1.1.

The real value of OCP is that these elements are researched at such scale as to short circuit the development and standardisation process from decades to years and sometimes months. What was the preserve of a small number of mainframe computers, high power density and cooling is now readily available at all levels in the data centre community.

Not too long ago a small data centre might be considered to be a cluster of 50-100 racks, with a combined IT load of 100kW. A single rack can now accommodate 100kW in normal chilled water cooling and this scales to 250kW with immersive cooling. These developments represent giant steps forward in terms of efficiency.

OCP Ready is therefore likely to gather momentum as the demand for artificial intelligence enabled applications, and therefore HPC, continues to grow at scale. This is not a tick box exercise.

Certification entails colocation data centres working with the OCP to achieve compliance against its rigorous criteria for power, cooling, IT technical space layout and design, facility management and control, and facility operations. Thereafter, demonstrating an ongoing commitment to continuous improvement and, of course, sharing. The certification is reviewed every two years to track development against the core principles and PUE.

Paul Mellon
Stellium Datacenters

Editor's comment

OCP Ready has a big part to play in driving open source ecosystems in data centres and efficiencies in rack, server and network topology. Vitality, this will hopefully also improve energy efficiency. There are, however, some who remain sceptical and with just 11 OCP Ready data centres globally, there's clearly more work to do.



How the circular economy can

Hi Rob

Embracing a circular economy in the data centre sector has never been more important. Electronic waste – or e-waste – is the fastest growing waste stream in the world, growing at 3-5 per cent per year, according to the World Economic Forum.

The world now produces 50 million tonnes of e-waste per year – a weight equivalent to all the commercial airliners that have ever flown, and just a fifth of this mountain of waste is recycled, based on United Nations (UN) statistics. For business leaders in the data centre sector, the shift towards a circular economy offers an opportunity to rethink the way they work, and boost profits and sustainability at the same time.

The e-waste problem is inextricably intertwined with the environmental costs of running data centres, which is estimated to be up to 1.5 per cent of global electricity consumption worldwide, according to the International Energy Agency. Over the past decade, the adoption of technologies such as better cooling systems have kept the energy demands of data centres relatively stable but embracing circularity can help to boost efficiency even further.

Opportunities to embrace a circular economy in IT now exist in a way that they did not before. Technological solutions are revolutionising supply chains, product design and materials, allowing organisations to recycle, refurbish and use products and parts as raw materials in manufacturing. In the data centre sector, sustainability services are now enabling data centre operators to refurbish, recycle and reuse in a way that was previously impossible.

Moving beyond the familiar ‘make, use, destroy’ cycle of the linear economy yields many benefits. Adopting a ‘design, use, return’ approach expands the longevity of a product, with takeback programs allowing servers to be reused and recycled. Switching to a device as a service model, where devices are recycled or repurposed at the end of their service life, allows business leaders to engage with the circular economy without the capital outlays of an ownership model.

Asset recovery services are another key part of the puzzle and can find the best way to deal with end of life servers. Options include recycling, refurbishing, reusing or environmentally friendly scrappage. Business leaders need to ensure there are clear policies around how assets are disposed of and make sure that their partners in asset recovery have high standards. In that way, for example, there’s no risk of a partner finding a loophole to ship e-waste abroad and bury it.

Recycling servers brings many business advantages alongside the benefits for the environment. Asset recovery services can offer a welcome cash boost when old hardware is reused. Recycling older units can also yield benefits in terms of energy use, with newer, more efficient servers often capable of doing the job of 10-20 older ones. Refreshing hardware also means business leaders can weed out older machines that have gone from being business critical to sitting at the back of a data centre, drawing power but not doing a great deal. All of this can help to cut emissions and energy bills.

boost the data centre sector

With customers, investors and the wider world increasingly conscious of the sustainability credentials of the companies they buy from, there has never been a better time to embrace the possibilities of the circular economy in the data centre sector. Recycling, refurbishing and reusing can help to curb not just e-waste, but also electricity consumption – offering benefits both

Ian Jeffs
Lenovo

Editor's comment

The Ellen MacArthur Foundation defines a circular economy as 'a systemic approach to economic development designed to benefit businesses, society and the environment'. Replacing a network infrastructure every decade or so has a significant impact on the environment but by adopting circular economy principles data centres can reduce their negative impact by minimising waste, maximising resource efficiency and promoting the reuse and recycling of materials.

15

Inside Networks

2024 CHARITY GOLF DAY 22ND MAY

An opportunity to compete and entertain clients and colleagues at the superb Marriott Hanbury Manor Hotel & Country Club.

www.marriottgolf.co.uk/club/hanbury-manoor

Playing the Hanbury Manor PGA Championship Course:

This prestigious golf course was the first to be designed by Jack Nicklaus II and still incorporates features from an earlier 9-hole course designed by the great Harry Vardon. The course is now widely recognised as one of the best in England.

The event will ask for 4-ball teams to compete in a 'best 2 from 4' full handicap Stableford competition over 18 holes (with a 2-tee start from 10:30am).

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 £100,000 through our charity golf events!

Supporting:

**WE ARE
MACMILLAN.
CANCER SUPPORT**



Indoor Simulator Competition

The cost of a 4-ball team will be £790 (+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.

Organised by:

Promoted & Supported by:



To book a team or for further information email info@slice golf.co.uk or telephone 077 69 69 69 76

StratusPower™

Designed
with the
future
in mind



StratusPower – not only a reliable and efficient power protection solution but also a sustainable choice for your critical infrastructure.

At Centiel, we are committed to minimizing our impact on the environment and promoting sustainability in all aspects of our business.



Tangible sustainability

Minimal environmental impact

97.6% (VFI) efficiency

Zero waste

30+ years of UPS design life

15+ years of life on replaceable components

Rate and review

With 2023 coming to a close, it's a good time to review the events of the last 12 months. [Inside_Networks](#) has assembled a panel of industry experts to pick their highlights and suggest what 2024 might have in store


▶ 2023 is almost over and organisations in the enterprise and data centre network infrastructure sector will be turning their attention towards what 2024 might bring. But first, it's a good opportunity to take stock of what's happened over the last 12 months.

2023 was undoubtedly the year of artificial intelligence (AI) and the influx of programs like Google's Bard and OpenAI's ChatGPT means that the AI market is exploding. The impact of AI is massive on the data centre sector and has led to a rapid increase in demand. However, the rise in computing power brings challenges to existing facilities, especially those that were not designed for these types of applications. Effective

optimisation needs to be top of the agenda in 2024 if operations teams are to step up and meet this challenge.

AI wasn't the only headline grabber this year though. Increasing demand for data centres closer to end users and devices, and improving performance for both business critical and consumer applications, has meant that edge data centres have once again dominated discussion throughout the year and will do so for the foreseeable future. And then there's quantum computing to look forward to. Watch this space...

Inside_Networks has assembled a panel of experts to discuss the highlights of 2023 and predict the big talking points of 2024.



WHAT HAVE BEEN THE MOST SIGNIFICANT EVENTS WITHIN THE ENTERPRISE AND DATA CENTRE NETWORK INFRASTRUCTURE SECTORS OVER THE LAST 12 MONTHS, AND WHAT DO YOU THINK WILL BE THE KEY TALKING POINTS DURING 2024?

MARK ACTON

HEAD OF TECHNICAL DUE DILIGENCE AT FUTURE-TECH

The most significant events during 2023 were without doubt the emergence and rapid proliferation of generative artificial intelligence (GenAI) and its associated

power demands, plus the publication of the Energy Efficiency Directive (EED) and Corporate Sustainability Reporting Directive (CSRD) documents.

Here are my hot topics for 2024:

- EED and CSRD reporting requirements will come into force, which will promote significant discussion both within the European Union and beyond.
- Interest in data centre infrastructure management (DCIM) and building management systems (BMS) capable of complying with environmental, social and governance (ESG) reporting requirements will rise significantly.
- The increasing use of AI and machine learning in data centre operations and energy efficiency improvements – not to replace people but to better predict and manage the systems supporting data centre services.
- Lack of power availability in traditional Tier 1 (FLAP-D) markets and discussions around alternative power provisioning, as well as providing impetus for the continued growth and development of Tier 2 and Tier 3 markets.



- Genuine growth in cabinet power densities based on high performance computing (HPC) and AI workloads, and the increasing power consumption of large graphics processing unit (GPU) based chipsets.
- Crypto-mining sites being repurposed as colocation sites for non-latency dependent HPC/AI workloads.
- The importance of latency will be called out as a myth for the majority of applications, leading to some elements of service to be in areas offering cheap renewable power and cooling climates to reduce cooling power consumption. This will result in the continued rise of the Nordics as a choice data centre location.
- An increasing focus on water usage, albeit with sense being applied to consider the type of water being used and questioning the use of evaporative cooling in areas where water resources are limited.
- An increasing focus on the energy efficiency of the IT stack, and the associated uptake of tools to both report on, and manage, this area.

'THE IMPORTANCE OF LATENCY WILL BE CALLED OUT AS A MYTH FOR THE MAJORITY OF APPLICATIONS.'

RACHID AIT BEN ALI

PRODUCT MARKETING MANAGER SMART BUILDING & DATA CENTRE AT AGINODE

For years, network and data centre operators have been saying they'd like to make their facilities more sustainable. However, all too often, higher costs have resulted in opting for more traditional solutions.

Now proof of sustainability is becoming mandatory. Tenders are increasingly demanding this and upcoming European Union legislation, such as the Corporate Sustainability Reporting Directive (CSRD) and Corporate Sustainability Due Diligence Directive (CSDDD), which require accountant auditing, will result in sharp focus on sustainability throughout the supply chain.

Fortunately, there are several ways of tackling this from a technology angle. Increasingly, smart building infrastructure, based on IoT and network convergence, can significantly reduce consumption and improve energy efficiency thanks to the intelligent use of data. Sensors are directly linked to lighting; heating, ventilation and air conditioning (HVAC), VoIP and other systems – monitoring and adapting continuously.

Reducing the use of raw materials is another key step to improving sustainability performance. Bringing optical fibre closer to end users makes it possible to reduce the use of copper. Furthermore, the ability to combine power and data on same cable thanks to power over Ethernet (PoE) also contributes to reducing the amount of copper required, as one cable covers two functions.



Of course, the greater the need for bandwidth and data, the higher the energy consumption. As data centres ramp up to 400Gb/s, 800Gb/s and even 1.6Tb/s, it becomes important to accommodate more devices and connectivity without consuming significantly more power. Higher density racks and enhanced cooling play a big part in this.

Edge computing can help reduce cloud traffic and decentralise operations, placing data and processing closer to end users, thus helping cut carbon emissions and energy consumption. As more people work at home or on the move, this becomes increasingly important. 5G can reduce latency and enhance coverage, making it a key driver for edge computing.

Of course, it remains vital to critically examine related matters such as manufacturing, packaging and logistics, and make improvements wherever possible. But there are vast gains to be made at the level of the technology itself, by thinking carefully about architecture and processes, and specifying solutions.

'UPCOMING EUROPEAN UNION LEGISLATION, SUCH AS CSRD AND CSDDD, WHICH REQUIRE ACCOUNTANT AUDITING, WILL RESULT IN SHARP FOCUS ON SUSTAINABILITY THROUGHOUT THE SUPPLY CHAIN.'

MARK PESTRIDGE

EXECUTIVE VICE PRESIDENT & GENERAL MANAGER AT TELEHOUSE EUROPE

Driven by the explosion of IoT devices and a shift to remote working models, data volumes have swelled significantly. Telehouse research underscores this evolution, revealing that 95 per cent of businesses perceive their digital infrastructure as a potential risk. This sentiment is especially poignant given that 89 per cent of IT decision makers anticipate the need for high density, high performance computer systems by 2030 to manage the data deluge stemming from the IoT, AI, machine learning, advanced analytics and cloud based work modalities.

With 75 per cent of organisations expecting their data management responsibilities to increase considerably, the reliance on robust IT infrastructure becomes non-negotiable. This is underscored by the fact that 54 per cent of organisations are now opting for colocation services – a significant jump from the 33 per cent reported in 2020.

Yet, amid these challenges there's a silver lining. For instance, to counter the shortage of skills – where 29 per cent and 20 per cent of decision makers identified deficits in AI and cloud related proficiencies respectively – 35 per cent of organisations have initiated internal training programs focusing on AI, edge computing and cybersecurity.

2024 promises to be a pivotal year for the sector. As AI continues to gain traction,

the power demands for these systems are expected to hover around 16-20kW. This will inevitably strain traditional air cooling systems. As a result, data centre operators are pivoting towards more efficient cooling solutions such as immersion or liquid.

As AI integration deepens, with a growth from 23 per cent to 33 per cent of senior IT professionals seeing it as a primary infrastructure challenge since 2020, it will also play a pivotal role in data centre infrastructure management (DCIM) tools. This will empower operators to fine tune their focus on metrics like Water Usage Effectiveness (WUE) and Power Usage

Effectiveness (PUE), aiding in achieving net zero targets.

Ultimately, it's the operators who plan ahead that will thrive. Building and retrofitting data halls for increased power and cooling requirements will be essential. As the data onslaught continues, it will be imperative for operators to engage with organisations, harnessing these insights to collaborate with suppliers and ensure sustainable growth.

'ULTIMATELY, IT'S THE OPERATORS WHO PLAN AHEAD THAT WILL THRIVE. BUILDING AND RETROFITTING DATA HALLS FOR INCREASED POWER AND COOLING REQUIREMENTS WILL BE ESSENTIAL.'





FTTA and PTTA Solutions for the 5G era

The easy, fast, cost-effective way to create end-to-end 5G cell tower connections. The integrated CONEXIO range brings site and operator-specific infrastructure system solutions for 5G and mobile communications within reach.



CLINT SHERRATT

HEAD OF TECHNICAL DEVELOPMENT AT CNET TRAINING

Several key areas have risen in prominence in 2023 and will no doubt continue to be talking points for 2024.

Firstly, advancements in technology continue apace. Where equipment is upgraded, on top of considering energy efficiency, we're also looking at utilisation, virtualisation and transactions per second or, in some cases, transactions per watt. This could leave redundant capacity in secondary systems to be utilised in the long-term but could increase Power Usage Effectiveness (PUE) for some facilities in the short-term. It gives rise to the question, 'is PUE still the right metric to measure efficiency moving forward?'

High density compute and AI are still hot topics, with an expectation that these will force the move to immersion cooling as rack densities increase. However, it's not yet widespread and tends to be limited to specialist facilities or pods within existing facilities.

Another change is in cable distribution system design and planning, where due to cost and supply chain issues there's been a shift to singlemode optical fibre as the medium of choice for anything backbone. Finally in this area, a major talking point is the sizeable increase in power over Ethernet (PoE) and internet of things (IoT) devices in smart buildings, and wider use of cabled and wireless telemetry systems in smart cities. Copper clearly still has a significant role to play for years to come.

The lack of regulation is often talked about but regulations are on the near horizon. Sustainability remains paramount across all global activity and, consequently, data centres are being more closely scrutinised than ever before.

The increase in metrics like Water Usage Effectiveness (WUE) and Carbon Usage Effectiveness (CUE), as well as amplified reporting for Scope 1 and Scope 2 carbon emissions, are creating challenges for operators everywhere. Claiming net zero and being net zero are two very different things. Geopolitics and the global network are also placing

restrictions on new facilities due to limited resources in local areas, forcing the market to look further afield.

Finally, the continuing skills shortage and impending retirement of many of the 'grey' generation has not gone away and continues to be the cliff edge some organisations are approaching. There are some initiatives making waves, but we still need more action, more collaboration and more awareness of the industry's existence to tempt the people we need to join it.



'WE STILL NEED MORE ACTION, MORE COLLABORATION AND MORE AWARENESS OF THE INDUSTRY'S EXISTENCE TO TEMPT THE PEOPLE WE NEED TO JOIN IT.'

JAMES HART

CEO AT BCS

Over the past 12 months we have seen extensive growth in edge computing as a result of the proliferation of internet of things (IoT) devices and the need for low latency applications. This has led to the development of micro data centres closer to the data source.

As 5G networks have started to rollout, there's been a push to integrate 5G capabilities into enterprise and data centre networks to benefit from its high speeds and low latency.

The sector has also faced cybersecurity challenges, with some high profile cyberattacks on critical infrastructure.

Large enterprises have underscored the importance of securing network infrastructure. There are also growing concerns about climate change, with many data centres focusing on sustainability, aiming for carbon neutrality and utilising renewable energy sources. Finally, the use of AI and automation in network management and data centre operations has grown, leading to more efficient and self-healing networks.

The key talking points for 2024 will definitely include quantum networking. As quantum computing matures, there will be discussions about the implications and integration of quantum networking, which promises ultra-secure communication. We will also see the continued growth of edge computing, especially with the growth of

augmented reality, virtual reality and other immersive technologies.

I think we will see the shift towards consuming network infrastructure as a service, similar to cloud services, gain traction and AI will play an even more

significant role in predictive maintenance, anomaly detection and network optimisation. As cities and businesses become smarter, the integration of IoT devices into enterprise networks will be a major topic, as will resilience and disaster recovery.

Given the increasing number of natural disasters and cyberthreats, building resilient network infrastructures that can quickly recover will be crucial. With the growth of decentralised technologies like blockchain, we might also see a push towards decentralised data centre models.



'THE KEY TALKING POINTS FOR 2024 WILL DEFINITELY INCLUDE QUANTUM NETWORKING. AS QUANTUM COMPUTING MATURES, THERE WILL BE DISCUSSIONS ABOUT THE IMPLICATIONS AND INTEGRATION OF QUANTUM NETWORKING, WHICH PROMISES ULTRA-SECURE COMMUNICATION.'

GLENN WARD

GENERAL MANAGER AT DUNASFERN

I will focus on firestopping, where the most significant topic of conversation in 2023 was the market reaction to the introduction of the Building Safety Act 2022. In particular, consultants are now beginning to move to only accepting 'as tested' solutions, rather than a combination of certificates and engineering judgements.

Many of the accepted firestopping practices have had to be revisited and, in many cases, new solutions and/or additional testing for both non-harmonised wall and floor types are now required.

Additionally, long-term problem areas in building design, such as floor and ceiling voids being designed at a size that makes 'as tested' firestopping very difficult, continue to cause significant issues for installers and this will likely remain unchanged for the foreseeable future.

For 2024, the talking point will be the start of the drive to ensure everyone involved in the built environment is able to prove their competency and expertise in the areas they are involved in, and this includes firestopping and/or penetrating existing fire barriers. Initially, understanding what this means and who within an organisation is responsible, will require training as a first step.

Designers and contractors who are responsible for cable installation will need to identify 'as tested' passive fire protection

products. This will introduce flexibility and a degree of future proofing, alongside

innovative designs that can eliminate the need for their installers and maintenance teams to have specific qualifications or expertise in firestopping when cables are installed through fire rated barriers.

Running concurrently over both 2023 and into 2024, the Golden Thread regulations are driving the conversation around 'as tested' requirements. Building designers are charged by the standards to ensure a building's fire safety design information is stored in a digital format

that is easily accessible by the right person at the right time.

Any changes made to these designs later in the build, or during the maintained life of a building, will leave a digital trace. In cases of firestopping infrastructure failing in future fire events, this can then be traced back and the person responsible for the change being asked to prove they had both the competence and expertise to make it.



'FOR 2024, THE TALKING POINT WILL BE THE START OF THE DRIVE TO ENSURE EVERYONE INVOLVED IN THE BUILT ENVIRONMENT IS ABLE TO PROVE THEIR COMPETENCY AND EXPERTISE IN THE AREAS THEY ARE INVOLVED IN.'

JON LABAN

RESET CATALYST AT THE OCP FOUNDATION & OPENUK BOARD MEMBER

For 2023 the most significant events have been the legislation for data centre combined heat and compute (CHC) in Germany and the European Union Energy Efficiency Directive. Also during 2023 AI – or as I call it machine learning with neural networks – hit the high point in the technology hype curve for the ‘early majority’ of the mainstream market, as defined by Geoffrey Moore in his book *Crossing the Chasm*.

Moore defines five phases for the dispersal of disruptive technology through a market. First are the innovators, then next are the early adopters. The chasm sits here between the early market and the mainstream market. The early majority are followed by the late majority and the laggards. Moore has another name for the early majority phase, which he calls the tornado phase. I call it the headless chicken phase – and that’s where we are now.

For 2024 the key talking points in the data centre sector will be told in a new language with new terms. Cooling will gradually fade towards ‘heat transfer’ because of CHC legislation and liquid will be a hot topic because we have now reached the point where physics has forced the switch from air to liquid heat transfer with 1kW processors. By the way, CHC loves liquid heat transfer from the servers because it avoids using heat pumps for heat reuse.



During 2024 data centre mechanical, electrical and plumbing vendors, along with their far too friendly independent consultants, will be talking up AI. They will use fear, uncertainty and doubt to

encourage their passive consumers to buy more stuff they don't need.

I wish the early majority would learn from the innovative early adopters that have, over the last decade, been using AI clusters of acceleration servers at considerable scale in their hyperscale data centres. Oh yes, that reminds me, watch out for the pre-loved vanity free and open source eight socket acceleration servers from the hyperscalers

finding their way at scale into the circular economy markets for use by the early majority that won't be able to afford buying new gear for two reasons – money and Scope 3.

‘COOLING WILL GRADUALLY FADE TOWARDS “HEAT TRANSFER” BECAUSE OF CHC LEGISLATION AND LIQUID WILL BE A HOT TOPIC BECAUSE WE HAVE NOW REACHED THE POINT WHERE PHYSICS HAS FORCED THE SWITCH FROM AIR TO LIQUID HEAT TRANSFER WITH 1KW PROCESSORS.’

Excel Networking Solutions grows its Category 6A market share

Excel Networking Solutions' share of the Category 6A market has increased to 22 per cent, putting it second in the UK based on 2022 sales figures. BSRIA published its World Market for Structured Cabling report, where the announcement was reported. Category 6A solutions are expected to grow and be on par with Category 6 during 2023, with more than half of the Category 6A connections being shielded.

Ross McLetchie, sales director at Excel Networking Solutions, commented, 'We



Ross
McLetchie

are delighted to see the increase in the Category 6A market share and we are seeing far more tenders requesting Category 6A solutions. We took the decision some time ago to standardise our screened and unshielded Category 6A cable designs to offer B2ca Euroclass performance, giving our customers the highest classification of resistance to fire, as well as market leading performance levels.'

Abloy UK appoints Cassie Wong to further strengthen its telecoms division

Abloy UK has appointed Cassie Wong to its critical infrastructure division, specialising in the telecoms sector. Her appointment broadens the skills and experience within the team and further strengthens Abloy's position in the industry.

Wong previously worked for Assa Abloy Hong Kong, building industry knowledge about the construction sector and forging relationships with architects and specifiers. She will use her industry knowledge to build relationships and engage with people across the communications sector including mobile



Cassie
Wong

network operators, tower companies, internet service providers and data centres, as well as postal, radio and TV media operators. Wong commented, 'With over 10 years of experience in the construction sales industry, I'm delighted to join Abloy UK. Asset management and controlling infrastructure is crucial in the industry, with organisations often boasting many disparate sites and assets. I want to fully understand the issues they face around security and explain how Abloy's solutions can help.'

Wiley Edge partners with Cisco Networking Academy to train job ready tech talent

Wiley Edge has partnered with Cisco Networking Academy to train graduates in the latest tech skills. Wiley Edge will incorporate Cisco Networking Academy's customisable curriculum, which evolves as new technology trends emerge, into several of its training courses. This will expand Wiley Edge's offering to provide trainees with additional high demand skills in cybersecurity, networking, programming, data science, the internet of things and infrastructure automation.

Wiley Edge follows the 'hire, train, deploy' model in its alumni programme, which helps companies to eliminate risks

associated with emerging talent and

ensures graduates can add immediate value to teams, while building diverse talent pipelines of talent. With around 95 per cent of Fortune 500 companies using Cisco technologies, the partnership will help graduates learn the skills these businesses require to stand out in a highly competitive field.

Dennis Bonilla, vice president and dean of the Wiley Edge Academy, said, 'Our partnership with Cisco Networking Academy

helps us provide real world training to graduates through a customisable curriculum that evolves with emerging technology.'



Dennis Bonilla

Mayflex is awarded EcoVadis silver medal

Mayflex has been awarded the silver medal by EcoVadis. EcoVadis is a globally recognised assessment platform that rates the sustainability of organisations based on four key categories – environment, labour and human rights, ethics, and sustainable procurement. To date, EcoVadis has rated over 75,000 trading partners worldwide.

Siobhan Bourke, Mayflex's people and sustainability manager, commented, 'We are delighted to have achieved the silver medal from our previous bronze status. This acknowledges the extensive work that Mayflex has been doing and continues to do. We have numerous initiatives in place with a goal of reducing our carbon footprint and emissions, reducing our energy use and working towards a more circular economy.'



Centiel receives Frost & Sullivan Technology Innovation Leadership Award

Centiel has been confirmed as the recipient of the 2023 Frost & Sullivan Technology Innovation Leadership Award in the global uninterruptible power supply (UPS) industry. The award recognises the use of technology in new ways to improve existing products and services, and elevate the customer experience. Recipients must develop a pioneering technology that enhances current products and enables the advancement of new products and applications.

Centiel was judged on commitment to innovation, creativity, successful commercial adoption, how the company's technology has disrupted existing technologies, and how the technology



David Bond

has superseded existing technologies. This is in addition to application diversity and financial performance. Frost & Sullivan said, 'Centiel stands out from competitors based on its commitment to innovation and creativity, while achieving commercial success. In addition to its market driven innovation, the company's collaborative, partner focused approach drives the acquisition of new channel partners, while retaining its existing network.'

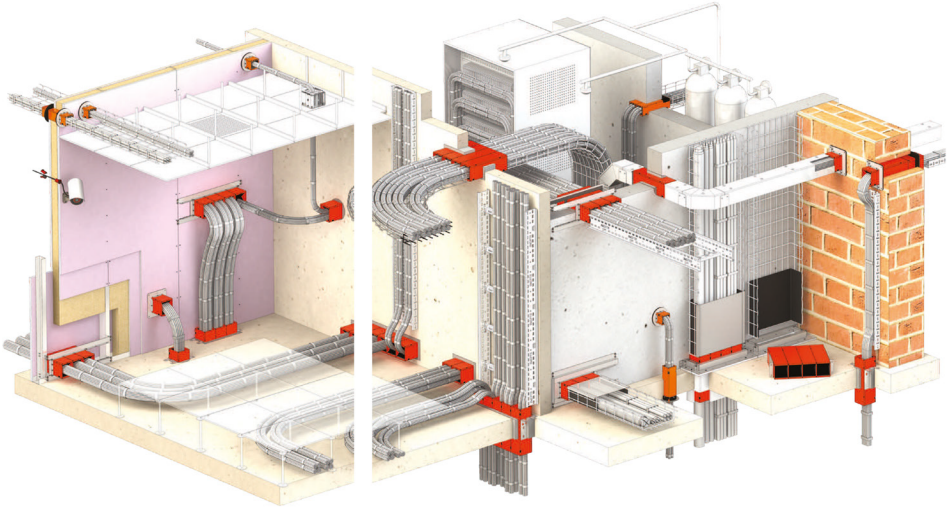
David Bond, chairman at Centiel UK, commented, 'Centiel's technology targets the reduction and mitigation of risks that compromise the power availability of critical loads. We are incredibly proud to become a recipient for this prestigious award, which recognises Centiel's innovation and leadership in technology over the years.'

CHANNEL UPDATE IN BRIEF

AFL plans to construct a state-of-the-art sustainable manufacturing facility in Poland to meet rapidly growing bandwidth needs across the region. The new facility is expected to open mid-2024 and will enable AFL to meet customer delivery expectations and more efficiently serve regional customers.

Vertiv has formed a new strategic partnership in the UK and Ireland with Intec Microsystems. The company is also making a significant investment in a manufacturing facility in Northern Ireland, creating approximately 200 skilled jobs and contributing to the country's economy. Supported by Invest Northern Ireland, Vertiv's investment will further strengthen the country's highly developed and advanced manufacturing and engineering sector.

Optical fibre operators can reduce costs and time when deploying new and upgrading existing networks thanks to a strategic partnership between Slovenia's Kontron and Netsia. The collaboration has created a reliable software defined access (SDA) solution for large scale rollouts across Europe, combining Netsia's virtual network management software with Kontron's optical line terminals.



Does your fire stopping solution give you peace of mind

With the introduction of the new Building Safety Act 2002, does your installation offer a “tested solution” when penetrating existing fire barriers?

EZ-Path mechanical fire stopping devices offer the client, specifier, contractor and fire inspector a tested, passive fire protection solution, wherever electrical and data cables have been installed, giving you a flexible, future proofed installation.



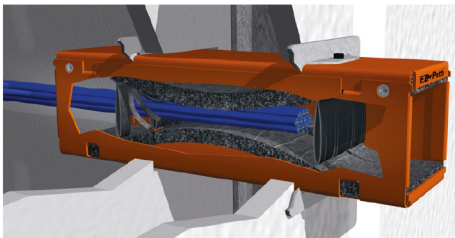
Series 33
Fire Stopping Device

Series 44
Fire Stopping Device

Eliminate the need for installers and maintenance engineers to have specific qualifications or expertise in firestopping when cables are installed through fire rated barriers.

Cables can be added or removed without the need for additional holes which means the fire rating of the wall or floor does not have to be restored or re-certified.

Plate Kits Accessories



EZ-Path devices contain a factory fitted intumescent lining which react to either flame or heat by expanding by 800% in size, closing the pathway.



2 Gang



3 Gang



1 Gang

Connect with our team - we're here to help

01908 282200 | enquiries@dunasfern.com | www.dunasfern.com

On the fast track to

Ken Hall of CommScope explains why the data centres of the future start with higher speed migration

▶ At the end of 2017, the Institute of Electrical and Electronics Engineers (IEEE) embraced standard IEEE 802.3bs, accommodating speeds of 200Gb/s and 400Gb/s. This standardisation paved the way for 400GBASE-SR16, which necessitated 32 multimode optical fibres per MPO and supported 16 25Gb/s non-return to zero (NRZ) lanes. Despite garnering significant attention initially, 400GBASE-SR16 faded into obscurity within a few years.

AS IT HAPPENS

Turns out that, at that time, putting 32 fibres in a single connector may have been a bridge too far. So, what's the lesson here? It might just be that, in the search for ever faster throughput, practicality is every bit as important as speed.

High speed migration is a relative term based upon the business model and purpose of the data centre operator. Enterprise organisations are moving from duplex to parallel transmission at 10Gb/s to 40Gb/s, 25Gb/s to 100Gb/s and above to increase capacity. Currently, industry

leaders are poised to migrate to 800Gb/s and 1.6Tb/s after that. Network designers are working through their options, trying to ensure they have the right infrastructure to efficiently deliver higher speed, lower latency and cost effective performance.



On the cabling side, there are a lot of installed 12-fibre links out there (and a few 24-fibre ones). Some facilities switched early on from 12-fibre to 8-fibre for application support and, more recently, others have decided to leapfrog from the 8-fibre option – jumping directly to a 16-fibre based infrastructure.

Success

STANDING OUT

Beginning with 400Gb/s, eight lane octal technology and 16-fibre MPO breakouts became the most efficient multipair building block for trunk applications. Moving from quad based deployments to octal configurations doubles the number of breakouts – enabling network managers to eliminate switch layers or maximise the fibre presentation and density at the face of a switch, while supporting line rate applications.

Today's applications are optimised for 16-fibre cabling. Supporting 400Gb/s and higher applications with 16-fibre technology allows data centres to deliver maximum switch capacity to switches or servers. By the way, 16-fibre groupings also fully support 8-fibre, 4-fibre or 2-fibre applications without compromise or waste.

This 16-fibre design – including matching transceivers, trunk/array cables and distribution modules – becomes

the common building block enabling data centres to progress through 400Gb/s and beyond. Want to migrate to 800Gb/s using 100Gb/s lanes? A single MPO16 or two MPO8 connections from a common trunk in a single transceiver will soon be an option that also provides full backward compatibility. Once a line rate of 200Gb/s

comes online, that same idea gets us to 1.6Tb/s.

TOO HOT TO HANDLE?

While 16-fibre may be the most efficient configuration for speeds above 400Gb/s, there is still some value in the legacy 8-fibre deployments, mainly for those data centres running applications up to 400Gb/s. For those currently running 8-fibre trunks that need to be upgraded to 16-fibre, the question is what's the best way to handle that, and when?

Essentially, you need to double the number of fibres at the front of the panel to support the same port count within the panel. One way to do that is by switching existing LC connectors on the front to smaller SN connectors, provided that is an option with the fibre panel. SN packaging provides the footprint necessary to at least double the fibre count in the same space as a duplex LC adaptor, while using the same size and proven ferrule.

Two MPO8 (rear) to eight SN (front) connectors in a module fit in the same space as a single MPO8 to four duplex LC connector module. This change frees up half of the panel space, allowing data centres to double the number of fibres available and support twice as many ports without adding rack space (which is generally not available for Day 2). Additional trunk cables can be added simply and easily with flexible cable managers. This pays significant dividends when it comes to managing Day 2 challenges.

MAKING THE MOVE

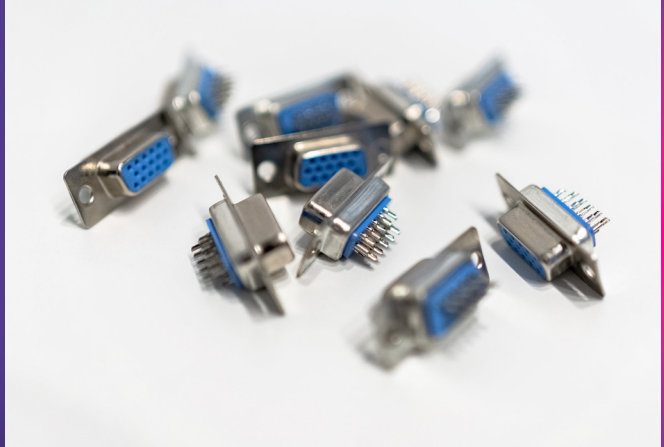
But what if you're currently running 12-fibre or 24-fibre trunks and are now ready to



'Today's applications are optimised for 16-fibre cabling. Supporting 400Gb/s and higher applications with 16-fibre technology allows data centres to deliver maximum switch capacity to switches or servers.'

move to a more efficient 8-fibre or 16-fibre set-up to match the applications? The first consideration is your business model. Should you consider the 8-fibre option if your network team is evaluating applications that may require a 16-fibre link? Great question.

While 8-fibre breakouts sit alongside 12-fibre or 24-fibre solutions for higher speed applications, when compared to a 16-fibre design, there's a strong business case for forgetting 8-fibre trunk deployments. The key difference between the two? Port counts. Typical MPO port density is 72 per rack unit. If the trunk and applications are 8-fibre based, that's 72 ports. If the applications become 16 fibres, that same 8-fibre base provides only 36 ports. 16-fibre



trunks match the 16-fibre application with 72 per RU but can also support 144 8-fibre ports in that same space.

The reality for many enterprise organisations is that 8-fibre applications with four way breakout ability will have a longer migration life based on capacity needs. However, energy efficiencies and lower cost per gigabit using eight way breakouts available with 16-fibre ports



may change the models sooner than originally planned. Moving from 8-fibre to 16-fibre connections allows you to better distribute full switch capacity and, in some cases, eliminate some switches and their associated costs. In the case of a greenfield deployment, the smart money is on 16-fibre trunks, which efficiently support future path, as well as legacy applications, without wasting fibre.

KEEPING IT REAL

While 8-fibre and 16-fibre configurations are best suited for the higher speeds that will take us to 1.6Tb/s and beyond, the reality inside many of today's data centres – including large hyperscale facilities – is that many legacy 12-fibre trunks are still in use. Let's assume the decision is to go from 12 and 24 duplex fibre deployments to 8-fibre and 16-fibre parallel applications. How do you make that transition without a complete rip and replace?

One way to do this is by using adaptors and array cables – for example, using LCs on the front of a fibre patch panel and an array that terminates in four duplex LCs connected to an 8-fibre MPO. You also could break out a 24-fibre trunk into three 8-fibre arrays or two 24-fibre cables connected to three 16-fibre MPOs.

One downside to the MPO adaptor/array solution is cable management. Breakout lengths need to be practical to be useful. Additionally, MPO based transceivers have alignment pins built in, requiring non-pinned equipment cords. Equipment cords that are non-pinned on both ends are the simplest for technicians in the field. But the right combination of pinned/non-pinned must appear throughout the channel.

SUPPORTING THE TRANSITION

The more complex and crowded the data centre environment grows, the more challenging the migration to higher speeds becomes. The degree of difficulty increases when the migration involves the (eventual) move to different fibre configurations. This is where data centre managers find themselves. How they transition from their legacy 12-fibre and 24-fibre deployments to more application friendly 8-fibre and (particularly) 16-fibre breakouts will determine their ability to leverage capacities of 800Gb/s and beyond. ■



KEN HALL

Ken Hall is data centre architect for North America at CommScope. He is responsible for technology and thought leadership, as well as optical fibre infrastructure planning for global scale and related data centres. In this role he has been instrumental in the development and release of high speed, ultra-low loss fibre optic solutions to efficiently enable network migration for data centre operators.



HARTING delivers reliable connectivity solutions for data centres

 Businesses and individuals now need continual access to data to allow them to embrace new ways of working, meaning the data centre market is experiencing explosive year on year growth. As we become more reliant on accessing information, it's essential that data centres and their IT infrastructure run as smoothly and efficiently as possible.

By switching to HARTING plug and play connectors and pre-assembled cables, you can improve reliability, reduce maintenance time, eliminate costly wiring errors and simplify your installations. The Han-Eco from HARTING is an electrical connector that ensures critical power to data systems via a quick and easy installation process. The Han-Eco system can support either power inserts with a built-in ground for safety or a wide range of modular inserts including data, signal and power – all in a single connector.

The range is manufactured from high performance plastic, which complies with standards IEC 61948 and EN 45545-2. It offers IP65 protection and substantial weight savings compared to traditional metal housings, which makes location mounting easier and safer.

HARTING also offers connectorised cable assemblies, which distribute power from a



Pushing Performance
Since 1945

data centre's uninterruptible power supply (UPS) to its power distribution units (PDUs). These assemblies consist of a cable between one or two connector hoods. Inside the connector is an insert or multiple inserts where the conductors from the cable are terminated. The connector hoods then mate with a matching housing wired to the PDU and/or UPS.

All customised products are built at the HARTING manufacturing facility in Northampton and options include standard or custom cable lengths and a range of plastic or metal housings. The facility holds ISO 9001 certification for quality

management, the ISO 14001 environmental standard and UL certification for wiring harnesses ZPFW2/ZPFW8.

HARTING has the capacity to produce project specific assemblies to suit your needs, including installing

components, routing cable harnesses and fabrication. The company can also support you with thorough in-house testing of cabling and wiring.

To learn more about HARTING's wide range of connector and cabling solutions for data centres **CLICK HERE**, or **CLICK HERE** to send an email and one of our experts will contact you.

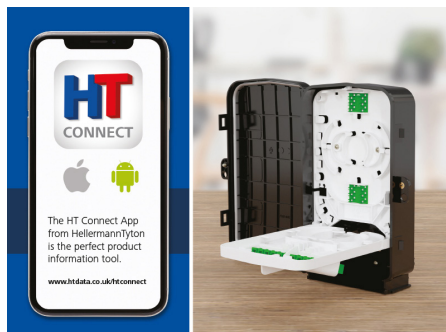
www.harting.com



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

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.
- Full compatibility 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



EDP Europe Distribution

Flexible end to end Huber+Suhner data centre optical fibre connectivity solutions are available from stock at EDP Europe Distribution.

From bulk fibre that can be cut and supplied to length, cabling distribution racks (CDRs) that provide backbone and meet me room connectivity, through to high density 19-inch IANOS modular connectivity and a flexible MTP offering that enables polarity flipping and pin reconfiguration, EDP Europe can support your data centre fibre network with future proof technologies – off the shelf.



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

For more information [CLICK HERE](#), call 01376 510337 or to send an email [CLICK HERE](#).
www.edpeurope.com

Siemon

As networking environments become more complex to support ever increasing demands, you need innovative, robust solutions that will allow you to easily design, deliver and manage your critical infrastructure – both now and in the future. Siemon's cutting edge range of optical fibre and copper structured cabling and point to point high speed direct attach cables (DACs) and active optical cables (AOCs) allow users to do just that.

At Siemon, we've taken our passion and engineering pedigree and focused it into



a truly world class portfolio of advanced fibre and copper solutions that blend industry leading quality, performance and usability. This allows our users to reduce risk, maximise uptime and successfully deliver new applications and services at speed.

No matter where you are on your network infrastructure journey, Siemon has the solutions and services to help you design and deliver what you need to achieve your strategic goals.

To find out more [CLICK HERE](#).
www.siemon.com



Audit | Design | Build | Test | Maintain

Seeing the light

Michael Akinla of Panduit looks at optical fibre connectivity in the rack and the importance of reducing human error disconnects

▶ Fibre within the data architecture has reached every application – from patch cords to long distance links within buildings and across campuses. There's a variety of fibre cabling and connector solutions, as well as various configurations to meet the unique needs of a data centre project at any scale.

SOLUTION PROVIDER

The expansion of fibre cable utilisation across sites offers lower data latency than copper cable, so directly impacts IT equipment performance in respect of data transmission. This allows data to be transmitted much faster and more efficiently, and also improves security and reliability of the end to end performance.

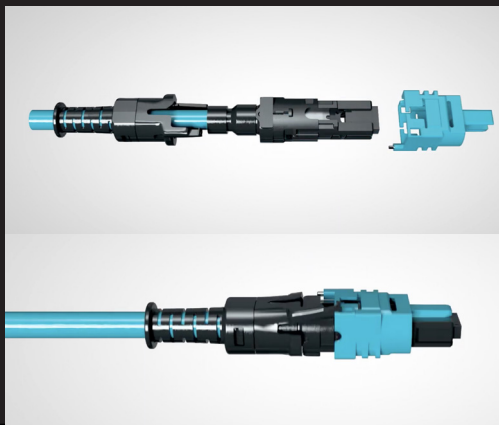
MPO/MTP fibre connectors are used for high density requirements and provide up to 224 fibre connections with one breakout connector. The increase in capability this offers aids a reduction in the installed cables needed, therefore reducing cable congestion in the cabinet.

It important to ensure the connector solution chosen is FOCIS compliant and accommodates



Base-8 and Base-12 wiring. Most should be available in singlemode and multimode variants for trunks, interconnects, harnesses and pigtails. For ease of use the push-pull boot allows users to remove an MPO from the cassette without having to pull on the housing, which can be difficult to reach in high density environments.

An MPO fibre connector is available that provides toolless gender and polarity change capability in the field.



The mechanism allows easy switching of the connector's polarity and gender, while maintaining compatibility with third-party components.

SMALL WONDER

CS connectors have an ultra-small form factor and are gaining share of mind. As bandwidth speeds continue to increase, 200Gb/s and 400Gb/s applications are becoming commonplace in high performance data centre environments, requiring enhanced capabilities at the rack level. The CS connector is a high density fibre solution that helps optimise the data centre for next generation applications. Its compact size enables breakout mode options and improves compute density for 25Gb/s to 400Gb/s deployments and is available for unitary singlemode and multimode fibre options.

Complex applications including artificial intelligence (AI) and machine learning are driving the need for higher data density in the rack and increased data per port. CS connectors offer a solution by enabling two duplex CS patch cords (four fibres) to fit in QSFP-DD and OSFP transceivers. This doubles the number of fibres compared to LC patch cords and enables 200Gb/s per port today and 400Gb/s in the future. CS fibre patch cords and cassettes also provide 40 per cent greater port density per rack unit (RU) over LC connectors when used with specific original equipment manufacturers' fibre cabling systems.

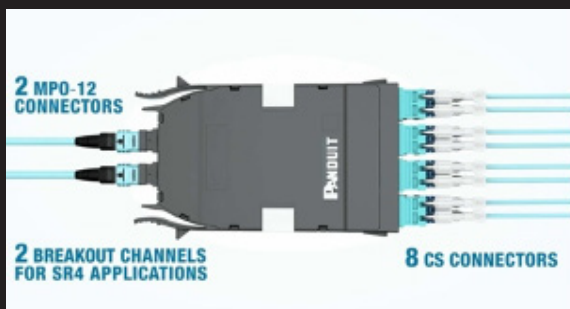
The push-pull connector and unitary cable design reduce congestion in pathways and allow easy access in high density applications without disturbing

adjacent circuits. The smaller form factor CS connectors allow for a reduced connectivity footprint, which enables more efficient space utilisation in hyperscale, multi-tenant and large data centre environments.

CASSETTE DECK

Cassettes and the rack systems that facilitate them are key elements in deploying IT equipment infrastructure that supports the needs of high speed and high density data interconnect. CS cassettes are available in singlemode and multimode, and provide 4-1 or 8-1 breakout options for 100Gb/s, 200Gb/s and 400Gb/s applications.

The 4-1 breakout cassette has two



MPO 12 connectors on the back and eight CS connectors on the front. This provides two distinct breakout channels for SR4 applications. An 8-1 breakout cassette has one MPO 24 connector on the back and eight CS connectors on the front for 400Gb/s SR8 applications using an MPO 24 connector.

Both of these cassettes provide installed densities of 192 fibres per rack unit. A third cassette configuration offers three MPO 12 connectors on the back and 218 CS connectors on the front. This cassette is universally wired and is used on both

ends of a cassette-trunk-cassette link. This cassette increases the density of from 144 fibres using LC connectors to 216 fibres using CS connectors.

ACROSS THE UNIVERSE

Universal wired fibre cassettes are easy to use and deploy, as the same cassette is used on both ends of the link. Users no longer need different cassette configurations to maintain proper polarity. They are available in a wide range of form factors and are compatible across a variety of connector form factors. Installers can even mix appropriate cassette types in a link without issues. Universal wired cassettes use method B trunks for interconnects, while both assemblies are available with MPO connectors that allow infield polarity and gender changes in seconds – saving time in installation and maintenance regimes.

High density fibre enclosures facilitate the highest connector density and support 144 LC fibres or 72 duplex LC ports per rack unit. These rack cassettes can be installed and removed from the front or the back of the enclosure, helping to remove cable congestion, as well as offering accessibility from the left and right sides of the enclosure. Cassettes

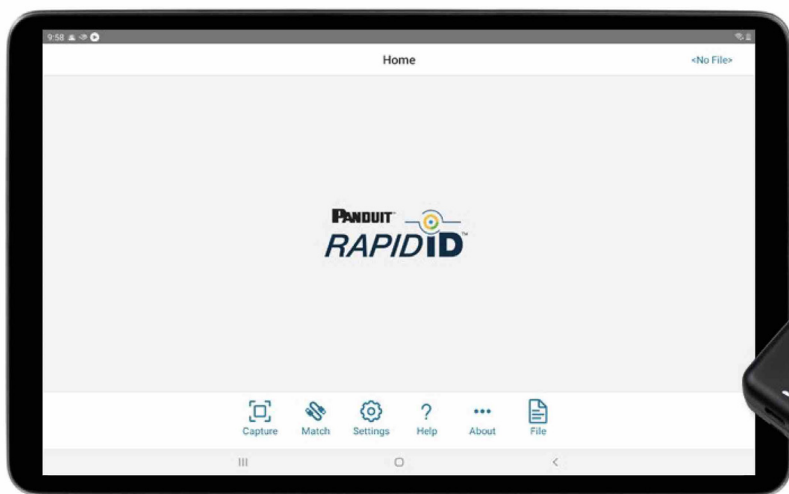
are available with MPO, standard LC, angle polish LC and SC connectors.

This wide capability not only speeds serviceability and deployment, but also streamlines migrations from 10 Gigabit Ethernet to 40, 50 and 100 Gigabit Ethernet when cassettes are replaced with fibre adaptor panels.

NETWORK MAPPING

Keeping track of patch panel connections and end to end connectivity has always been time consuming. Too much time

‘An MPO fibre connector provides toolless gender change capability in a mechanism allows easy connector’s polarity maintaining compatibility components.’



spent labelling cables, tracing cables and troubleshooting during an outage can increase damage – both physical and reputational. In fact, outages can occur by disconnecting cables while trying to trace them, which is not helped by manually

ector is available that
nder and polarity
the field. The
asy switching of the
and gender, while
ibility with third-party

documenting
cables. This is
notoriously
error prone.

Network
mapping
solutions
are a highly
efficient patch
management
application.
Utilising pre-

barcoded patch cables, the system can
reduce patch cable documentation and
validation time by up to 50 per cent, while
removing human error from the process.
Using this type of app on Windows PCs,
tablets and mobile devices, users can scan
the barcodes with a Bluetooth enabled

handheld scanner
and accurately
capture and
document new
cable installations,
reducing the risk of
human error cable
disconnects.

SUPPORT STRUCTURE

A cabling network
supports the
critical data,
voice, video and
other applications
required to
maintain corporate
and private

networks. Understanding the benefits
and capabilities of the subsystems that
perform an essential role in that platform
will expand the capabilities that the total
compute can support and the increased
opportunities that it offers. ■



MICHAEL AKINLA

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

Investors in people

In the first of two articles examining apprenticeships in the digital infrastructure sector, [Rob Shepherd](#) talks to [Dave Buchanan](#), operations manager at Onnec, about the company's apprenticeship programme and why it is so important to encourage the next generation to join the industry

▶ RS: Why do you take on apprentices?

DB: Onnec recognises the need to bring young blood into the game. I've been with Onnec for 27 years and during that time many people have naturally progressed within the company from engineering to the management roles that they're in today. However, engineering roles have been difficult to backfill due to the industry shortage.

We see this as a great opportunity to bring new talent into the business, diversify our workforce and get the apprentices up to scratch. This is not only from a cabling perspective, but as part of our succession planning across the business.

These individuals may be able to move into another role, which they would never have had the opportunity to do if they hadn't completed their apprenticeship with us.

RS: Is becoming an apprentice the



Dave Buchanan

'We purposefully did not look to recruit anyone with experience. We were looking for people with the desire to learn something completely different from what they'd done previously, and who we could mould into what we need as a company.'

best way for someone to get the requisite skills to succeed in the network infrastructure sector?

DB: I definitely think it's one of the best ways, particularly the way we have structured the program here at Onnec. Our apprentices gain insights into the wider picture surrounding structured cabling, with exposure to our full range of network infrastructure solutions – from design and networking to new smart building solutions – all from one company.

Onnec's apprenticeship program was six months in the making. Across all of our internal departments, from human resources to marketing, accounts and managed service solutions, we discussed what we needed to cover throughout the 16 month program.

As a result we constructed a really comprehensive plan, built around the core CNet Training Network Cable Installer (NCI) Apprenticeship program. It's a unique, tailored program that has been

carefully planned to ensure apprentices get everything they need to learn out of the apprenticeship, with input from Onnec, CNet Training, our cabling vendors and many more besides. At completion, the apprentices will have the opportunity to work as a lead engineer on a small level project. The whole program is structured to ensure maximum learning and experience in every aspect of the role and with the full support of everyone at Onnec.

RS: How much does it cost to take on an apprentice throughout their training?

DB: In financial terms, there's government funding available

– a percentage of which comes from businesses through the levy. Onnec's program runs beyond the length of the NCI Apprenticeship because we want our apprentices to be able to move onwards and upwards beyond that period and be able to manage small sites.

Cost doesn't really come into at the end of the day, as long as the education is provided to the level that you're expecting – and this is certainly a demanding program. We ensure our apprentices have time to do the paperwork that's needed, which includes weekly progress reports, pictures, statements, challenges, etc. The way I see it, if I invest in that time, I'm

going to get a better investment back from them. If you don't give them time to learn, then they'll lose morale and things will start to slip. I've already seen the results that these guys are getting, which is the reward for giving them the time to put all their



efforts into it.

RS: What are the challenges/difficulties of taking on an apprentice?

DB: The biggest challenge is trying to get the apprentices to the same level because, at any age, some people are quicker at learning than others. This is why we structured it in such a way that they get to shadow the various departments, whether it be on-site or in the office.

Every week we review what we've got to cover off and the apprentices will complete progress reports on what they've been doing. Therefore, if there are things that pop up that someone hasn't covered, I get the opportunity to identify that really

quickly and level the platform.

RS: What do you think are the key qualities of a successful apprentice?

DB: We purposefully did not look to recruit anyone with experience. We were looking for people with the desire to learn something completely different from what they'd done previously, and who we could mould into what we need as a company.

Our apprentices are from diverse backgrounds – from printing and security to bar work. We had significant interest in our apprenticeship, with well over 160 applicants. Using selection questions and criteria, we settled on 20 people to invite to interview. We asked the usual questions like why they wanted the job, but we also presented them with five practical tasks to complete. It wasn't about who could do it the quickest, it was about us being able to see those key qualities, such as how they reacted to a task under pressure and how they communicated, as well as the results.

RS: 'What's the point of taking on an apprentice as they'll only leave when they've finished and I'm left with nothing.' How would you respond to this comment?

DB: Generally, people leave because of money. They believe that the grass is greener and they may get a little bit more elsewhere.

Onnec is a large global organisation and we've got great opportunities for these apprentices, should they wish to go for them. When going through the interview process, we were purposefully looking

for candidates that would want, and saw potential for, a long-term career with Onnec.

At the moment, the focus is on learning, and everyone here is invested in helping them to succeed.

We have a friendly environment, where they can call upon anyone at any time and ask for some guidance or direction. Be it me, their site manager or a colleague, we've all

learnt, we've all come up. The majority of people that are at senior level today have

'I'm a big believer that you must invest in people and if you're not prepared to give them the time, you won't get the rewards later.'



progressed through the ranks, so they know what it's like to be a cabling engineer.

We're giving the apprentices the support they need from people they can aspire to be. We can't guarantee they're going to be out of cabling within two years, for example, but one thing I can say for sure is if they commit 100 per cent, we will commit 100 per cent, and when those opportunities arise, they can grab them.

RS: In what ways does taking on apprentices benefit your company?

DB: We're looking at a long-term strategy at Onnec. As a rapidly growing organisation, finding and retaining the highest calibre of people is fundamental for the success of our business. Introducing

apprentices to the team brings a broader diversity of background and experiences, providing our teams with a fresh perspective. Recruiting apprentices gives us a chance to diversify our workforce, plan for the future and capitalise on the expertise offered by CNet Training.

These apprentices may not necessarily stay in the cabling side of the business and that's why we chose the shadowing process – so they can gain real experience across all departments. They have opportunity to undertake as much as training as possible in cabling via CNet Training's programs, as well as our own internal training, being out on-site with various supervisory teams and, of course, working with experienced staff who are sharing their expertise and showing them how to do things correctly.

Overall, we're just happy that we've got these apprentices because it opens the gates for them to be able to diversify, should they want to do so at a later date, and should we have the position for them to do so.

RS: What more could be done to encourage more network infrastructure firms to take on apprentices?

DB: I think it's about showing what the future could be for them. If you want people to be interested, you must look at what you want from them and the way you're going to train them.

I'm a big believer that you must invest in people and if you're not prepared to give them the time, you won't get the rewards later. As to whether those individuals will stay in the cabling industry, and how you can retain them, it's down to what you give them long-term and the company's overall commitment to seeing apprentices succeed. This goes way beyond just running a piece of cable. ■



Quick clicks

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

The AI Disruption: Challenges And Guidance For Data Center Design is a white paper from **Schneider Electric**. [CLICK HERE](#) to download a copy.

The Pros And Cons Of Liquid Cooling is a blog by Merki of **R&M**. [CLICK HERE](#) to read it.

Vision 2030: Overcoming Your Digital Infrastructure Connectivity Challenges And Requirements is a report from **Telehouse** that surveyed 250 UK IT decision makers to gauge their opinions on the digital infrastructure challenges they are likely to face over the coming decade. [CLICK HERE](#) to download a copy.

FOR A FREE
SUBSCRIPTION TO
Inside_Networks
[CLICK HERE](#)



Extended Reach: The Fact File is a white paper from **CommScope** that looks at why it's time to push network cabling beyond the limits. [CLICK HERE](#) to download a copy.

og by Robert

The Iberian Peninsula is a report from **DC Byte** that looks at the data centre market in Spain and Portugal. [CLICK HERE](#) to download a copy.

What Is Hyperscale? is the question addressed in an ebook by **AFL Hyperscale**. [CLICK HERE](#) to download a copy.

The Impact Of Technology In 2024 And Beyond: An **IEEE** Global Study surveyed 350 technology leaders in the US, China, UK, India and Brazil at organisations with over 1,000 employees across multiple industries. [CLICK HERE](#) to find out more.



From top to bottom

Michael Moore of Chatsworth Products (CPI) examines the role of next generation vertical cable management solutions for digital transformation

▶ As enterprises digitally transform to remain competitive and meet customer and employee expectations, they demand high performance, reliable, scalable and available networks that deliver the bandwidth and latency needed to support emerging technologies and an ever increasing number of devices. With the average hourly cost of network downtime exceeding \$300,000 for more than 90 per cent of enterprises, according to ITIC's 2022 Hourly Cost of Downtime Survey, cabling infrastructure that serves as the foundation of the network is the lifeline of business today. In the information and communications technology (ICT) industry, proper cable management has long been a best practice.

MORE THAN MEETS THE EYE

Cable management can enable – or inhibit – everything from the signal integrity of a single cable to the overall performance of a data centre or local area network (LAN). Cable management is also closely tied to aesthetics, as well as form and function. A lack of cable management doesn't just risk network performance, reliability and availability, it conveys a sense that the network is unmanageable. Well organised cabling allows technicians to easily locate and troubleshoot issues, and encourages proper network care during routine maintenance or moves, adds and changes (MACs).

As cabling infrastructure evolves to support emerging technologies, next

generation vertical cable managers will do more than just ensure performance,



reliability and availability. Cable managers play a critical role in providing the durability, scalability, flexibility and ease of installation for enterprises to quickly and efficiently embark on digital transformation.

FUNDAMENTALS REMAIN

The fundamentals of cable management are key to maintaining the signal integrity of cables and the overall performance, reliability and availability of a network. One

vital aspect is maintaining the specified minimum bend radius of copper and fibre optic cables routed within racks and cabinets. Bending cables tighter than their specified minimum radius can alter the cable geometry, which degrades network performance.

Another key fundamental is maintaining proper cable strain relief to protect cables

individual components and makes it easier to trace, identify and reconfigure cables during MACs.

MOVING ON UP

While the fundamentals of cable management haven't changed, technology certainly has. Emerging technologies like the internet of things (IoT)/industrial

internet of things (IIoT), 5G wireless, artificial intelligence (AI), virtual and augmented reality (VR/AR), smart buildings and edge computing all mean that cabling infrastructure needs to handle more data and connect more systems, equipment, devices and users than ever before.

To support increasing bandwidth demand, twisted pair copper cabling has advanced over the past 30 years, with Category 6A cabling now supporting up to 10Gb/s.

In the data centre, transmission speeds are now migrating to 25Gb/s and 50Gb/s in horizontal switch to server links and

100Gb/s to 400Gb/s in backbone switch to switch links. With twisted pair copper cabling effectively only supporting up to 10Gb/s, data centres are increasingly relying on fibre optic cabling.

As digitisation and bandwidth demand continues to increase to support more emerging technologies, vertical cable managers must provide the durability, scalability and flexibility to accommodate ever increasing densities and more complex, volatile network environments.



and connectors from any damage that can occur during routing or from hanging cable weight in vertical managers, and at connection and cable entry/exit points. Vertical cable managers also keep cables neat and organised within racks and cabinets, where substantial numbers of cables converge and terminate at network equipment and patch panels. This improves overall aesthetics, prevents spaghetti cabling that can impede proper airflow in and around equipment, facilitates access to

‘While legacy vertical cable managers may support the fundamentals, next generation vertical cable management solutions are specifically designed and engineered to support the cabling needs of evolving technology.’

With today’s limited workforce and the need to reduce labour and speed deployments, vertical cable managers also need to be fast and easy to install, while still ensuring network performance, reliability, availability and aesthetics.

KEY COMPONENTS

Many legacy vertical cable management solutions do not provide the durability, capacity, scalability and flexibility needed for today’s networks. Next generation vertical cable management solutions are designed specifically to sustain high performance, reliability and availability in today’s high density, complex and volatile networks. Enhanced design elements support current and future cabling needs, while saving time and labour.

Next generation vertical cable managers take the fundamentals of cable management to a new level to ensure maximum signal quality, transmission and availability. They support larger bend radii for bulkier cables in the LAN, while eliminating the potential for kinks, twists and sharp bends in high density fibre environments. With signal integrity in mind, next generation vertical cable managers offer bend radius protection at critical entry/exit points, as well as the ability to add bend radius protection and strain relief wherever needed in the vertical rack and cabinet space.

Vertical cable managers are designed to support the latest cable designs and applications. In the data centre, that means maximising utilisation of space to

properly manage high density fibre, while enabling optimal airflow and accessibility to components. For LAN environments, vertical cable managers need to be durable enough with a proper load rating to accommodate large numbers of Category 6A cables, while adequately spacing cable bundles as required for power over Ethernet (PoE) applications.

SCALE AND ADAPT

To support ever changing network environments, next generation vertical cable managers come in a wide variety of heights and widths, with high configurability and adjustable designs. For example, accessories like cable spools, cable management fingers and cable bundle supports that can be installed at various depths and easily adjusted horizontally or vertically to support both fibre and copper allow for increased capacity as the network grows.



Next generation vertical cable managers feature intuitive, toolless designs that speed deployment and reduce labour costs. This includes toolless accessories that can be quickly attached and reconfigured, with highly visible touch points for easy identification. Vertical cable managers that can be set up and installed with a one person operation and standalone solutions that can be simply pushed into place are ideal for reducing labour cost and dealing with workforce constraints in data centres and LANs.

FORM AND FUNCTION

Next generation vertical cable management solutions don't just consider the latest trends – they also deliver form and function. Matching sleek and modern designs across product lines offers seamless aesthetics for enterprises to showcase their technology, while unique details like dual hinged doors with push to close convenience and hooks for hanging a test meter facilitate day to day tasks.

As enterprises digitally transform and adopt emerging applications to remain competitive, the amount of fibre in the data centre and copper in the LAN will only increase. Vertical cable management

can no longer be overlooked, as it plays a critical role in today's digital era.

THINKING AHEAD

While legacy vertical cable managers may support the fundamentals, next generation vertical cable management solutions are specifically designed and engineered to support the cabling needs of evolving technology. Not only do they help ensure network performance, reliability and availability in increasingly dense, complex and volatile data centre and LAN environments, they do so while saving time, cost and labour and maintaining the aesthetics that enterprises need to function at their best. ■



MICHAEL MOORE

Michael Moore is product manager open architecture systems at CPI. Moore has more than 25 years of experience within the telecommunications industry. He has held various product management roles, and been responsible for developing, launching and managing new innovative products within the data centre, airflow management and IT market segments.

Cable Management Warehouse (CMW)

Labelling plays a crucial part in cabling installations – it enhances organisation and streamlines troubleshooting processes. In complex networks, identifying specific cables becomes challenging without clear labels, which can lead to delays in maintenance and repairs. Proper labelling ensures accuracy during installation and minimises the risk of errors.

Additionally, labelling helps with documentation, providing a clear roadmap for future modifications or expansions. Compliance with industry standards often mandates clear and consistent



labelling practices. Adhering to these standards ensures not only a well organised infrastructure but also compatibility with future technologies and ease of

collaboration with other professionals in the field.

Brady portable printing and labelling solutions provide a professional

way of labelling and identifying your cables and wires. [CLICK HERE](#) to see full range of Brady labelling and printing solutions from CMW or get in touch by calling 01234 848030.

www.cmw ltd.co.uk

Excel Networking Solutions

The ExpressNet panel and cassette system by Excel Networking Solutions offers a modular and flexible solution. Users can choose from splice, MTP connectivity or LC presentation, as well as Category 6 or 6A copper modules.

The system is perfect for engineers. With its colour coded LC adaptors, they can easily identify the optical fibre grade installed before even opening the rack. There is heather violet for OM4, aqua for OM3, blue for OS2 UPC/LC adaptors and green for the APC/LC variant.

Manufactured in chrome, these quality

panels come in 1U four slot and eight slot options, allowing for high density deployment whilst keeping U space usage

down. The cassettes come in 12F presentation, seamlessly merging into the Excel Enbeam MTP 12F method B solution, allowing the panels to work brilliantly with

customers deploying Gigabit Ethernet and 10 Gigabit Ethernet systems today, and migrating to 40 Gigabit Ethernet and higher in the future.

For more information [CLICK HERE](#).
www.excel-networking.com



HellermannTyton

Together, HellermannTyton and gabocom deliver a full end to end FTTX solution, combining a wide choice of quality products and strong industry knowledge.

A winning partnership of quality optical fibre management closures and wallboxes, along with perfectly manufactured microduct, means the demands of fibre deployment are met at every stage of the last mile network. From the street to the building and into your property, HellermannTyton and gabocom offer a full range of connectivity solutions completing the fibre journey from the central office to



the router.

With products for both internal and external fibre applications, the combination of HellermannTyton and gabocom allows end users and installers to source a full fibre solution from companies with a wealth of knowledge and experience in fibre connectivity across the global market. Furthermore, the acquisition of Höhle means increased microduct production capacity, allowing HellermannTyton to meet the growing demand in fibre network deployment across the UK and Europe.

To find out more [CLICK HERE](http://www.htdata.co.uk).
www.htdata.co.uk

GET YOURSELF SEEN


BY THE TIME YOU READ THIS YOUR COMPETITORS' ADVERTISEMENTS WILL HAVE BEEN SEEN BY OVER 23,000 READERS OF INSIDE_NETWORKS.

IF YOU WOULD LIKE TO PROMOTE YOUR PRODUCTS AND SERVICES AND MAXIMISE THE POTENTIAL OF YOUR ONLINE ACTIVITIES, [CLICK HERE](#).

FOR A FREE SUBSCRIPTION TO **Inside_Networks** [CLICK HERE](#)

Finders keepers

Joe Bowden from Brady Corporation talks about smart label technology that can transmit unique, digital identities to quickly locate physical data centre assets

 Singling out one cable or server amidst hundreds became a lot easier with classic analogue labels. In today's data centres, however, the number of cables and components has grown so exponentially that locating the right label may have become a challenge in itself. Enter smart labels that enable professionals to home in on any physical asset.

CABLES AND COMPONENTS

Digitisation accelerates ever faster across many industries and data centre capacity is keeping pace. Increasing needs for security, speed and capacity result in the expansion, modernisation and relocation of data centre computing power. In addition, higher server and router port densities multiply the number of cables present in data centres to keep all wired and wireless online applications running.

Current data centre evolutions make fast and accurate network maintenance increasingly daunting. At the same time, most applications have become so mission critical for businesses worldwide that there is little to no room for error and inefficiencies. Simply finding the right cable to initiate an intervention can take time that is almost never available. As a result, already efficient data centre professionals will need more flexible identification solutions to quickly locate and service any asset.

EFFICIENT INTERVENTIONS

Luckily, evolving label technology offers data centre operators increasingly powerful

solutions to keep a rising tide of cables and components under control. Radio frequency identification system (RFID) labels, for example, enable professionals to home in on any item using sound and/or visuals.

These are provided by an app on an RFID reader or smartphone with an ultra high frequency (UHF) RFID reading extension. Portable or fixed RFID readers can power up all battery free RFID labels in range, and they can focus on a single labelled asset when selected on screen. With RFID technology, finding the right server or cable to service becomes much faster, as it cancels out most, if not all, searching involved. In addition, the number or density of cables and components present in a server room does not impact the time required to find the right asset.

The fastest cable and component finding becomes possible when combining RFID and LED technology. Most RFID readers can send enough power to battery free RFID labels to ignite an LED light. Any labelled server or component will quickly appear on an RFID reader or smartphone screen, where it can easily be selected. As a result, the selected component's RFID LED label starts to act like a blinking beacon that attracts attention and lights the way for data centre professionals.

SECURE DATA ON THE SPOT

To further increase the accuracy and speed of interventions, smart labels enable professionals to check asset relevant information when and where it matters.

RFID, near field communication (NFC) and combined dual frequency labels offer sufficient space to store identifying asset data and a link to documentation about the labelled item.

To secure data, smart labels can be programmed to provide several layers of information accessible by specific user profiles. RFID labels can enable in-house specialists or management to easily, and securely, access potentially sensitive information from the asset itself. By setting up user profiles for layered data access, sensitive information can also be withheld and protected. In addition, all information stored in RFID and NFC labels can be encrypted to reserve access to identifying server data for the data centre's own RFID readers.

AUTOMATED INVENTORIES

RFID readers are available both in portable and fixed variants. While portable readers are extremely practical to home in quickly on a single asset, fixed readers are ideal to offer complete overviews in seconds.

Fixed RFID reader gates at server room entrances can pick up any RFID labelled physical server that passes through. They can keep server room inventories up to date in real time by sharing data with centralised systems. RFID reader gates can also be programmed to provide a

signal when a physical server, or any other labelled asset, enters the wrong server room. The same applies when the wrong asset leaves a server room.

Battery free RFID labelling technology does not enable constant monitoring. However, the labels can be pinged by RFID readers at any time, and at any frequency. They can offer a series of data shots in quick succession and, in this way, RFID labels equipped with temperature sensors can detect temperature spikes. The technology provides a cost effective way to detect single server overheating. By extension, they can help provide temperature readings for any mission critical asset because RFID labels can easily be applied to almost any material.

DANGER ZONE

LED lights and temperature sensors are not the only technology that can be combined with battery free RFID labels. Moisture sensors can also be embedded to detect coolant leaks, condensation or any fluid the



‘To further increase the accuracy and speed of interventions, smart labels enable professionals to check asset relevant information when and where it matters.’

label is exposed to.

Moisture sensing battery free RFID labels can provide wet/dry or safe/unsafe status data for any asset they are attached to. Each time the label is powered by RFID readers, the labelled asset’s status can be shared with centralised data centre monitoring systems. The wet/dry threshold can be customised, as can the frequency at which the sensor labels are read. Data from the labels can be processed into intervention prompts, complete with accurate leak sources, depending on where the labels were applied.

LAW AND ORDER

A functional RFID, NFC or combined dual frequency solution that adequately answers business needs is about more than applying smart labels. A well thought out RFID

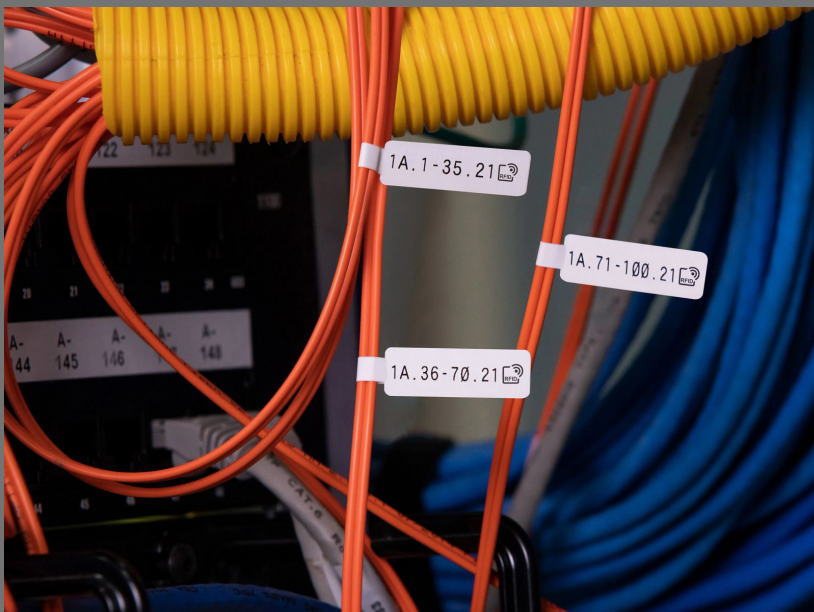
concept goes a long way to optimise results and minimise total cost of ownership.

Fixed reader placement and optimal label locations can be challenging, and using the right technology prevents unpleasant surprises. Because RFID technology relies on radio signals, it is important to use the right European Telecommunications Standards Institute (ETSI) bandwidth and to determine early on what the maximum read range can be in specific environments.

Faraday’s Law applies and metal rich environments will influence the range at which RFID signals can be read. Through careful label and reader placement, read ranges can be maximised in any environment to support interesting business advantages. RFID label technology also plays a role. On metal RFID labels do exist, and will generally use a thin layer of

insulating foam to increase the label’s radio signal sending and receiving capabilities.

To arrive at an optimal set-up, with the right choice of labels, the right



choice of readers and their optimal placement, it is best to contact a specialised supplier. They can help determine the best label location per asset type, and can set up any fixed RFID readers needed in an optimal way.

FULL CONTROL

Once the optimal placement of readers is done, and the best label locations per asset are determined, any data centre can be in full control of its own RFID set-up. RFID print and program systems enable fast and accurate creation of additional RFID labels at your premises. New hardware can easily be labelled with RFID labels printed and programmed on-site. In most cases, the label's unique digital identity can be sourced directly from asset lists in a database, or even from a spreadsheet.

The unique digital identity of any RFID label can also be updated with RFID readers. Most portable RFID readers enable RFID label chip writing in order to add or change information. Just like enabling layered reading access, writing access can also be granted to specific user profiles.

RELIABLE FOR YEARS

No matter how technologically advanced RFID labels are, their functionality is linked to how well they stay attached to assets and equipment. Cable labels must stay attached to extremely curved surfaces, preferably without sticking to any neighbouring cables. Just like asset labels, they can be blank, colour coded and partially or fully pre-printed and pre-programmed. Asset labels can additionally feature a raised profile to maximise the neatly organised look and efficiency of any



data centre server room. This all enables users to maximise intervention speed and find assets without searching. ■



JOE BOWDEN

Joe Bowden is business development manager at Brady Corporation. Since 2018 he has helped many leading data centre and network providers implement complete identification solutions, including smart labelling technology, to support increased intervention efficiency, security and reliability.

Sudlows constructs new data centre for Nexperia

Nexperia instructed Sudlows to design and build a new data centre facility at its site in Stockport following a competitive tender proposal.

Nexperia required the data centre to be located closer to its IT departments, offices and operations and, to be equipped with the latest technology to replace legacy equipment.

Sudlows worked closely with Nexperia's site facilities team and developed the space planning of the room to provide a hot aisle containment pod of IT cabinets. In row coolers were designed, selected and installed to maintain the environmental conditions within the space to provide N+1 topology to suit the 30kW IT load. A computational fluid dynamics (CFD)



simulation of the space was modelled by Sudlows' inhouse CFD team, to ensure that the room conditions and environment were maintained in the event of a failure scenario.

New critical power supplies were installed with independent low voltage switchboards to support the IT equipment. A and B power provides dual supplies to the cabinet power distribution units (PDUs), supported by the N+N uninterruptible power supply (UPS) systems and associated electrical distribution. In addition to the critical supplies, a general power supply was installed to support the mechanical, small power and lighting services, this being supported by the site's UPS system.

Vertiv supports Green Mountain's OSL2-Hamar project

Vertiv has strengthened its partnership with Green Mountain and is supporting its rapid growth. As part of its expansion plans, Green Mountain has embarked on

its OSL2-Hamar project, which involves the construction of a cutting edge data centre in Hamar, Norway.

The OSL2-Hamar site will be powered by 90MW of renewable hydropower

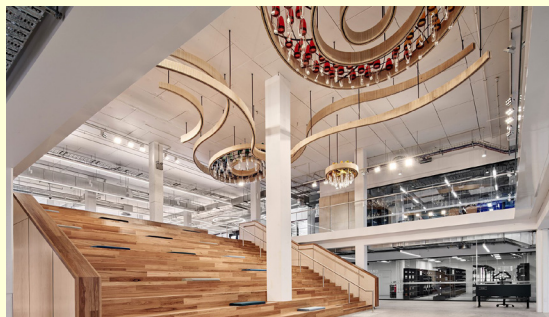


energy, with the potential to scale up to 150MW to accommodate future growth, and will be enabled to provide balancing services to support the grid. Green Mountain has deployed

Vertiv Liebert EXL S1 uninterruptible power supplies (UPS) with advanced battery storage systems, supporting the adoption of on-site hydropower energy and enabling grid balancing services.

Siemon powers the future of learning at Curtin University

Curtin University is a publicly owned institution based in Perth, Australia. The institution's TL Robertson Library, built in 1972, is a state-of-the-



art facility with over two million visitors a year and houses over one million books, journals and other resources. Curtin University committed to a major upgrade of the library, with significant network infrastructure changes, to provide a more digitally innovative and collaborative space for its students and users.

The new infrastructure design incorporated over 5,000 outlets with 150 Siemon consolidation enclosures to provide a flexible and scalable solution.

This also meant an increased number of end devices to be supported and Siemon's Z-Plug supports 10Gb/s system transmission performance, which is ideal for the library's high

speed requirements.

To support the increased bandwidth, Siemon's Z-MAX Category 6A shielded F/UTP cable and connectivity was chosen. It supports data transfer rates of up to 10Gb/s, allowing for improved performance and extended reach. This presented a significant upgrade from the previous Category 5e system and gives the Curtin University team the ability to run power over Ethernet (PoE) throughout the library to run various applications.

PROJECTS & CONTRACTS IN BRIEF

Telehouse has announced a significant build update to its largest existing data centre – Telehouse South. Skanska has been appointed as the contractor to deliver the first phase of the main works, which will include completing two floors of colocation space by June 2024. The facility will see a new highly efficient mechanical, electrical and public health (MEPH) infrastructure implemented, while its overall power capacity will increase to 7.7MW across three floors of colocation space.

STMicroelectronics has selected Lucidworks to upgrade and future proof its on-site search solution.

Equinix and etalytics have expanded their collaboration to implement the artificial intelligence based cooling solution developed by etalytics at the Equinix International Business Exchange (IBX) in Frankfurt to further optimise energy consumption and reduce CO2 emissions.

CMC Networks has partnered with aconnic to bring network function virtualisation (NFV) to service providers across Africa and the Middle East.

All you need to know

Inside_Networks

THE NETWORK INFRASTRUCTURE E-MAGAZINE WWW.INSIDENETWORKS.CO.UK

MEDIA KIT 24

CLICK ON THE COVER TO VIEW THE 2024 MEDIA KIT

Disruptive influence

Chris Coward of BCS explains why ongoing supply chain issues continue to take their toll

▶ Disruption is arguably the technology sector's key tool, as it utilises it to cause significant change in an industry by means of innovation. However, even the technology sector has been unable to shield itself from the ravages of the worst disruptor of recent years – the Covid-19 pandemic. It should, of course, be noted that the industry was also able to take advantage of this disruption by enabling and servicing the rise in home working, resulting in the soaring demand for online communications and collaborative software housed in data centres.

VOLATILITY CONTINUES

The downside impacts that have been felt are largely related to raw material

cost inflation and disruption amongst global supply chains. Indeed, there is little doubt that these supply chains are continuing to suffer ongoing impacts in the post pandemic world, exacerbated by geopolitical factors such as the Russian invasion of Ukraine, which has led to further economic consequences, not least the rise in energy prices and consequent calculative inflationary effects.

It is within this context that BCS sought the views of 3,500 senior European data centre professionals on a variety of supply chain topics. Firstly, there appears to have been little sign of easing on some supply chains, with 86 per cent of respondents stating that they had experienced supply chain volatility over the past year, slightly



down on the same level who reported the same in winter 2022.

DELIVERING THE GOODS

Once again, the professionals responsible for delivering new data centre facilities to the market have been significantly impacted by the volatility in the supply chain. Our survey of developer/investor respondents revealed that some 91 per cent of them confirmed being significantly affected. This figure represents an increase from the 82 per cent reported six months ago and 83 per cent recorded a year ago.

Notably, among our design, engineering and construction (DEC) stakeholders the impact was more pronounced, with 93 per cent expressing their strong agreement, compared to 70 per cent in Q4 2022.

Amongst our service providers, there is still a high level of agreement regarding this disruption, albeit with some marginal easing – 92 per cent stated that they had experienced such supply chain problems, down from 97 per cent reported six months ago.

SOME GOOD NEWS

In this latest survey, there is some welcome evidence that our build stakeholders are seeing alleviation in problems around their ability to source raw materials used for construction, although not across all items. For example, issues in the sourcing of dry lining materials has remained relatively static, reported by around a third of respondents, whilst the

‘Two thirds of respondents stated that the supply chain will significantly impact their decisions on future data centre locations.’

sourcing of cladding has evidently become slightly more problematic, rising from 31 per cent to 34 per cent of respondents reporting issues.

However, over the past six months, our respondents have reported an easing of the difficulties in getting hold of other key materials. These include steel, where the proportion reporting problems has fallen to 33 per cent from 42 per cent, and for cement and concrete, down to 27 per cent from 38 per cent.

BUT OTHER COSTS ARE RISING...

Despite this, there is evidence of an inflationary impact on build professionals, with a rise in associated costs most notable amongst transportation costs as well as construction labour costs. In the case of both, some 80 per cent of respondents reported a rise on that cited six months ago. Amongst our developer stakeholders



Ongoing disruptions in the supply decision making process regarding

around 95 per cent have reported experiencing rising costs across all three of these metrics – a rise on the 90 per cent specifying the same six months ago.

Among all our participants, the acquisition of cooling units and uninterruptible power supply (UPS) hardware has proven to be the most challenging. Regarding the former, approximately 57 per cent of participants acknowledged experiencing difficulties in securing this equipment over the past year, while 50 per cent stated the same challenges with UPS acquisitions.

Furthermore, two fifths of the participants encountered similar issues with sourcing power distribution units and related components, and an additional third cited difficulties in obtaining switchgear. Just over a quarter of the respondents found it difficult to source lithium-ion batteries and generators.

IMPACT ON THE FUTURE

In this survey, two thirds of respondents stated that ongoing disruptions in the supply chain will significantly impact their decision making process regarding future data centre locations. This represents an increase from the 54 per cent recorded in our winter 2022 survey.

Our DEC respondents remain one of the most fervent in agreement, with some 85 per cent expressing their agreement, albeit a decline from 92 per cent recorded six months ago. In contrast, service providers appear more concerned than previously with 65 per cent in agreement, up from the 54 per cent previously recorded. Indeed, our integrator participants are now the most heavily in agreement – some 88 per cent agreed.

CHANGING SUPPLY CHAIN

Most companies have embraced the post pandemic world by prioritising the agility and resilience of their supply chains. Amongst respondents, around 60 per cent have now looked to source from local or national suppliers, potentially avoiding inflated global transport costs, as well as shortening lead in times.

Around 45 per cent have expanded their list of suppliers to give greater breadth of options and a similar number have increased order sizes, allowing them to carry stock or gain efficiencies from bulk buying. Around one quarter of participants have actively changed their supplier or





64

suppliers over the past year in response to disruption.

Amongst our professional groups, just over half of our DEC respondents increased their size of orders to ensure they have access to materials they require, whilst 47 per cent of end users and 66 per cent of colocation providers looked to increasingly source from local or national suppliers. Whatever the chosen route, the desired conclusion is the creation of a stronger, more diversified supply chain with greater potential for risk mitigation.

CLOSE EXAMINATION

The continuing challenges within the supply chain have pushed data centre designers and builders to carefully examine existing supply routes, identifying potential weak points and implementing measures to mitigate associated risks. This may include consideration around location, as well as a significant change in the way they manage their supply chains. ■



CHRIS COWARD

Chris Coward is director of project management at BCS. His career includes roles across the UK and mainland Europe, predominantly working for leading wholesale data centre providers. The projects he has worked on involved complex new build data centre campuses, high performance computing, IT migration, mechanical and electrical upgrades, diesel generator installations and white space fitouts.

WE HOPE YOU HAVE ENJOYED

Inside_Networks

COMING UP IN FEBRUARY 24'S ISSUE:

SPECIAL FEATURES:

- > COPPER CABLING SYSTEMS
- > COLOCATION DATA CENTRES

TO FIND OUT MORE ABOUT PROMOTION
WITHIN THESE FEATURES [CLICK HERE](#)

- > ALL THE LATEST NEWS, VIEWS, COMMENT AND ANALYSIS
 - > WHAT IMPLICATIONS WILL THE ENERGY EFFICIENCY DIRECTIVE HAVE FOR THE DATA CENTRE SECTOR?
 - > THE KEY CONSIDERATIONS WHEN INSTALLING COPPER CABLING PRODUCTS IN EXTERNAL APPLICATIONS
 - > WHY AN OPTIMISED HPC INFRASTRUCTURE IS MISSION CRITICAL FOR TRANSFORMING MODERN AI DRIVEN BUSINESSES
 - > WHAT'S IT LIKE TO BE AN APPRENTICE?
 - > WHY NAVIGATING SUSTAINABILITY AND DEMAND IS THE KEY TO ADDRESSING DATA CENTRE CHALLENGES
 - > HOW AI IS BEING USED TO DRIVE SUSTAINABLE DATA CENTRE INFRASTRUCTURE
- > MOVES, ADDS AND CHANGES IN THE CHANNEL
 - > NETWORK INFRASTRUCTURE CASE STUDIES FROM AROUND THE WORLD
 - > THE LATEST PRODUCT, SYSTEM AND SERVICE DEVELOPMENTS

FOR A FREE SUBSCRIPTION
[CLICK HERE](#)