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Demand for data centres is higher than ever and even the supply chain issues, material shortages and costs currently affecting their construction will not hinder the sector in the long-term. However, perhaps a bigger concern is the ongoing skills shortage. According to the Uptime Institute, by 2025 the staff requirements in data centres across the world will reach 2.3 million – this means finding an additional 300,000 staff by the same year.

To compound the issue, there are a lot of data centre engineers coming to the end of their careers. In fact, a 2021 study by Bisnow found that nearly half of the US data centre workforce is nearing retirement age. This means that there a talent void that needs to be filled quickly.

During my recent interview with Darren Watkins of Virtus Data Centres, he summed up the frustration of many when he said, 'Take the role of a data centre manager – it is challenging and rewarding, compensation is competitive, career prospects are appealing and no two days are the same. Sounds compelling, right? But have you ever heard anyone say that they really want to work in the data centre industry?'

Well you're not alone Darren and in this issue we take an in depth look at training and skills development, with two excellent articles. First up, Adam Nethersole of Kao Data examines why education and awareness are vital to solve the data centre skills shortage. He's followed by our old friend Andrew Stevens of CNet Training, who makes his case for changing the word apprenticeship to careership, which he claims better reflects the opportunities on offer. It's an interesting idea and I'd like to hear your thoughts on it.

This issue also contains a special feature on fibre optic cabling standards, while Question Time asks a panel of industry experts to explain the common issues that can prevent a UPS working to its full capability and what to do to mitigate them. With the very real possibility of energy blackouts in the near future, they provide some excellent advice.

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

Rob Shepherd
Editor

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Data centre sector remains buoyant despite recent global events

Concerns around recent global events and the subsequent inflationary pressure on power, materials and labour costs are not, as yet, adversely affecting growth in the data centre sector, which continues to remain buoyant. This is according to the latest independent industry survey from BCS, which captured the views of over 3,000 senior data centre professionals across Europe.


Janes Hart

'The European economic outlook remains surrounded by an exceptional degree of uncertainty, as Russia's war of aggression against Ukraine continues and the potential for further economic disruption is far from exhausted,' said James Hart, CEO at BCS. 'Yet, against this backdrop, our respondents are confident, with a 100 per cent agreement, that demand will either grow or remain the same in the coming 12 months.'

However, 85 per cent of respondents stated that they expect to have to raise prices to cover costs. This is in part due to adverse developments in the gas market, the risk of shortages and the impact on energy costs, especially in the winter of 2023-24. In addition, 82 per cent of respondents agreed that the current pressures will increase the demand for power efficient data space over the next three years, which represents a significant uplift on the two thirds that expressed this same opinion 12 months ago.

Businesses need to nurture their IT talent

Organisations looking to build out their IT teams need to look internally, according to research from Espria. Its study of 5,000 UK workers identified that the lack of digital skills is hurting the economy in general – and businesses in particular.


Clinton Groome

The report found that around 22 per cent of employees admitted a lack of digital skills was impacting their ability to hit targets and 58 per cent said they had received no digital training from their employers. Clinton Groome, chief operating officer at Espria, stated, 'The goal must be that all businesses need to nurture their homegrown talent. IT staff need to be allowed a healthy work/life balance and feel supported in managing external stress factors. For a business to retain its key employees, they really need to demonstrate they value them.'

CNet Training listed on the Register of Apprenticeship Training Providers (RoATP)

CNet Training is now officially an Apprenticeship Main Provider, approved to fully deliver apprenticeships. The Education and Skills Funding Agency (EFSA) gave the approval for the company to be listed on the RoATP, the go-to place for employers when selecting high quality apprenticeship training and education companies.

Initially, CNet Training will deliver the Network Cable Installer (NCI) Apprenticeship, a 12-15 month program that is creating the next generation of competent, confident and qualified network cable installation professionals. Since the NCI Apprenticeship launched in 2019, CNet Training has been delivering much of the off the job training elements, however, being an Apprenticeship Main Provider allows it to take full responsibility for end to end management and delivery.


Andrew Stevens

Andrew Stevens, CNet Training's president and CEO, commented, 'This accolade further strengthens our position in technical education and the provision of apprenticeship programs for the digital infrastructure industry. With our existing experience of the NCI Apprenticeship and our relationships with network infrastructure companies, we are well versed in the required processes and quality standards needed.'

More than half of organisations have experienced an insider threat in the past year

Gurucul's annual 2023 Insider Threat Report has found that insider threats are a top concern at organisations of all kinds, with only three per cent of respondents surveyed not concerned with insider risk. With responses from more than 325 cybersecurity professionals, the report found that organisations have never felt more vulnerable, with three quarters of respondents saying they feel moderately to extremely vulnerable to insider threats.

This rise in perceived vulnerability coincides with a significant increase in insider attacks. 74 per cent of organisations report that attacks have become more frequent, with 60 per cent experiencing at least one attack and 25 per cent experiencing more than six attacks.

'While this report shows that 86 per cent are using some sort of solution to monitor user behaviour in some way, it was surprising to see that access logging was the primary method, and that only 25 per cent are using automated tools to monitor user behaviour 24x7,' said Saryu Nayyar, Gurucul's chief executive officer. There is a need for better tools and processes to analyse data behaviour, user behaviour, access and movement across a network both internally and externally to detect and prevent insider attacks.'


Saryu Nayyar

Edge computing is key for the rapid adoption of Industry 4.0

The global internet of things (IoT) market is anticipated to surpass $1tr in 2024 in revenue, and enterprise IoT could account for over 70 per cent of the market share. Against this backdrop, edge computing holds a promise to dramatically improve data processing for mission critical applications and accelerate the adoption of Industry 4.0, according to GlobalData.


Kiran Raj

Kiran Raj, practice head of disruptive tech at GlobalData, commented, 'Edge computing technology is the missing link of IoT, as it processes data at the network edge instead of sending it back to the cloud or a data centre. It therefore reduces the latency issue for businesses related to their internet and networking infrastructure, which is impacted by the growing number of devices and data.'

76 per cent of business leaders don't believe their peers' ESG reporting

Most business leaders (76 per cent) doubt their peers' environmental, social and governance (ESG) reporting, according to Inmarsat. Its research sought the views of over 1,000 senior technology and ESG decision makers about their perceptions on ESG and whether they believed data provided by the internet of things (IoT) solutions could help improve reporting transparency.

Despite scepticism about the motivations of their peers, most business leaders have faith in their own initiatives, with 81 per cent convinced their company is more sustainable than their competitors. The results suggest that a lack of verifiable hard data – and the willingness to share it – is undermining trust and slowing progress on business sustainability. Many believe data collected via IoT solutions is critical to building trust (81 per cent) and improving ESG outcomes overall (82 per cent).


Jat Branch

Four in five respondents plan to increase their use of IoT solutions over the next 12 months to measure and understand the impact of their sustainability initiatives more accurately. 78 per cent reported they are already seeing return on investment from IoT tools used to improve sustainability.

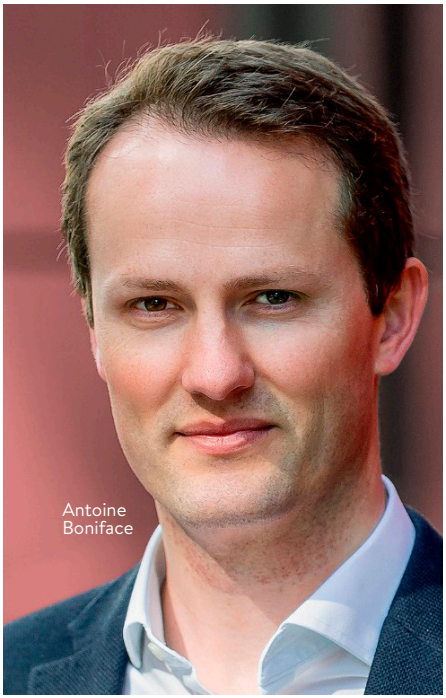
'Businesses must overcome their reluctance to share useful data and have the confidence to publish meaningful insights,' said Jat Brainch, chief commercial and product officer at Inmarsat. 'Otherwise, they risk undermining genuine collaboration on sustainability and overshadowing the real progress being made. There is no quick fix, but creating methodical benchmarks based on actionable data, and sharing the results, will play a critical role in re-establishing trustworthy ESG reporting.'

Vantage Data Centers enters the London market with £500m investment

Vantage Data Centers has announced its entrance into London with the development of a 48MW £500m campus. In addition, the company has opened a second 40MW data centre on its existing Cardiff campus.

Situated on nearly five acres in the PowerGate neighbourhood of North Acton, an established data centre community in the northwest part of the city, Vantage's London campus will total 40,000m² across two 24MW multi-story data centres. The first facility will open its doors to hyperscale customers and cloud providers in late 2024.

'Vantage has experienced rapid growth over the past three years as we continue developing state-of-the-art data centre campuses across EMEA,' said Antoine Boniface, president EMEA at Vantage Data Centers. 'With London being one of the largest data centre markets in the world, this expansion further solidifies our role at the forefront of the digital infrastructure revolution.'


Antoine Boniface

NEWS IN BRIEF

Rolf Werner has joined Nokia as senior vice president of its European region, reporting directly to chief customer experience officer, Ricky Corker.

Ed Almond has been announced as the new chief executive and secretary of the Institution of Engineering and Technology (IET). He has worked at the IET for 21 years, having held the position of director of finance since 2006.

Research from Hornetsecurity found that 33 per cent of companies are not providing any cybersecurity awareness training to users who work remotely. It also revealed that 74 per cent of remote staff have access to critical data, which is creating more risk for companies in the new hybrid working world.

Lenovo has announced its goal to reach net zero greenhouse gas (GHG) emissions by 2050, validated and approved by the Science Based Targets initiative (SBTi).

Juniper Research claims that 5G internet of things (IoT) connections will reach 116 million globally by 2026; rising from just 17 million in 2023. It predicts that the healthcare sector and smart city services will drive this 1,100 per cent growth over the next three years.

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R&M

Not all liquid is water w

Hi Rob

Water usage is becoming a controversial topic, as many regions are starting to face regular drought conditions. Public pressure is being put on data centre owners to reduce their water usage and we saw that first-hand this summer when Thames Water announced it was going to launch a review of the impact of data centres on water supplies in and around London.

What has become obvious to me as a result of these discussions is that greater clarity is needed on how and why data centres use water in their facilities. Water has always been a part of the cooling infrastructure, whether it is circulating in the technical space underfloor and through air handlers or via a chilled water loop cooling the air moving around the room. Data centre operators should rightly be scrutinised for the type of water being used – non-potable versus potable – as well as the quantity, given that many data centre operators do not report on their water usage.

Air cooling has long been the default standard within the industry, but its limits are quickly being reached. Accelerating chip thermal design power, as well as the rise of artificial intelligence, high performance computing and machine learning, are all pushing air cooling beyond its limitations.

This is where liquid cooling technologies come in. Precision immersion liquid cooling circulates small volumes of a harmless dielectric compound across the surface of the server, removing almost 100 per cent of the heat generated by electronic components. This technology can significantly reduce or eliminate water usage from the cooling system design. Because they use warm water (up to 45°C) in a closed secondary loop for heat rejection, simple dry coolers can be used in most climates to reject the heat.

One of the challenges in the discussion about water usage within the industry is that the terms water cooling and liquid cooling become interchangeable, but they are not. After all, water is liquid, but not all liquid is water.

Even the study that triggered discussions about data centre water usage this summer conflated the two terms. The lead analyst on the report from GlobalData was quoted as saying, 'We have reached an environmental crunch point in the resources needed to run data centres. Switching to liquid cooling can cut a data centre's electricity usage, but water is an increasingly scarce resource in drought stricken parts of Europe and the US.' While the two halves of this statement are independently true, the implication leaves one to believe that all liquid cooling is water

hen it comes to cooling

cooling.

Thankfully, when it comes to water usage, the industry is taking steps to remedy the problem. The Climate Neutral Data Centre Pact has set a limit of 0.4l of water per kW/h of compute power deployed to ensure its members will rate among the most efficient globally for their use of water. Last year, Google announced it will replenish 120 per cent of the water it consumes across its offices and data centres by 2030.

These are all positive steps in the right direction. Combined with solutions like liquid cooling that can be implemented now, the industry is looking to play its part the next time there is a major drought.

Stuart Crump
Iceotope

Editor's comment

There's no doubt that data centre water usage is placing itself firmly on the radars of governments around the world. Stuart is absolutely right to point out that there needs to be great clarity from the sector itself about why, and how, data centres use water and what can be done to limit the amount consumed.

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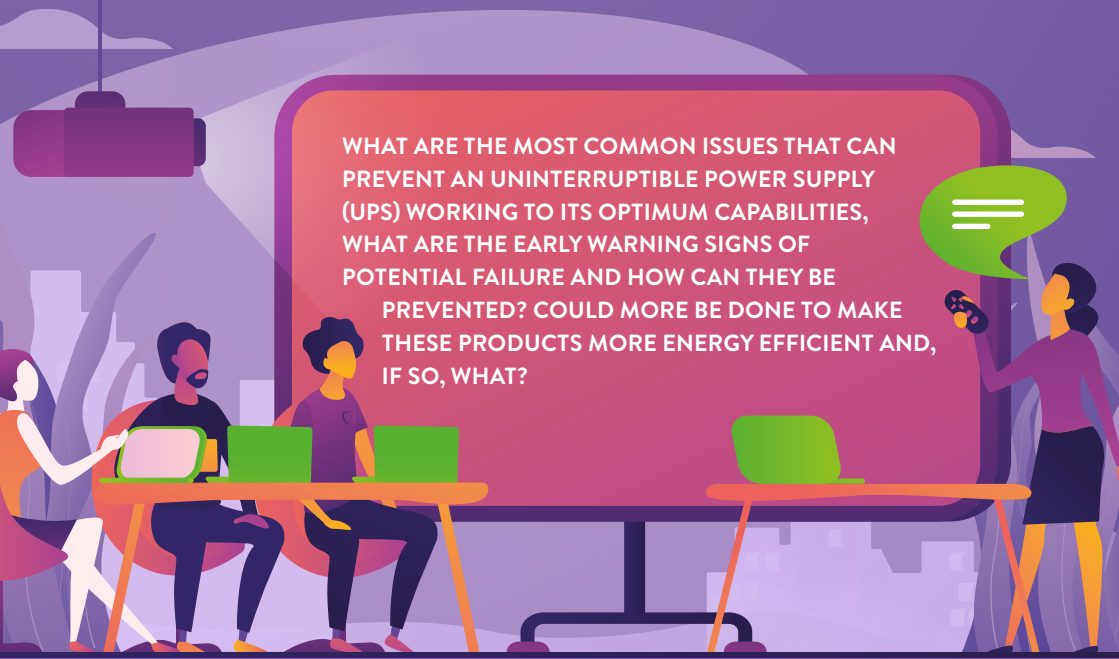
Balance of power

With the very real possibility of energy blackouts in the near future, having a reliable uninterruptible power supply (UPS) in place is vital. Inside_Networks has assembled a panel of industry experts to explain the common issues that can prevent a UPS working to its full capability and what to do to mitigate them

Against a backdrop of ongoing uncertainty in the energy market, data centre owners, managers and users are bracing themselves for interruptions to their power supplies over the next few months. The data centre sector has been warned that it may be necessary to initiate planned, loadshedding schemes, meaning that some customers could be without power for predefined periods.

There are many strategies and technologies that can help alleviate at least some of this potential scenario. While many will have back-up power generators that can supply electrical power in the case of events such as this, a UPS will play a vital role in ensuring operational reliability by providing battery back-up for IT equipment until such time as mains power is restored, or emergency generators are brought online.

Resilience becomes more of an issue as energy supplies become unstable, so the health, efficiency, reliability and the cost of a UPS will become of greater importance. To explain the issues that can prevent a UPS working as efficiently as possible, Inside_Networks has assembled a panel of experts to identify the early warning signs and suggest how they can be prevented.



WHAT ARE THE MOST COMMON ISSUES THAT CAN PREVENT AN UNINTERRUPTIBLE POWER SUPPLY (UPS) WORKING TO ITS OPTIMUM CAPABILITIES, WHAT ARE THE EARLY WARNING SIGNS OF POTENTIAL FAILURE AND HOW CAN THEY BE PREVENTED? COULD MORE BE DONE TO MAKE THESE PRODUCTS MORE ENERGY EFFICIENT AND, IF SO, WHAT?

STEVEN BROWN

SEGMENT DIRECTOR C&SP AT SCHNEIDER ELECTRIC

Readiness, the essential feature of a UPS, can only be maintained by vigilance. Any vital electrical installation must be confident that its UPS will react flawlessly in the event of mains power disruption.

Although batteries are typically rated for several years of useful life, factors such as environmental conditions can affect longevity. Temperatures higher than a battery's stated optimal operating temperature range will shorten its life, while temperatures that fluctuate markedly between hot and cold will also make the lifetime of a battery unpredictable. Temperature control can improve a UPS's potential lifetime.

By extension, check the health of components, such as fans, that control temperature. Their lifetime depends on how frequently they are brought into use, and at what speeds, while load variations will affect fan performance. Also, fans in a double conversion UPS will operate more frequently than in single conversion layouts, so inspections must therefore take this into account.

Capacitors, which are essential components that smooth out voltage fluctuations in a UPS, have typical life expectancies of 5-7 years, but multiple capacitors working in tandem – a typical arrangement – can make it difficult to determine when one starts to degrade, as the others may simply take over the load. Capacitors nearing end of life deserve close scrutiny and perhaps thermal scanning to identify any issues.

The growing prevalence of built-in sensors and monitoring software, such as data centre infrastructure management (DCIM) systems, offer persistent oversight from a central monitoring console in place of regular manual inspection. Additional support using machine learning and artificial intelligence technology can produce deeper insights into the health of a UPS, yielding more timely intervention as issues develop.

Efficiency can be improved by proper load matching, ensuring that excess UPS capacity is not wasted, nor resources strained beyond recommendation. Also, UPS batteries – especially lithium-ion varieties – are increasingly being used in energy saving techniques such as peak load shaving and microgrids, which greatly increase the number of charge/discharge cycles. This, in turn, affects battery longevity. Greater overall efficiency can be achieved at the expense of constant monitoring, which is best achieved by appropriate DCIM software.

'TEMPERATURES HIGHER THAN A BATTERY'S STATED OPTIMAL OPERATING TEMPERATURE RANGE WILL SHORTEN ITS LIFE, WHILE TEMPERATURES THAT FLUCTUATE MARKEDLY BETWEEN HOT AND COLD WILL ALSO MAKE THE LIFETIME OF A BATTERY UNPREDICTABLE.'

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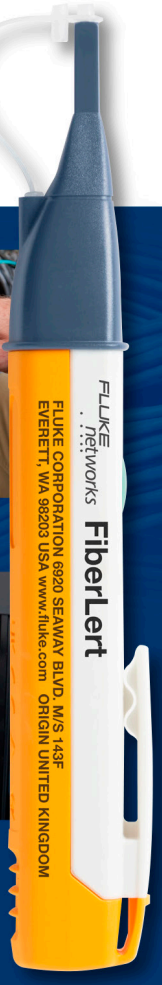

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LOUIS MCGARRY

SALES & MARKETING DIRECTOR AT CENTIEL

The two most common issues with UPS are generally battery and capacitor failure. This is because batteries and capacitors require regular preventative maintenance checks and have a recommended age for replacement. If capacitors are not replaced within the recommended timeframe, it can lead to substantial component failure.

Similarly, valve regulated lead acid (VRLA) batteries usually have a five or 10 year design life. However, in reality this can be a lot less even if they are maintained properly. Trained maintenance staff will look out for any signs of corrosion, swelling of the blocks and any indication of leaking or other damage. However, they can't see inside a battery with just a visual inspection. Impedance testing every six months can identify if any batteries are starting to degrade.

When it comes to UPS efficiency, there are a variety of culprits burning electricity. For example, the load itself and environmental controls such as air conditioning. However, how systems are managed can have a significant impact on reducing electricity usage.

Right sizing and timely replacement of legacy systems will reduce power consumption. However, the most substantial energy savings can often be made by addressing losses from associated infrastructure. For example, a UPS can continue to run optimally at temperatures of up to 40°C without derating. VRLA batteries, on the other hand, need to be kept at around 20°C to maintain optimal functionality. Put simply, locating batteries away from any heat source in their own dedicated environment will result in a reduction in cooling requirements, or may allow you to remove cooling completely.

Removing transformers is another option, as they burn incredible amounts of energy. In the past, transformers were seen as essential to cope with the loss of neutrals – the reference point to stabilise voltage. However, modern UPS don't need transformers to maintain a clean continuous supply of power. The removal of transformers means losses can be significantly reduced and, on consultation and advice of an experienced team, it could be the single most effective way to make an existing UPS and its associated infrastructure more efficient.

'THE REMOVAL OF TRANSFORMERS MEANS LOSSES CAN BE SIGNIFICANTLY REDUCED AND, ON CONSULTATION AND ADVICE OF AN EXPERIENCED TEAM, IT COULD BE THE SINGLE MOST EFFECTIVE WAY TO MAKE AN EXISTING UPS AND ITS ASSOCIATED INFRASTRUCTURE MORE EFFICIENT.'

JON BARKER

TECHNICAL MANAGER EUROPE AT CHATSWORTH PRODUCTS

With rack densities rising to an average of 8-10kW, power distribution into the rack will require a more robust power distribution unit (PDU). Monitoring is critical. You may distribute three phase power to racks to reduce the number of PDUs needed to power equipment. Load balancing also becomes important and extending monitoring closer to equipment will provide more precise data on power demands at either the rack or device level.

Outside of primary data centres, there is a growing need to place more compute at enterprise sites. As sensor cost comes down, the use of internet of things (IoT) enabled devices to capture data to improve operations is increasing.

Enterprises will need to evaluate if they will send local data to the cloud or process it locally. In many instances, the cost of processing data locally makes sense, creating the need to place compute back into enterprise sites. Here, a rackmount UPS is ideal and new battery technologies like lithium-ion may be a good choice. Although more expensive than traditional valve regulated lead acid (VRLA) solutions, lithium-ion batteries will often provide longer battery power life, recharge faster and need less maintenance.

Likewise, at the enterprise level there are three complementary technologies that will impact UPS selection – Wi-Fi 6, 5G and 60W/100W power over Ethernet (PoE).

Both Wi-Fi 6 and 5G radios require higher power, as will future generations, which drives continual upgrades in PoE. These PoE upgrades require review of the UPS to ensure battery power for critical systems in the event of a power outage. Furthermore, now that 60W PoE is standards based, there are an increasing number of end devices that can be powered over Ethernet including building systems for lights and displays.

Finally, the racks that hold the IT equipment that enable these technologies are often an afterthought. But as rack densities continue to rise, so are the loads within the racks. That means the combined weight of equipment and UPS is increasing. As a result, new rack designs are increasing load capacities to well above 1000kg per rack. And along with rack density, the weight of equipment is also increasing with the average 2U, four socket server weighing around 36kg and the average 2U UPS weighing around 60kg.

> ‘AT THE ENTERPRISE LEVEL THERE ARE THREE COMPLEMENTARY TECHNOLOGIES THAT WILL IMPACT UPS SELECTION – WI-FI 6, 5G AND 60W/100W POE.’

GIOVANNI ZANEI

SENIOR DIRECTOR AC POWER GLOBAL OFFERING BUSINESS LEADER AT VERTIV

Like any piece of equipment, a UPS requires regular maintenance to ensure it is operating at its best, as neglecting upkeep can lead to issues and faults. The environmental conditions in which the UPS will be operating are an important consideration – for example, protecting equipment from extreme temperatures, humidity, dust and other factors that can affect performance.

Lifecycle management, complemented by data collection and analytics, enables the condition of equipment and its components to be closely tracked, and alerts businesses about elements that need to be improved, fixed or replaced. Battery health is vital because if the battery is not in good condition, not only might it be unable to provide sufficient power to keep equipment running, it could also cause problems with the UPS itself.

Today, diagnostic capabilities within UPS systems are improving significantly, allowing businesses to spot potential malfunctions early – from system issues to problems with individual components. The latest innovations are making equipment even more efficient and durable, and control systems have evolved to enable a UPS to move between modes of operation quickly – saving energy and increasing efficiency. Insulated gate bipolar transistor (IGBT) power components have also improved in new UPS systems, with features providing greater power monitoring and control.

However, many businesses don't fully utilise the new features of UPS systems – perhaps due to not fully understanding how they work or what they can deliver. This needs to change in order to achieve optimum performance for the long-term.

It's important to choose the right UPS for your business needs and configure it with a comprehensive understanding of power requirements. This will enable equipment to be properly protected and run optimally to achieve maximum efficiency. Ultimately, achieving optimum performance and managing the lifecycle of a UPS involves taking a holistic approach to managing the UPS from initial purchase and commissioning, through regular maintenance and monitoring, to eventual decommissioning and responsible disposal.

'LIFECYCLE MANAGEMENT, COMPLEMENTED BY DATA COLLECTION AND ANALYTICS, ENABLES THE CONDITION OF EQUIPMENT AND ITS COMPONENTS TO BE CLOSELY TRACKED, AND ALERTS BUSINESSES ABOUT ELEMENTS THAT NEED TO BE IMPROVED, FIXED OR REPLACED.'

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MICHAEL AKINLA

BUSINESS MANAGER NORTHERN EUROPE AT PANDUIT

UPS are key components in any environment where continuous electrical power to IT equipment is mission critical. The Uptime Institute's 2022 analysis stated that 43 per cent of significant data centre outages were power related, and the single biggest cause is the UPS.

As the massive increase in digital infrastructure demonstrates, when the power goes off unexpectedly and the back-up processes fail, the result can be catastrophic in business terms. Understanding an organisation's IT equipment requirements and key UPS product variables will help implement optimised processes.

Those minutes between mains power failure and back-up generators coming online are mission critical and the UPS is the bridge to operational continuity. However, UPS have common problems, which are a good place to start in defining processes to eliminate them, including battery failure, capacitor issues, fan breakdowns, ageing power supplies and connection failure.

UPS are not a fit and forget purchase. Regular maintenance routines are essential and should be supported by onboard diagnostics and connected device management software such as smart cloud solutions, which analyse and report early signs of inconsistencies. Furthermore, the IT equipment being supported, customers' risk tolerance and application resilience will dictate the capabilities when choosing UPS.

Modular UPS components are popular, especially when combining new and legacy UPS products in an environment that is upgrading to higher power rated IT equipment racks. The modular capability allows for the additional UPS kVA to match the upgraded rack kW, helping to reduce overall costs and improve the solution's energy efficiency.

Extending battery life is essential. Utilising the three stage charging method matches the most optimum power curve, together with temperature compensation using advanced algorithms to extend battery life. With that in mind another key factor in the process is the UPS unity power factor. The latest UPS have a unity power factor of 1, however, earlier devices may have a unity power factor <1.0 and this could seriously impact the critical load supported when the lights go out.

As UPS technology advances, more battery management and safety features are being implemented. This generates more granular data on battery and component health and connectivity capability, providing important operational data to technicians and customers.

'UPS SOLUTIONS ARE NOT A FIT AND FORGET PURCHASE. REGULAR MAINTENANCE ROUTINES ARE ESSENTIAL AND SHOULD BE SUPPORTED BY ONBOARD DIAGNOSTICS AND CONNECTED DEVICE MANAGEMENT SOFTWARE, WHICH ANALYSE AND REPORT EARLY SIGNS OF INCONSISTENCIES.'

CARL MCCAMMON

MANAGING DIRECTOR AT SALICRU UK

UPS are fundamental for power continuity to support critical applications. Whilst there are specific ways to protect some UPS components, the easiest way to prevent common issues overall is routine maintenance of your equipment by trained professionals.

Regular maintenance support is essential for reporting and the general maintenance of the equipment, but upgrading monitoring hardware and reporting software can actually provide the data to improve overall power management.

One of the most common issues I see with failures relates to where the UPS is located and the environment it is in. Many organisations don't consider temperature, humidity, dust or water ingress, to name a few. Data centres aside, these factors are regularly overlooked and this, in turn, tends to decrease the overall lifespan of the equipment and the components. A few warning signs of a poor environment can be high levels of dust on the equipment and a lack of space around the UPS, which is required for maintenance and effective temperature regulation.

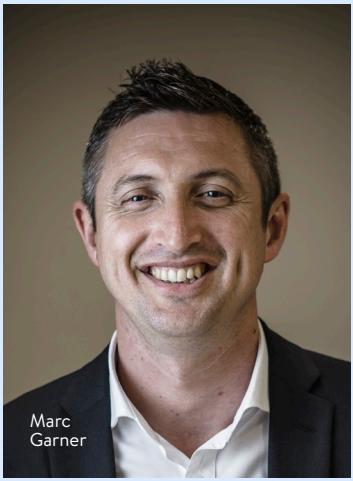
Batteries are normally the first point of failure within a UPS and it's not always clear to everyone that batteries have lifecycles. They are a consumable item and must be replaced in line with professional recommendations. Upgrading internal batteries to 10 year design life and investing in battery monitoring software can manage these risks and increase the lifespan of the batteries. Regulating the temperature within the operating environment can also be effective.

Another common issue is incorrectly sizing the UPS. The decision is often made based on the incoming supply or focused around replacing the existing infrastructure like for like – this can be costly and inefficient. Correctly sizing a UPS will improve efficiency and lower running costs. Older UPS models are generally not as efficient as newer models and can be considerably more expensive to run. So, investing in a new UPS is another way to increase efficiency, reduce energy usage and lower operational expenditure.

Choosing the correct product, managing the operating environment and ensuring you have a maintenance plan will assist with proactive power management to help improve overall efficiency, whilst reducing costs.

'CORRECTLY SIZING A UPS WILL IMPROVE EFFICIENCY AND LOWER RUNNING COSTS. OLDER UPS MODELS ARE GENERALLY NOT AS EFFICIENT AS NEWER MODELS AND CAN BE CONSIDERABLY MORE EXPENSIVE TO RUN.'

Schneider Electric appoints Marc Garner as new senior vice president of its Secure Power Division in Europe


Marc Garner

Schneider Electric has appointed Marc Garner as the new regional senior vice president (SVP) of its Secure Power Division in Europe. Garner is a 17 year veteran of Schneider Electric and since first joining its graduate program in 2005 has progressed through several leadership positions within the organisation.

Working with country and zone leaders across Europe, he will help build the sustainable data centres of the future. Further, through his extensive experience and knowledge within the region, as well as his strong sales and customer focused background, he is perfectly placed to help customers in Europe navigate the challenges created by the energy crisis.

'I'm looking forward to working with our customers across the region to fulfil our mission of being their digital partner for sustainability and efficiency,' said Garner. 'I believe that digitalisation and electrification are the key vectors for decarbonisation, and that our company's vision for Electricity 4.0 will be vital to help the data centre sector transition from a consumer to a prosumer.'

Pulsant powers edge and growth strategy with COO appointment


Mark Turner

Pulsant has made a significant move to power its growth strategy with the appointment of Mark Turner as its new chief commercial officer (CCO). In his new role, Turner will lead the sales, commercial and solution consulting teams at Pulsant, spearheading initiatives that accelerate the significant momentum in hybrid cloud and edge computing built up by the company in 2022.

Turner has an outstanding track record in senior management roles across cloud, infrastructure and data centres at Claranet, T-Systems International and MCI. He has led sales and commercial go to market strategies in infrastructure, data centres and cloud – boosting adoption of rapidly evolving technology to help customers maximise digital transformation.

'I'm very excited to be joining Pulsant at a time when UK demand for edge computing, hybrid cloud services and colocation is taking off in a big way,' said Turner. I'm going to collaborate with the many highly talented people at Pulsant to drive growth even further and develop the range of opportunities in a highly dynamic market.'

Giordano Albertazzi becomes Vertiv CEO


Giordano Albertazzi

Giordano Albertazzi has now assumed the role of chief executive officer (CEO) at Vertiv and been appointed to the board of directors. Albertazzi will aim to increase Vertiv's customer focus as it addresses the infrastructure and business needs of the data centre, communication networks and industrial applications.

'I'm looking forward to working closely with our leadership team and employees around the world to continue to increase the value we create for our customers, further strengthen our financial performance and create long-term value for our shareholders,' said Albertazzi. 'As I've shared with Vertiv employees, we will work to achieve our full potential by focusing on building a high performance culture of collaboration and innovation, institutionalising operational excellence and execution, and delivering profitable growth and improved cashflow.'

Excel Networking Solutions creates two new sustainability tools

Excel Networking Solutions has developed two new tools to help customers measure and promote their sustainability savings when they use Excel products. Based upon Excel's 2021 performance, the company estimates that at least 18 million single use plastic bags are removed from the supply chain each year, which equates to 45 tonnes of plastic.


Tracey Calcutt

Tracey Calcutt, marketing manager at Excel Networking Solutions, commented, 'We understand that our customers also have sustainability targets and goals to reach, so allowing them to easily understand how much plastic they have saved, or could save, by choosing Excel is a benefit to them. To this end we have created two tools. Firstly, a plastic free packaging calculator, where they can instantly get an overview of the potential savings in kgs they can make. The second tool provides a certificate to show how much plastic they have saved in any given year. Partners complete a simple request form, and a certificate is then produced for them including their company logo.'

Two senior team members appointed to new roles at Trend Networks

There have been changes within the senior management at Trend Networks. Dan Barrera, formerly global product manager, has been appointed into the newly created role of director of product innovation, while Tim Widdershoven, who was most recently marketing director, has become international sales director.

'Instead of doing what everyone else is doing, we're looking ahead to develop products with the features and functionalities that our customers may not even realise they need yet,' explained Barrera. 'In my new position, I'll have a strong focus on our product roadmap and on finding new ways to meet our customers' requirements, while providing better value.'

Tim Widdershoven is now leading a team of international sales managers, with a goal of growing Trend Networks' business in markets outside of North America and the Germany, Austria and Switzerland (DACH) region. He said, 'I have the benefit of seeing the business from a marketing point of view, and a sales angle, which really helps me understand our customers' perspectives and provide exactly what they need.'


Dan Barrera


Tim Widdershoven

CHANNEL UPDATE IN BRIEF

Aryaka has appointed Jon Selway as vice president of channel sales in Europe, Middle East and Africa (EMEA). In his new role, the 15 year channel veteran will lead the Aryaka Accelerate Global Partner Program across the region.

Aliter Capital has completed its investment in ITM Communications. The current ITM management team – Mike Jackson, Mark Barber and Lynda Ayris – led an management buyout of the business in 2010, and they are remaining with the business following the acquisition. ITM employs 85 employees with robust levels of growth during the last few years.

Eaton has joined forces with BNP Paribas Leasing Solutions to offer a tailored finance solution to help business owners accelerate their energy transition, while preserving cashflow. In an era of elevated energy prices, business owners are increasingly looking to invest in technology that will help them to reduce energy costs and ensure business continuity.

MicroCare has opened a new warehouse and distribution centre in Leeds. The new location will improve service and support of MicroCare distributors and end users throughout Britain, Europe and Africa.

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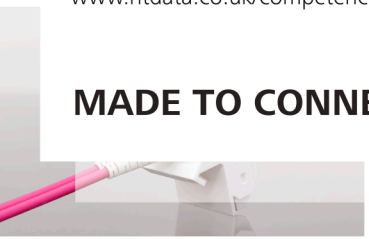
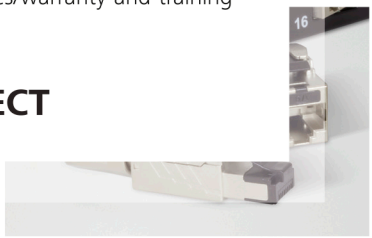
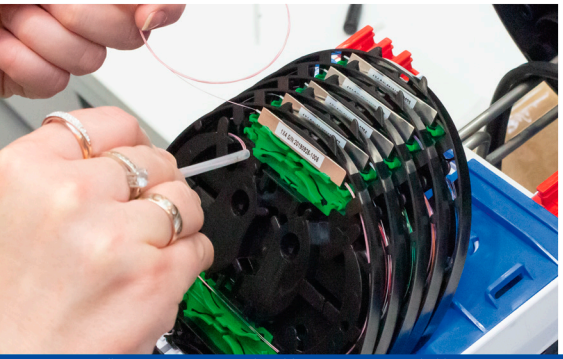
MADE TO CONNECT







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

UK-TRAINING-R11

Look before you leap

R&M's Hermann Christen and Daniel Eigenmann outline the standards issues related to LC and SFP connectors

Originally, the SC connector was used for Gigabit Ethernet installations and as its cost dropped it became more widely used. Today, however, another push-pull type of connector is more widely used – the small form factor (SFF) LC connector. The LC connector has half the dimensions of the SC, making it ideal for high density applications. LC is often used in conjunction with SFP transceivers, however, a lack of clear global standardisation between the two technologies means buyers need to be careful!

SIZE MATTERS

The LC connector is an SFF connector with a highly compact ferrule. This allows LC fibres to be connected and disconnected. The LC was first developed in response to telcos' need for a small, low insertion loss connector. Its small size makes it practical for current equipment, which features large numbers of connections in a limited space. Generally, LC duplex (LCd) cables are employed, as fibre cables are typically used in pairs.

The LC design was standardised in IEC 61754-20 and TIA/EIA-604-10 Fiber Optic Connector Intermateability Standard Type LC for the USA. This is the intermateability standard for simplex, duplex and quadruplex connectors with the commercial designation LC, issued as an addendum to TIA/EIA 604. The intermateability standards define the minimum physical attributes of mating connector components.

GET TOGETHER

LC connectors are often used in conjunction with SFF pluggable transceivers, or SFPs. SFP modules are usually provided

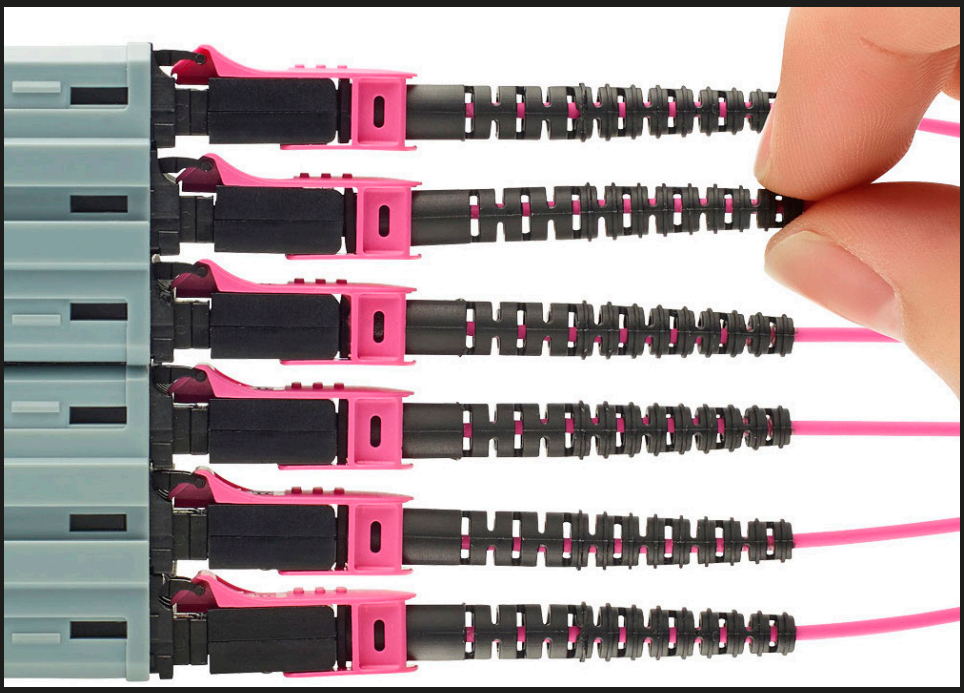
with an LC port and these interfaces are primarily used with network and storage switches. Switch mounted SFP ports and SFP modules make it possible to connect with fibre cables of different types and speeds.

SFPs have become widely adopted owing to their size and wide variety of connection options accommodating copper as well as fibre optics for extensive network compatibility. What's more, SFPs are hot swappable, enabling alteration and expansion of networks without any need for redesigning cabling infrastructure. A faster version of the form factor exists, SFP+, which supports up to 10Gb/s, albeit across shorter distances.

NO FORMAL STANDARD

Compatibility between SFP, LC connectors and network devices is essential for error free operation. However, there are no official standards for SFP transceivers. Instead, a multi-source agreement (MSA) between manufacturers is intended to ensure compatibility between SFP fibre transceivers. The agreement is meant to ensure that SFP or SFP+ devices from any vendor function properly and work together but there's no guarantees when it comes to compatibility between SFP and LC.

In practice, we have discovered that many LCs and SFP connector manufacturers do not adhere to the MSA or global standards



when it comes to dimensions, As a result, they do not perfectly fit into each other, and most existing LCs can't be pulled off the SFP.

LCd connectors for high density applications may have an unplugging issue when connected to LCd SFP transceivers. This problem can occur with any type of transceiver combination. The root cause is the fact that the SFPs are out of standards and if the HD connector is not designed perfectly it might lead to issues.

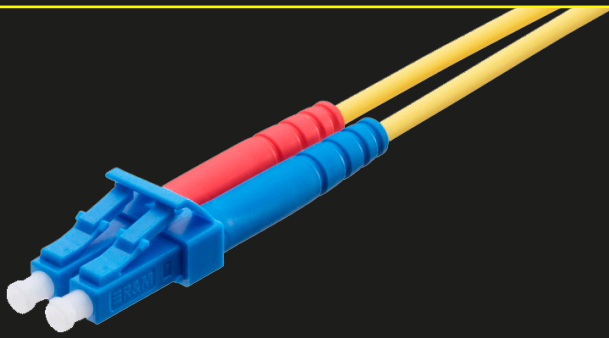
CHECK MATE

When combining LC/LCd and SFP, it is vital to make sure connections can be properly and durably mated and that they are fully compatible with all commercially available LC duplex transceivers. It's also worth ensuring that the shape of the LC connector takes up the smallest possible space and thus supports the maximum possible packing density on patch panels.

Even with the already highly compact SFF standard dimensions of the LCd, it's possible to realise even higher density by, for example, freeing the connector from its conventional retainer and unlocking mechanisms. The gap between the con¬nectors has historically been relatively large in order to accommodate fingertips that needed to reach a small lever. Smart design can avoid this requirement.

GET TO WORK

Ideally, a connectivity solution should work with any standardised SFP transceivers and be combined with conventional LCd adaptors, as well as with quad-, hex- and octo-adaptors. The ability to realise a fast, easy polarisation change without special tools or procedures can also help save time and cost. ■

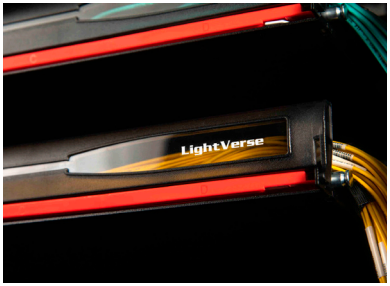


‘Compatibility between SFP, LC connectors and network devices is essential for error free operation. However, there are no official standards for SFP transceivers. Instead, a multi-source agreement (MSA) between manufacturers is intended to ensure compatibility between SFP fibre transceivers.’

HERMANN CHRISTEN
Hermann Christen is market development manager at R&M and has been with the company since 2003. He studied chemical engineering and business administration, and began working in the field of fibre optics in 1989. Christen also has significant experience in marketing and market development.

DANIEL EIGENMANN
Daniel Eigenmann is product manager fibre optic at R&M. He studied mechanical engineering and obtained his first job in the area of fibre optics in 1999. Eigenmann joined R&M in 2005 and his areas of expertise include fibre optic connectivity and cables, and engineering and development.

Siemon



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

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

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

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

Trend Networks

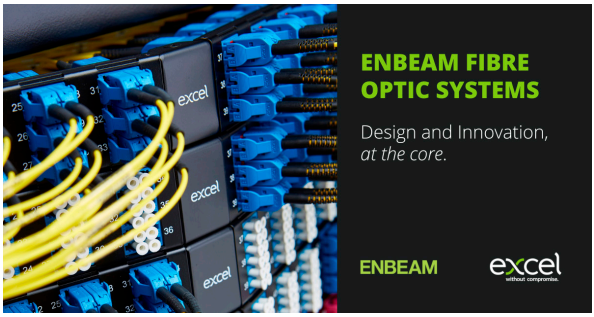
The FiberMASTER optical time domain reflectometer (OTDR) from Trend Networks is a simple, handheld tester for troubleshooting, installing and certifying optical fibre cable. Available in quad, multimode and singlemode models, it is designed for Tier 2 fibre cable certification.

As one of the smallest OTDRs in the world, FiberMASTER is easy to carry and operate, with ruggedised housing to protect your investment. The tester is simple to set-up and use, saving training time and reducing the likelihood of errors.

FiberMASTER features an industry leading dynamic range and small dead zones, enabling users to test longer fibres and passive optical network (PON) systems, and maintain accuracy on high loss fibres. The onboard software also provides a pass/fail report to TIA/ISO/IEC/IEEE requirements. Custom test parameters can also be set for any application.

The compact FiberMASTER OTDR is an essential for accurate test data, yet offers a cost saving of around 50 per cent compared to other premium brands. To find out more **CLICK HERE.**
www.trend-networks.com

Excel Networking Solutions



Excel Networking Solutions offers one of the market's most comprehensive ranges of fibre optic solutions, supplied in plastic free packaging.

The Excel Enbeam range of fibre optic systems delivers high performance, reliability and scalability for large multi-purpose venues, supports high density data centre applications and enhances the cabling infrastructure for a small business. The range is extensive and includes bulk cable, patch cords, adaptors and connectors, pigtails, fibre panels, pre-terminated, FTTx, PON, MTP and high density solutions through to a full range of cleaning products, tools and accessories.

When installed by an accredited Excel Partner, Enbeam fibre products can be covered by a comprehensive 25 year warranty. The full portfolio of Excel's Enbeam fibre products is also available in the dedicated Enbeam Fibre Catalogue.

CLICK HERE for further details or call our sales team on 0800 757565.
www.excel-networking.com

Networks Centre

Networks Centre Group has produced a growth video to showcase its significant expansion over the past three years. The video includes first person view (FPV) drone flythrough footage of the company's new and expanded optical fibre warehouse spaces. As well as the main video, there are also separate videos for the Comms Centre, Networks Centre Scotland and Networks Centre Netherlands operations.

These videos demonstrate that Networks Centre Group has consolidated its position as a leading distributor of fibre optic cables and components for data centre and enterprise networks. The company is also now a leading player in the rapidly expanding FTTX market.

As well as additional warehousing to service FTTX customers, Networks Centre is launching a new website this month – telecomscentre.co.uk. It will help to meet the need for an increasing number of customers who prefer to buy online and create a hub for telecoms products and services.

For all your fibre needs **CLICK HERE** or call 01403 754233.
www.networkscentre.com

Fluke Networks

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

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

Key features:

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

To find out more **CLICK HERE.**
www.flukenetworks.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 call 01376 510337, **CLICK HERE** to send an email or to visit the EDP Europe website **CLICK HERE.**
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4D DUNASFERN
CELEBRATING FOUR DECADES OF NETWORK CABLING SOLUTIONS

Blood, sweat and tie

Dan Barrera of Trend Networks looks at why optical fibre certification is essential to ensure maximum bandwidth throughput

Fibre optic networks transmit data at tremendous rates, more than 1Tb/s, and they depend on cabling to operate at peak performance to make it happen. The primary factors that affect cabling performance are insertion loss (attenuation), reflection and length. To support the demands of modern networks, cabling must be tested to ensure that each of these factors are within allowed specifications.

FIELD WORK

The two primary standards organisations that define the performance requirements for installed optical fibre cabling are the ISO/IEC SC 25 and the ANSI/TIA TR42 engineering committees. The standards published by these organisations define the test procedures and limits that engineers should use when commissioning a network.

Two tiers of testing are used to certify a fibre cabling installation. Tier 1 certification tests the end to end loss and length of an optical link with a power meter and light source, and Tier 2 certification tests the loss of the individual components on an optical link with an optical time domain reflectometer (OTDR).

NUMBER CRUNCHING

Both the ISO/IEC and ANSI/TIA standards have similar limits for allowed cable, connection and splice loss for field certification. The attenuation/loss of the fibre depends on the wavelength of light used for testing and there are different limits for each wavelength. Connections and splices have the same loss limits regardless of fibre type and wavelength.

When testing cabling to these standards the test equipment used should calculate the allowed loss based on the wavelength, fibre length, number of connections and number of splices in the link. This eliminates the need for a field technician to manually calculate a loss budget for each link they test.

NEAR AND FAR

LANs and enterprise data centres typically utilise multimode fibre because of the short distances and lower data rates required. The standards currently allow a maximum fibre attenuation of 3.0dB/km of loss at the 850nm wavelength, and 1.5dB/km of loss at

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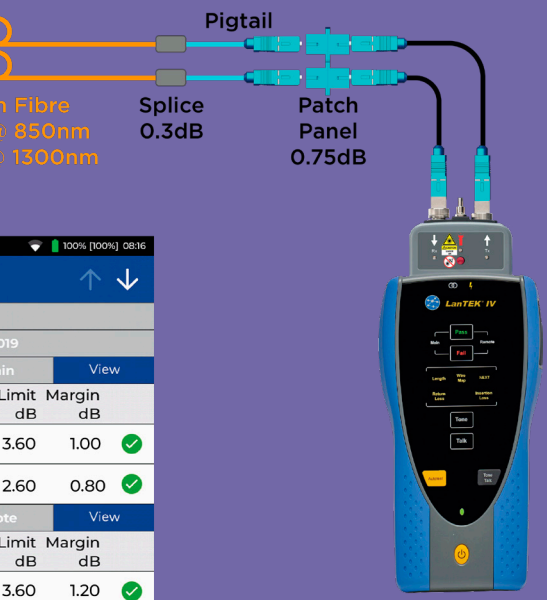


the 1300nm wavelength.

Longer distance networks and large data centres typically utilise singlemode fibre because it supports much longer distances and wavelength division multiplexing, where many data channels can be combined on to one fibre to transmit more than 1Tb/s of data. The maximum attenuation for singlemode fibre is 0.4dB/km at 1310 and 1550nm for outside plant cable, and 1.0dB/km at 1310 and 1550nm for inside plant cable.

Both multimode and singlemode networks allow the same amount of loss for connections and splices. The maximum allowed loss for a connector pair is 0.75dB, and for a splice the allowed loss is 0.30dB. Typically, the loss for a factory terminated connector pair is 0.4dB and for a fusion splice the loss is usually less than 0.2dB.

TIER 1 CERTIFICATION

A Tier 1 field tester is often called an optical loss test set (OLTS) and it tests one pair of fibres at a time. The software of the OLTS lets the user input the number of splices and connections on the link and it will calculate the allowed loss based on the length of the cable measured during the test. The actual loss of the link is compared to the limit and a pass/fail result is presented to the operator.

An example loss limit for a 500m link of multimode fibre, with a pigtail connection spliced at each end connected to a patch, is calculated as follows:

- Cable loss at 850nm = 500m (0.5km) x 3.0dB/km = 1.5dB
- Cable loss at 1300nm = 500m (0.5km) x 1.0dB/km = 0.5dB
- Connector loss = 0.75dB x two connections = 1.5dB
- Splice loss = 0.30dB x two splices = 0.6dB.
- Total loss limit at 850nm = 1.50dB cable + 1.50dB connectors + 0.6dB splices = 3.60dB
- Total loss limit at 1300nm = 0.50dB cable + 1.50dB connectors + 0.6dB splices = 2.60dB

A common tool used to perform Tier 1 fibre certification is a copper cable certifier with a set of fibre optic OLTS heads. In the example above, a LanTEK IV-S with FiberTEK IV test heads will connect to both fibres in a link to perform a loss and length test of both fibres at 850nm and 1300nm. The advantage of using an OLTS certifier is that it first measures the length of the fibre, then calculates the loss limits using the

'Tier 1 certification tests the end to end loss and length of an optical link light source, and Tier 2 certification tests the loss of the individual comp link with an OTDR.'

appropriate standards. The operator needs to input only the number of connections and splices in the link to properly certify the cabling.

APPLICATION BASED TESTING

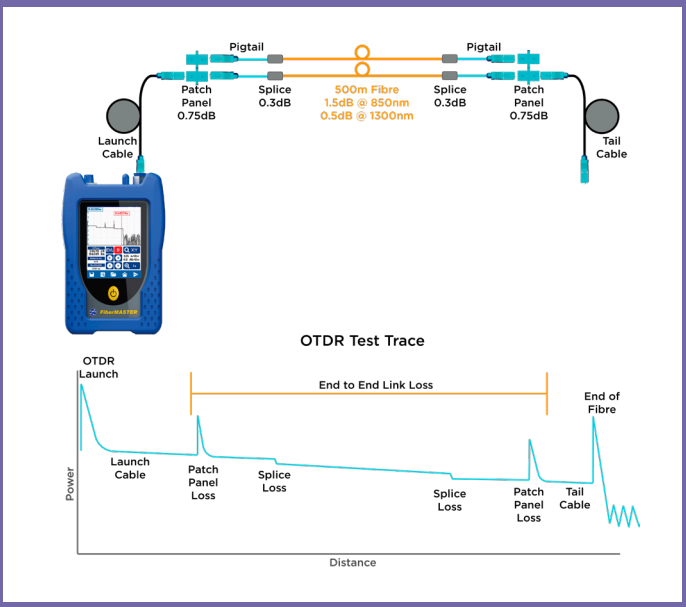
The ISO/IEC and ANSI/TIA standards do take the application or speed of the network into account when determining loss limits. They are worst case limits to support a wide variety of fibre applications and speeds.

If the application is known a different test limit can be selected that will test compare the loss against that specific application. An example is 100Gb-SR4, which is 100Gb/s running on multimode fibre at 850nm. The limit is a maximum of 1.8dB of loss and 70m. Application testing is not Tier 1 certification but it is appropriate for troubleshooting links with high transmission errors, or links that do not come up at all.

TIER 2 CERTIFICATION

Tier 2 certification requires testing the fibre cabling with an OTDR in addition to Tier 1 certification. An OTDR sends pulses of light down the fibre and measures the intensity and time delay of reflections. With this information it can calculate the loss to confirm that each connection, splice and cable segment meets specifications. The result of an OTDR measurement is a graphical trace or a linear schematic diagram of the tested link.

OTDR testing is done using a launch cable that is typically 100m or longer to allow loss measurement of the first connection. An OTDR has a dead zone at its connection that inhibits measurement of the first 5-100 or more metres of fibre depending on the OTDR's configuration.



A tail cable must be used to measure the last connection in the link because loss can be measured across two mated connectors only. If one is troubleshooting a link to locate breaks, kinks or

with a power meter and
ponents on an optical

other damage in the fibre, a tail cable is not required. Just be aware that the loss of the last connector is unknown.

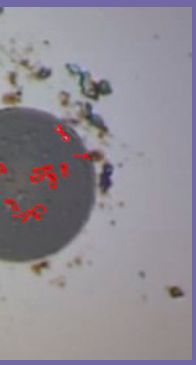
SIGHT LINE

The most common sources of excess loss in fibre links are dirty connectors. An OLTS or OTDR may offer a video inspection probe to check connectors for contamination. Many will also analyse the connector to the IEC 61300-3-35 standard, which provides pass/fail requirements for multimode and singlemode connectors.

The image below is from the LanTEK IV/ FiberTEK IV's video inspection probe, which has analysed and failed the connector, and marked the defects on the core and cladding in red. The connector should be cleaned and reinspected before use.

KEEP IT CLEAN

Tier 1 and 2 certification ensures that the loss and length of installed cabling meets performance standards. Tier 1 OLTSs measure the end to end loss of the link, while Tier 2 OTDRs measure the loss of each component in the link. Although an OTDR can provide total link loss, it is less accurate than an OLTS, which is why Tier 2 OTDR measurements are supplemental to Tier 1 OLTS measurements. Before testing and when troubleshooting, begin by inspecting connectors. Contaminants spread easily between patch cords and network devices. With fibre networks, cleanliness is priority one. ■



DAN BARRERA

Dan Barrera is director of product innovation at Trend Networks. He develops the long-term product strategy and leads the product management team developing telecommunications infrastructure test and troubleshooting equipment for optical, wireless and twisted pair networks. Barrera carries out hands-on training seminars for industry organisations such as BICSI, IBEW/ NJATC and CEDIA. He represents Trend Networks at the Telecommunications Industry Association (TIA) TIA TR-42 and ISO/IEC SC25/WG3 and WG9 committees, developing the latest standards for copper and fibre optic cabling systems.

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Word to the wise

The word apprenticeship has certain connotations, which is why Andrew Stevens of CNet Training thinks it's time to jump aboard the careership

Engage in a conversation about apprentices and it won't be long before someone mentions stripey paint or lefthanded spanners – we've all heard these kinds of jokes time and time again. The unfortunate fact is apprenticeships have a certain image associated with them that is, of course, unfair and untrue, yet hard to shake.

PATH FINDERS

Even at traditional apprenticeship age, it always surprises me how many young people are either unaware or unwilling to contemplate the different pathways available to them for post-16 education. The path of remaining in school until 18 and applying to university has become well regarded and familiar to the extent that it is the only option for many. There is, however, an attractive alternative to this route in the form of apprenticeships.

Apprenticeships have existed in some form for hundreds of years, originating in craft based professions with the earliest records dating back to 1563. They were traditionally associated with taking an unskilled young person under your wing and overseeing their moral welfare, while teaching them a profession. They continued loosely in this format throughout the years, peaking in the 1960s, with a third of boys leaving school to become apprentices. Modern Apprenticeships were introduced in 1993, which saw apprentices counted as employees, earning a wage and gaining a qualification.

A further rebrand in 2004 saw the

upper age limit of 25 being removed and since 2010 financial incentives for smaller companies employing apprentices, and minimum standards across all apprenticeships, have been introduced. Apprenticeships have come a long way and appear to be in good standing now but uptake is still much lower than it could be, as is, so it seems, their overall perception.

ALL FOR ONE

Nowadays, apprenticeships are for everyone. Whether you're just starting out, upskilling or looking for a complete change in career, there's an opportunity out there for you, regardless of age, skill level or ambition. Apprenticeships offer people of all ages the chance to learn, whilst both earning and gaining skills and qualifications – even a degree. So why aren't people banging down the door to get involved?

As an example, by far the most well-known and popular route to becoming a solicitor is to undertake a three year law degree at university, followed by a qualifying examination and required work experience. If you study full time, it will take five to six years in total to qualify, and you will commence your career with a debt somewhere in the region of £40,000-60,000.

'I will continue to shout about careerships and implore as many people as possible to adopt the word and push the concept out into our industry.'

An attractive yet little known alternative is to undertake a solicitor apprenticeship that you can enter straight after A-levels, earning a wage throughout the six year program, and gaining invaluable, real life, on the job experience. Upon successful completion of the apprenticeship, you will be a fully qualified solicitor with zero tuition fee debt and, having been earning a wage throughout, in an imminently more stable financial situation.

OPPORTUNITY KNOCKS

The latter option, to me, appears to be the very definition of a no brainer, and it's certainly not an isolated case. Within the digital infrastructure industry, opportunities exist for individuals of all ages and skill levels in areas such as network cable installation and network engineering. In fact, 36 apprenticeships exist in the digital

infrastructure sector including four at degree level. This enables individuals to career hop, upskill or start a career journey, free from the anchor of student debt and, hopefully, liberated from the stigma surrounding being an apprentice.

I actually don't much like using the word apprenticeship because of the associated social stigma and I've been thinking for some time that the word itself is where the problem lies. But I have a gem of an idea that I've been trialling and it seems to me to be quite a good one. I'm the type to call a spade a spade and, in that vein, I've decided to call them by a different name that better reflects the opportunity that they present – careerships.

SKILL SET

Since I've made this subtle shift, I've found that everyone I talk to gets excited about the prospect of careerships in way that they didn't when I used the A-word. It feels much more appropriate and the word really captures the essence of what these opportunities offer – lifelong training, reskilling and upskilling at any stage of a career journey.

Whenever I talk with customers or partners about ongoing professional education or the pathways from education into work, there is immediate clarity how careerships could fit their businesses. They appeal to existing and prospective employees, offering inclusive opportunities to commence or further careers, regardless of age or skill level.

I do, of course, understand that smarter minds than mine will argue that apprenticeships are embedded and that it's not as simple as changing the name – but I'm convinced that this straightforward amendment would make a crucial and much needed difference. Sometimes the smallest of changes can have the most spectacular effect and I think this could be one of those occasions. I just need people to get on board with the idea and join me.

TALENT SCOUT

With growth in the digital infrastructure industry at unprecedented levels and a

lack of talent flow throughout the ranks, forecasters have predicted a global shortage to exceed 2.5 million people. The most important actions we can take to address this shortage are to carve out clear pathways into the industry for people of all ages and backgrounds in order to attract new talent to the pool, and to make sure that people know about them, understand them and want to pursue them.

We're making headway in establishing these pathways but the knowledge, understanding and subsequent desire to participate is falling behind. By embracing careerships and establishing it as a recognised term, we can precipitate the knowledge and understanding aspect, and propel the desire to participate and join our industry.

SHOUT TO THE TOP

I will continue to shout about careerships and implore as many people as possible to adopt the word and push the concept out into our industry. I have witnessed first-hand the positive impact and increased adoption that it attracts, and I'm confident that if it was in use on a much wider scale the effect could be revolutionary. ■

ANDREW STEVENS

Andrew Stevens is president and CEO at CNet Training. He has been involved in the international telecommunications and data centre industries for the past 35 years, starting his career within the manufacturing and distribution arenas. Stevens has been an active member of numerous industry trade bodies and has also been awarded a number of industry accolades for his work.

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They have helped individuals gain recognition and rewarding careers, while data centres achieve higher efficiency and performance.

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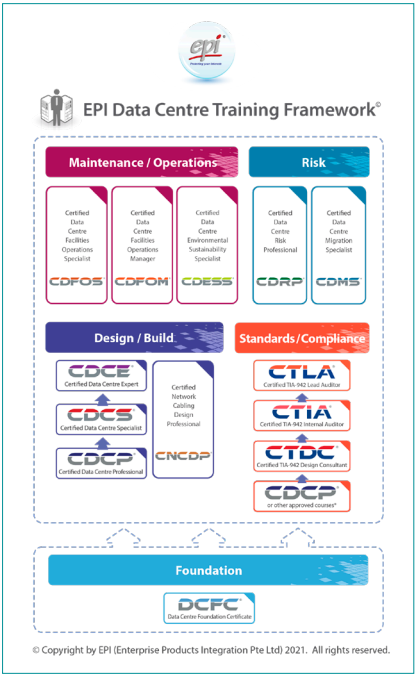

CNet Training

Infrastructure Masons (iMasons) has formed a strategic alliance with CNet Training, appointing the company as its global training partner. CNet Training shares iMason's passion for education and lifelong professional development, and the two organisations will drive forward this message with a shared commitment to encourage technical professionals across the industry to connect, grow and give back.

CNet Training's CEO, Andrew Stevens, plays a role within the iMasons education committee, whose mission it is to increase the flow of talent into digital infrastructure industries. The committee's main objectives are to make high quality education programs accessible through scholarships and by developing a digital infrastructure job ladder, which will provide clarity around how to enter the industry and the career progression pathways within it.

Scholarship funding is available for pre-qualified degree and certification programs, including CNet Training's portfolio of technical education programs. One of iMasons' goals is to award at least 50 per cent of scholarships to under-represented groups, in order to increase diversity and inclusion across the industry.

To find out more **CLICK HERE.**

www.cnet-training.com

HellermannTyton

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

The Cat6A and Cat6 practitioners course has been specifically designed with HellermannTyton's HTC product range in mind. This one day course is conducted at the HellermannTyton Connectivity headquarters in Northampton. Completion of the course is an integral part of the HellermannTyton 25-year system warranty.

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

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

CLICK HERE for more information about the HellermannTyton Academy training courses.

www.htdata.co.uk

EPI

Most people are too busy planning their work, so they forget to plan for their careers. If you feel you are stagnant in your current job and not getting the promotions you want, it's not too late to plan your career.

EPI's Data Center Career Planning Tool (DCPT) is super easy to use. Just pick your current job(s) and your desired future job(s). The DCPT will generate a list of knowledge and skills that will help you succeed based on the global Data Center Competence Framework. It'll also give you the training courses that will help you get there.

The next five minutes could change the rest of your life. **CLICK HERE** to get your data centre career plan.

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Learning curv

Adam Nethersole of Kao Data examines why education and awareness are vital to solve the data centre skills shortage

The data centre industry is in a quandary. As the amount of data generated globally grows exponentially, demand for data centre infrastructure increases. The sector, however, faces an endemic skills shortage and with digital infrastructure vital to many critical industries, one must ask how we can begin to attract more people to pursue careers within it?

JOB CENTRE

Data centre industry growth is arguably the most notable reason the market is facing a skills crisis. In the months leading up to November 2022, UK data found that vacant jobs citing data centres reached an all-time high of 2,468 – almost two per cent of all permanent jobs advertised in the country at that time.

Growing investment from the public and private sectors could also push the global data centre industry past a compound annual growth rate (CAGR) of 10.2 per cent by 2025, and by 2028 the industry is expected to be worth more than $400bn a year. The need to attract and retain a pipeline of skilled workers to build, operate and maintain this mission critical industry is, therefore, essential to not only its future, but that of wider tech.

RECRUITMENT DRIVE

Findings from the Uptime Institute suggest that despite advances in automation, and the consolidation of data centre capacity into smaller numbers of larger hyperscale facilities, the data centre industry will still need to find an additional 300,000 staff by 2025. New professionals will be required in all job roles and the industry cannot escape the threat of an aging workforce, with many experienced professionals beginning to retire.

These forces combined are creating a double edged sword in the market where we'll begin to lose vital experience to help train new generations. On the one hand, for example, the industry is beginning to build an inexperienced workforce, but on the other, we're not doing enough to attract new talent into the sector. For those already pursuing careers in science, technology, maths and engineering (STEM), one might even suggest that our industry is far from demonstrating how fulfilling, and secure over the long-term, a career it can truly offer.

EDUCATE AND INSPIRE

It's clear that to solve the skills shortage there needs to be an industry-wide, collaborative effort. Just like there's no one company that can crack this problem, there's no one solution to the skills gap.

and forward thinking ways our industry can address the skills gap, by providing practical, hands-on learning to young people from secondary school age.

A final route is to create dynamic educational initiatives that encourage STEM subjects with primary and early secondary school aged children, where decision making around career choices becomes a key focus. By helping students to understand the purpose and role of data centres through digital tools, hands-on learning and creative activities, we can teach children about the sector in an interesting and engaging way.

To begin overcoming the skills shortage we must first educate and inspire future generations of professionals. By sharing knowledge with school, college and university students, we can drive awareness of the industry's importance in society and thereby share the career opportunities within it.

University Technical Colleges (UTCs) present another direct route to bridge the skills shortages, delivering advanced technical education that helps students pursue rewarding careers in STEM. UTCs are arguably among one of the most logical

EMPLOY AND ADVANCE

The skills shortage also represents a generational crisis for the data centre sector, and only by leveraging the technology, diversity and perspectives of future generations can we begin to address the problem and safeguard the future for our industry. In an environment flush with technology, on the job education is key to developing the workforce that is able to evolve and drive change within the business.

There are a number of training

'It's clear that to solve the skills shortage there needs to be an industry-wide, collaborative effort. Just like there's no one company that can crack this problem, there's no one solution to the skills gap.'

organisations, such as CNet Training, that not only supply industry accredited development courses but offer tailored, professional guidance based on a person's needs and desired advancement. Data centres that provide support for these resources are arguably developing stronger, more positive ties with their employees, whilst guaranteeing a highly effective workforce.

The recent rise of the great resignation, for example, has demonstrated that employees are placing job satisfaction and career development as first and second on their list of priorities. To attract and retain the best talent, organisations must create new incentives that match the needs of a younger and more diverse generation, and offer continuous opportunities for professional development.

INDUSTRY DIVERSITY

Another key answer to the skills shortage is to look outside the demographics that have traditionally been the data centre industry's main source of professionals. According to the Uptime Institute, just five per cent of data centre operators come close to gender parity on their staff, and 64 per cent of operators have less than 10 per cent of women staff. Data centre operators that get serious about diversity will not only broaden the talent pool, but diversify the perspectives and skill sets within their teams.

Opportunities for women and other minorities should not only be in roles such as compliance, operations and finance. The number of women working full time across the UK, has risen by nearly 400,000 since January 2020, up to 15.45 million, while black, Asian and minority ethnic (BAME) individuals make up 19 per cent of IT employees and only 12 per cent of the workforce.

There are also other factors that must be addressed including pay gaps and career advancements that require positive action to drive future changes. The industry must, therefore, build a culture of inclusiveness within engineering based roles, which will, in turn, generate greater awareness and interest in employment in data centres.

INCREASE AUTOMATION

Automation undeniably has a future in the industry, especially if it is unable to bridge the skills gap. Advances in automation have already given us 'lights out' data centres that are capable of operating with minimal on-site human supervision until something

like maintenance is required. In an industry where human talent has the potential to become scarce, wouldn't it make sense to design our data centres to be as hands-off as possible, or indeed harness the power of technology to bridge the skills gap?

A combination of artificial intelligence (AI) and machine learning tools, capable of real time operational decision making, could change the staffing requirements of a data centre once up and running. One example is the use of advanced robotics like those used by Alibaba Cloud to replace broken hard disks. Another is the use of machine learning algorithms to identify potential issues, before they become critical.

While as many as three out of four data centre professionals believe that AI powered automation will reduce data centre staffing requirements in future, the majority, according to the Uptime Institute, think the reality is still years away. This means that human interaction will remain vital to the industry's future.

TALENT SCOUT

The harsh truth is that unless the sector can attract fresh talent from beyond its traditional demographics, the skills shortage has the unfortunate potential to do long lasting harm to the industry.

However, by changing the industry's perception, nurturing the interest of the next generation and providing diverse education programs, we can plant seeds for the future – creating pathways to allow data centre professionals to pursue a dynamic career within the sector. ■

ADAM NETHERSOLE

Adam Nethersole is vice president at Kao Data and is responsible for both the company's marketing and engagement with industry. He's spent more than a decade working directly within data centres, supporting a wide range of clients. Prior to pursuing a career in the data centre sector, Nethersole worked within the global sustainability industry, and has a particular interest in both renewables and energy efficiency. He also leads Kao Data's projects within the fields of STEM – encouraging the next generation of data centre professionals to join the sector.

Hitting the target

Michael Winterson of Equinix explains how the data centre industry will meet its aim to be carbon neutral by 2030

The rapid acceleration of global digitisation, driven by business and consumer demand, has fuelled exponential growth in the data centre industry, traditionally a high user of energy and resources. The sector is now prioritising the introduction of new and emerging green technologies to limit its environmental impact and support the global effort to reduce climate change.

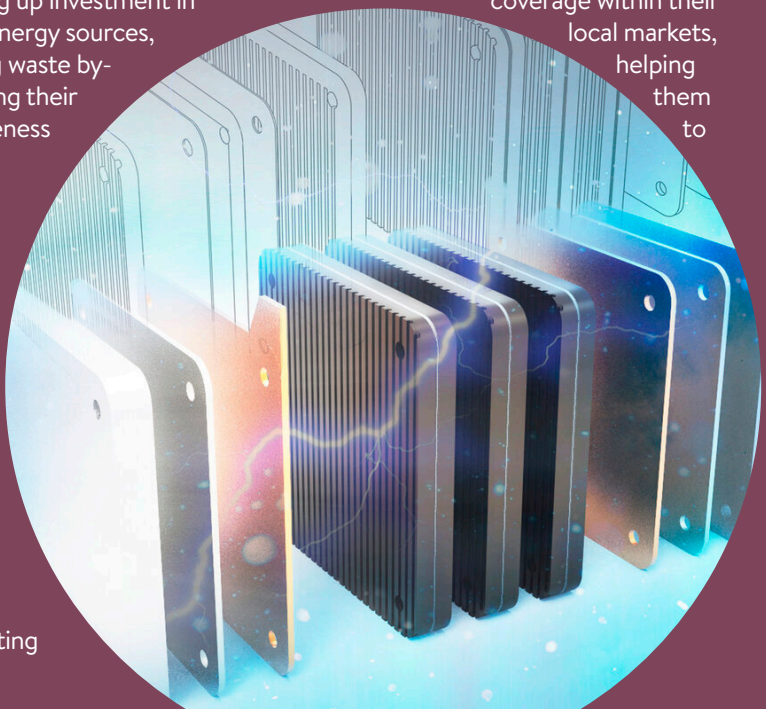
SMOOTH OPERATORS

Across Europe, data centre operators and trade associations have committed to the EU Climate Neutral Data Centre Pact, which is steering the industry towards carbon neutrality by 2030. As part of this, companies are ramping up investment in clean and renewable energy sources, limiting or redeploying waste by-products, and improving their Power Usage Effectiveness (PUE).

Global data centre providers have the advantage of operational scale, which delivers energy efficiencies not only to their facilities but also to their customers. Centralisation saves enormous amounts of energy simply because it is more efficient to have all storage and computing power concentrated in a few places around the world, rather than in the server rooms across thousands of individual businesses. In addition, building data centres at scale means they can be designed to the highest operational standards, with energy efficiency as a leading benchmark.

HOW LOW CAN YOU GO?

A game changer has been the introduction of low carbon energy sources that have enabled the industry to scale with rising data volumes without increasing emissions. Several industry pioneers have done this by prioritising virtual power purchasing agreements (VPPAs) that allow them to buy significant levels of renewable energy coverage within their local markets, helping them to



'green the grid'.

However, there are regions around the world where the uptake of renewable energy can be hindered by availability, reliability and cost. To mitigate these challenges, there must be greater partnerships and collaborations between utility companies, policymakers and data centre operators to deliver ecosystems where increased renewable energy opportunities can be realised.

SWAP OUT

Expanding the use of renewable and low carbon energy is crucial to reducing the industry's carbon footprint. Bridging technologies will make it possible to replace fossil fuel diesel generators with renewable hydrotreated vegetable oil (HVO) fuels in the intermediate term.

In the longer-term, the industry may use completely new energy systems based on hydrogen fuel cells currently being developed by the Clean Hydrogen Partnership. These could replace diesel generators with a clean energy source, thus reducing harmful emissions, lowering costs and making data centres easier to deploy in populated areas. Furthermore, Equinix is working in partnership with Bloom Energy to test solid oxide fuel cells as a potential replacement for traditional diesel generators and uninterruptible power supply (UPS) units.

Using power effectively to save energy is another area where improvements abound. Data centre efficiency is measured using PUE – comparing the total energy used by a data centre with the portion used specifically for IT equipment. To reduce PUE, operators must decrease overhead energy that does not directly power IT equipment. It is estimated that 75 per cent of that additional energy goes toward cooling systems, which is why high efficiency cooling is set to play such a critical role in the sustainability equation.

LIQUID ASSET

New and emerging technologies and increasing data demand require high levels of power density, so high efficiency cooling is one way to limit energy usage. One solution is liquid cooling, a process that is able to maintain stable equipment temperatures where traditional air cooling may fall short. The industry is now seeing considerable investment, research and the establishment of ecosystem

'AI algorithms and monitoring sensors built into automated data centres will be able to gather key data points and use them to accurately predict sustainability metrics under specific scenarios, delivering the next phase of sustainable data centre energy management.'

partnerships to drive forward these cooling technologies.

However, there is a catch, as liquid cooling adoption requires collaboration between hardware manufacturers, which must commit to building liquid capable servers at scale, and colocation providers, which must commit to supporting liquid cooling from a practical and mechanical perspective.

To democratise liquid cooling and tackle e-waste in the process, industry leaders have joined Open19 to reduce equipment redundancy by standardising the design of key infrastructure elements including services, storage and networking. For example, the open source hardware project is supporting the development of a new plug and play coupler for liquid cooling systems. Creating an industry standard design capable of supporting major liquid cooling techniques has the power to lower the barrier to entry for liquid cooling adoption.

AIR FORCE

Data centres not fitted with liquid cooling technologies are maximising efficiency through optimised airflow management. Rather than allowing hot air and cool air to flow throughout the facility at random, physical barriers are deployed to restrict cool air to supply aisles and hot air to exhaust aisles that swiftly remove waste heat. This heat can then be captured and redeployed as a source of low carbon heating for nearby homes and businesses.

In terms of water conservation, improving Water Usage Effectiveness (WUE) and establishing water positivity will continue to fuel sustainable innovation in the years to come. Switching to fuel cells that require less water and are up to 45 per cent cleaner, and using recycled water by harvesting rainwater and non-drinkable water, have proven to be efficient in reducing water usage to meet the expected

WUE of 0.4l/kWh by 2025 for data centres at full capacity.

GET REAL

The secret sauce supercharging advances in data centre design is the introduction of artificial intelligence (AI) monitoring and system automation. AI algorithms and monitoring sensors built into automated data centres will be able to gather key data points and use them to accurately predict sustainability metrics under specific scenarios, delivering the next phase of sustainable data centre energy management.

By deploying a software defined power management solution, operators will be able to manage power draw and limit power stranding to nearly zero per cent, improving powering efficiency in certain data centres by as much as 30-50 per cent. These AI solutions can also be used to balance demand for power with scheduled workloads based on times when renewable energy is available.

JOINED UP THINKING

While positive progress is being made across the industry to reach net zero by the end of the decade, there is still more to be done. Climate and sustainability challenges facing the data centre industry are much too complex to be addressed by organisations working in isolation. It will take a concerted effort by industry leaders, governments, policymakers, technologists and innovators working collaboratively to safeguard the future of the planet. The current economic challenges and uncertainty must not be allowed to distract attention – the industry must continue to focus on reducing its carbon footprint and reaching its commendable goal by 2030. ■

MICHAEL WINTERSON

Michael Winterson joined Equinix in September 2007 through the acquisition of IXEurope. During his time at Equinix, he has held the positions of both vice president of marketing and vice president of sales, before moving into his current role as managing director Equinix (Services).

EfficiencyIT and 8x8 deliver unified communications project for Motus

EfficiencyIT has secured a contract to deliver a digital transformation project for Motus Commercials and Motus Vehicle Solutions. The project will see EfficiencyIT deploy 8x8's award winning unified communications platform.

Unified communications will transform the customer experience, improve customer service and retention rates, and drive operational and cost efficiencies across both businesses. It will also provide an integrated technology suite that delivers a seamless employee experience, helping to drive workforce collaboration and optimisation, and future proofing the businesses for the hybrid working environment.

This is underpinned by the industry's only financially backed, 99.999 per cent uptime service level agreement (SLA) across 8x8's integrated cloud unified communications as a service (UCaaS) and contact centre as a service (CCaaS) platforms.

Cordless Consultants provides IT, audiovisual and security for new Edelman headquarters

Edelman has engaged Cordless to provide IT, audiovisual (AV) and security consultancy for the relocation of its London headquarters. The project entails the refurbishment of 45,000ft² of commercial office space for Edelman to be the sole occupier.

The renovation will reinvigorate the building, providing generous open spaces, as well as improving the property's energy performance. Cordless is providing technology advice and guidance to the client and professional team on AV, IT physical infrastructure and security – from the initial strategy, through to design, procurement and project management.

It is important that the technology supports the objectives to create a sustainable, digitally enabled workplace that is exciting, ingenious, connected, flexible and supportive. The end result is anticipated to be a welcoming and adaptable space that showcases the firm and develops closer working relationships, with greater collaboration between both staff and clients.

Proximity Data Centres announces regional internet exchange rollout

Proximity Data Centres is planning to rollout a network of regional internet exchanges across the UK and Europe. This initiative is the first of its kind and is in line with Proximity's ongoing commitment to reducing latency by bringing data and services physically closer to the end users, devices and customers that need them.

The wider availability of regional internet exchanges will enable the lowest latency possible for demanding edge computing applications and services including those for gaming, healthcare, manufacturing and smart cities, while also offering a more efficient and cost effective solution for the backhauling of rapidly growing data volumes. The company's newly formed Edge IX division will commence a phased build out of internet exchanges that which will be based at each of Proximity's regional colocation data centres. Currently there are 10 such facilities strategically located to conurbations and cities, and further data centres equipped with internet exchanges will be added to the portfolio during 2023.

PROJECTS & CONTRACTS IN BRIEF

MLL Telecom has been awarded a three year network services contract by Northumbria Police for the design, provision and ongoing support of a next generation software defined wide area network (SD-WAN).

Jaggaer has saved $2.7m on its annual cloud budget by choosing Capacitas as its cloud migration partner.

UK Connect has won an exclusive national contract to provide Cala Group's sites with connectivity and managed IT services.

CityFibre has now laid 1,725km of full fibre across Suffolk. The optical fibre being laid is part of a £53m investment into Ipswich, Bury St Edmunds and Lowestoft to upgrade the digital infrastructure in the region.

Residents of, and visitors to, Tower Hamlets can now enjoy enhanced 4G mobile signal thanks to bus shelters with built in small cell connectivity. Freshwave and Clear Channel UK collaborated to devise a solution that would allow the technology to be seamlessly integrated into bus shelters in the London borough.

Southern Cross Cables has announced the availability of commercial 400 Gigabit Ethernet services on its Southern Cross NEXT cable between Australia, New Zealand and the United States.

Mayflex

Mayflex has opened a new fully interactive demonstration suite at its headquarters in Birmingham. The Mayflex Technology Suite, or M-Tech, has been designed with three distinct areas – Excel racks and cabling, Excel FTTx, and security and access control.

The Excel focus area consists of five Environ racks. Within the racks there is a display of the Excel copper and optical fibre products, together with complementary products such as the Aura AV solution. A few intentional fault interlinks between the racks have even been set-up to demonstrate the prowess of the AEM and Fluke Networks testers. Meanwhile, the Excel FTTx solution has a large diagram to show the topology of the FTTx deployments, together with sample products.

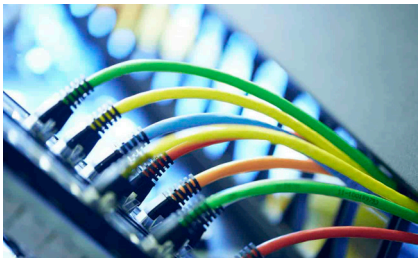
The security and access control area has a dedicated pod for each key vendor. Each pod displays a selection of their latest products, so that customers and our associates can see for themselves how the products work and, in the case of the cameras, the quality of the images.

If you would like to visit M-Tech call 0121 326 7557 or speak to your Mayflex account manager.

www.mayflex.com

R&M

Unbalanced resistance in a cable pair, or between cable pairs, can introduce signal transmission failure due to insertion loss. Another issue, albeit less serious, is heating of cables and the power sourcing equipment (PSE) that supplies DC power and data connectivity. This can reduce equipment lifetimes, waste power and lead to unreliable power provision. The main issue lies in the active equipment that fails to receive data sent along lines where the power is mismatched on that same pair.



Resistance unbalance testing verifies the deviation in resistance values between each of the cores in a twisted pair.

However, although ISO 11801-1 6.3.3.7 Direct current resistance unbalance defines maximum resistance unbalance figures, it is not currently a mandatory test.

We strongly recommend testing the complete channel in any remote power ready system – this includes the patch cords. In this way, you can be sure resistance unbalance in the complete system will be measured. You can also use tested permanent links in conjunction with specifically tested patch cords that have been designed to prevent resistance unbalance.

CLICK HERE to read more.
www.rdm.com

All you need to know

CLICK ON THE COVER TO VIEW THE 2023 MEDIA KIT

The price is right

Michael Cote of VMware identifies five strategies to control cloud costs

After the boom in tech investments during the course of the coronavirus pandemic, companies are now looking inwards at all the shiny new technology in their infrastructures. We're in an 'era of refinement' – organisations want to maintain their infrastructure while simultaneously cutting costs in order to allow them to remain buoyant in this stormy economy.

COST EFFECTIVE

Cloud cost management is a top priority and foundational to a company's digital transformation. Today, there is increasing awareness of cloud cost implications in the long-term, as usage can negatively impact budgets. In fact, Gartner predicts that 60 per cent of cloud leaders will encounter public cloud cost overruns.

As organisations prepare for another potential period of economic downturn, it will be important to have a cloud cost management strategy in place to help optimise overall spend, utilisation of services and increase profit margins.

Here are five ways to ensure there are no hidden surprises in your cloud bill today:

• Understand your environment

Businesses are attempting to transition quickly to the cloud, but without an understanding of how different teams use resources, they risk being taken aback when their cloud bill arrives at the end of the month. It's crucial to have a thorough

‘Today, there is increasing awareness of cloud cost implications in the long-term, as usage can negatively impact budgets. In fact, Gartner predicts that 60 per cent of cloud leaders will encounter public cloud cost overruns.’

understanding of your overall cloud environment when it comes to managing cloud cost.

Across software as a service, your developer needs, infrastructure and services like email and virtual desktops, cloud is likely in all parts of your IT estate. Getting a handle on what you’re paying for, and if it’s worth paying for, has always been difficult in IT and the operating model of public cloud requires different ways of doing IT financing management. The first step is to obtain insight into all cloud resources being used throughout the organisation because you cannot manage what you cannot see.

• Create the right governance framework

Once you know what you have, the next step in managing cloud spend is to create an appropriate governance framework that establishes rules and boundaries for effective cloud operations. A governance

structure provides notifications of approval or denial to users to guarantee correct resource deployment. More fundamentally, it gives people guidance about how they should be spending money (and not) beyond faceless budget numbers.

• Know and link your cloud value

Establishing guidelines for identifying and linking cloud assets to specific teams, lines of business or value streams is also essential. This practice is often called tagging an asset – similar to adding hashtags to social media posts to characterise the post and make it discoverable by others.

It's practically impossible to tell which assets belong to which teams and apps without adequate tagging. First, this means you can start to understand what you have and who in your organisation owns and uses the assets. Second, as you're figuring out how to manage your costs – and, let's be real, it's usually going to be reducing costs – you can get a better sense of what's going on.

• Understanding the value of cloud costs

Reducing waste in your cloud spending is valuable, but being able to show why you're spending that money in the first place is more valuable, and more strategic. Showing the value of IT to the overall organisation has always been difficult, sometimes impossible. And when you don't know the value of something, it's easy to manage that cost by simply demanding the lowest price. But, quantifying how valuable even the most basic IT services is can be difficult.

Unless you want your cloud cost control tasks to just be an annual practice in doing more with less, you need to show the value that each cloud asset is contributing. There's an art to this for sure, but at a baseline, you should be able to link cloud assets you have to customer facing parts of the business and internal facing apps and services that are used to run the business. As you

build up your cloud cost analysis, make sure you're showing the link between any given cloud asset and the actual business function it provides.

• Taking care

Let's look at the part of IT I care most about – software development and the apps that an organisation builds and runs itself for day to day business. Developers are notorious for their blissful ignorance of costs. Indeed, one of the recent insights from the FinOps community is that many cloud cost overruns are not so much from idle or wasted resources, but from application architectures that are expensive to run.

When it comes to cloud, developers need to start thinking about how much it costs to run their apps from the start. There are tools that can enable platform and application teams to understand the costs of their architectural decisions. This allows those teams to minimise cloud spending and streamline operations, while also assisting developers in gaining visibility into the financial and operational consequences of cloud options for apps.

SHIFT LEFT

I don't know about you, but it feels like we've been shifting everything left for a few years now. And there's still more shifting left to be done, it seems. Pretty soon, we're going to have everything all at once, there will be no more right or left, just 'the now'. Perhaps this will be some kind of chief information officer (CIO) bliss!

Kidding aside, what you see in the spending environment now is proof that cost management can benefit from shifting left, especially when it comes to how your developers are architecting their application. During 2023, with everything going on, CIOs are going to be asked to cut costs and getting a handle on cloud costs will be especially important for the foreseeable future.

VALUE ADD

Putting the right governance and controls in place that allow you to link what IT does to the business is always valuable. When you prove to the business side that you have the right cost controls in place, instead of coming and demanding budget cuts, they tend to come and ask the CIO how they can use IT to innovate the business. ■

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