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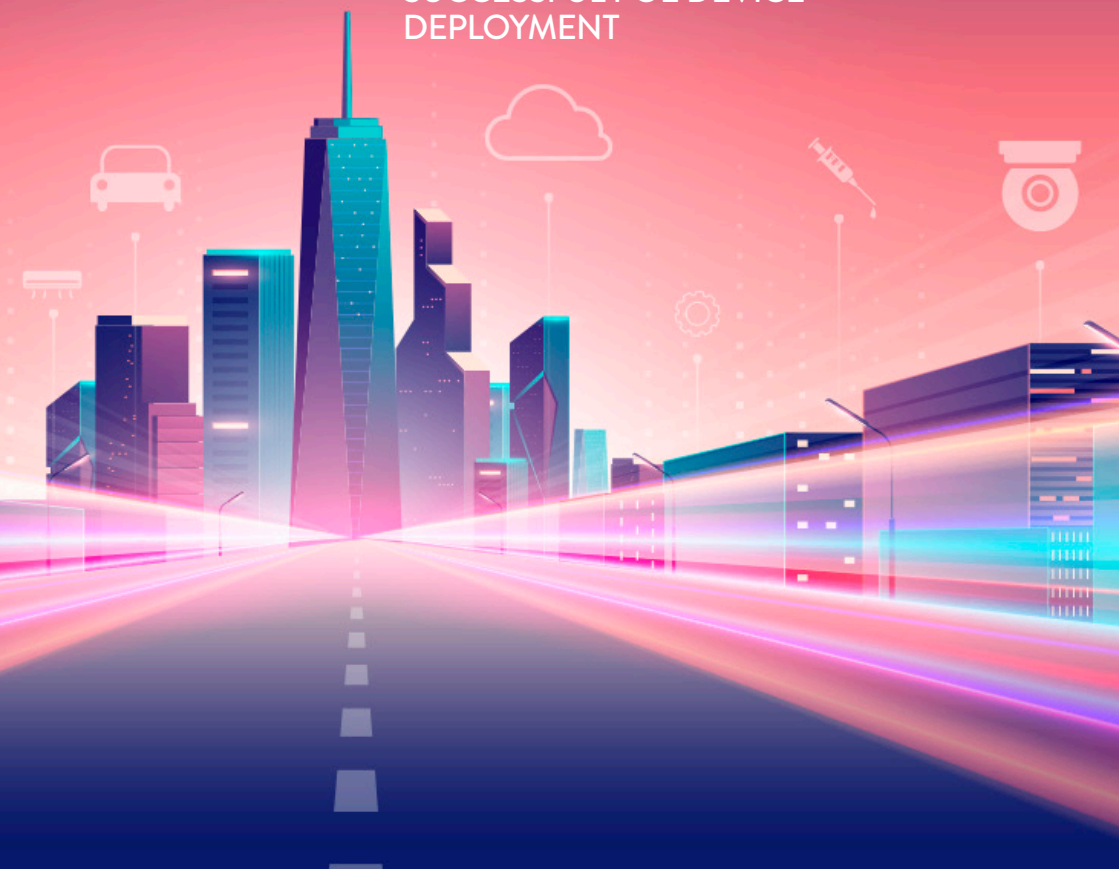

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EDITOR
Rob Shepherd
07708 972170

SUB-EDITOR
Chris Marsland

ADVERTISING MANAGER
Kate Paxton
01603 610265

CREATIVE DIRECTOR
Vishnu Joory

TECHNOLOGY CONSULTANT
James Abrahams

CIRCULATION MANAGER
Debbie King

ACCOUNTS
Billy Gallop

CHALK HILL MEDIA

These are exciting times for the data centre sector, as we see a move from large, fixed, monolithic architectures to fast changing networks that can be configured quickly, whilst constantly meeting the needs of a changing operating environment. As open source computing continues to grow its presence, it has brought with it an era of simplicity and efficiency, defined by fewer parts, scalable technology and affordable pricing, without vendor lock-in.

Vendors of data centre hardware and components including software, servers, racks, power supplies and cooling are being encouraged to share their intellectual property with others. This approach, it is argued, allows manufacturers to understand and meet the needs of their customer base by working with other vendors in the same space. In this issue's Question Time we've asked a specially selected panel of industry representatives to outline the impact open source technology is making on the way data centres are designed and managed. Some of their responses might surprise you.

Elsewhere, the rise of intelligent buildings continues unabated and their ability to utilise network infrastructures in interesting and innovative ways is inspirational. This issue has two excellent articles on this subject and in the first Mike Hook of LMG takes a look inside the internet of things (IoT) powered smart building, while Nick Edwards of HellermannTyton goes on to examine the benefits of zone cabling and passive optical LAN.

Last but not least, the importance of testing and test equipment should never be underestimated and Lisa Schwartz of AEM identifies best practices for assuring successful power over Ethernet (PoE) device deployment. I then talk to an old friend of Inside_Networks, Robert Luijten of Fluke Networks, about the importance of testing as part of a regular maintenance strategy but, more importantly, as part of the installation process.

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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Uptime Institute completes acquisition of CNet Training


Andrew Stevens

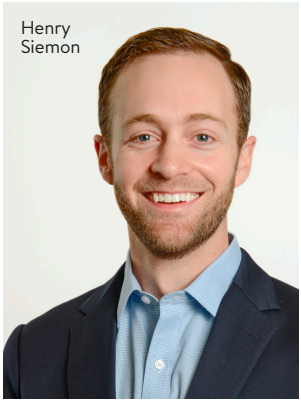
Uptime Institute has completed its acquisition of CNet Training. CNet Training dramatically extends the range and depth of Uptime Institute education offerings and positions it as the learning and development partner of choice around the world.

'The data centre industry is one of the fastest growing markets in the world,' said Martin McCarthy, CEO at Uptime Institute. 'This continued, extraordinary industry expansion requires a growing and diverse workforce, however, concerns over the industry's ability to attract, educate and retain skilled technical staff persist. This acquisition will help our respective customers thrive in a rapidly changing ecosystem by giving them access to a range of world class corporate learning and development technical education programs.

Andrew Stevens, CEO of CNet Training, stated, 'CNet Training was already growing quickly, but now will have many more opportunities through further geographic expansion and new service offerings. As we look forward to this next phase, I want to personally thank all our clients, staff and investors who have supported us over these past 26 years of bringing ongoing innovation to the digital infrastructure education market.'

Siemon celebrates 120 years in business

Siemon is celebrating its 120th anniversary. Founded by Carl Siemon in 1903 on the strength of his hardened plastic compounds and pioneering telecommunications technologies, the company has maintained its long-term commitment to the industry with the development of innovative infrastructure solutions that support digital transformation across the globe.


Henry Siemon

Henry Siemon is the company's fifth generation president and CEO. He commented, 'Siemon has invested heavily in research and development, demonstrating proven performance with new products that elevate today's data centre, intelligent building and LAN environments. Over the past two decades, Siemon has grown its global presence to more than 80 countries, including ISO 9001 and ISO 14001 certified manufacturing facilities in multiple countries. Siemon has also maintained its culture of continuous improvement including our longstanding commitment to protecting and preserving the environment. Today, that commitment continues with more fervour than ever through several key global climate change goals and initiatives.'

Organisations with the most servers are still unlikely to prioritise energy efficiency

Organisations with large numbers of servers are still unlikely to prioritise energy efficiency in the data centre. This is according to research from Asus, which found that among UK organisations with 11 or more servers 35 per cent say energy efficiency should be a factor in their server purchasing decisions but only 34 per cent say that energy efficiency is a factor in such decisions.

Meanwhile, among organisations with 2-5 servers 62 per cent agree that energy efficiency should be a factor in their server purchasing decisions, compared with just six per cent that disagree. 62 per cent agree that server related energy costs should be a line item in their IT budgets, while eight per cent disagree.


Morten Mjels

Morten Mjels, Asus's UK & Ireland country product manager for servers, said, 'We asked respondents to identify the top three factors in their server purchasing decisions, and it would have been perfectly possible for any respondent to say "performance, energy efficiency, warranty and these are equally important", or "price, energy efficiency, performance and these are equally important". But they didn't. The data seems to indicate that purchasers think there's a trade-off between these attributes – forcing IT managers and procurement departments to choose based on which attribute is most important to their organisation.'

Stellium Data Centres and CBRE claim North of England data centres are a strong proposition as connectivity hubs

Stellium Data Centres and CBRE's North of England Data Centres Report has been published, focusing on the economic growth and data centre capacity available in the North of England. It claims the UK's North East region has the lowest carbon intensity of any UK transmission area – a crucial requirement for a cloud service provider or hyperscaler – which will benefit further with the development of large scale renewable power from Dogger Bank.

Keith Breed, senior research analyst data centres at CBRE, said, 'Selected northern data centres such as Stellium 1 are becoming a strong proposition as connectivity hubs by providing access to optical fibre, dark fibre, internet exchanges and subsea cables – offering low latency local, national and international communications. The lower cost base compared with London, and substantial reserves of available renewable power, positions the area as a potential alternative to the power constrained and relatively high cost London region, where wholesale capacity has traditionally been based.'


Keith Breed

ECA welcomes creation of UK government's Department for Energy Security and Net Zero


Paul Reeve

ECA has welcomed the creation of the UK government's Department for Energy Security and Net Zero. It believes the move has the potential to make a step change in the efforts to reach net zero carbon emissions by 2050.

Paul Reeve, director of corporate social responsibility at ECA, said, 'We trust the new Department for Energy Security and Net Zero will rapidly engage not only with the government's own net zero carbon commitments but also the recent recommendations of Chris Skidmore's Net Zero Review, which confirmed the huge economic and other benefits of actively pursuing net zero.'

Reeve added, 'The new department must focus on boosting low carbon energy from renewables and nuclear, and the skills base that will ensure safe and reliable delivery. In the context of achieving energy resilience and net zero, it should also review the strategic potential for tidal energy to provide a major, storable renewable energy resource.'

Research reveals an increased reliance on open source technologies for the adoption of IoT and edge computing

The Eclipse Foundation has carried out research to gain a better understanding of internet of things (IoT) and edge computing ecosystems. It identified the requirements, priorities and challenges faced by organisations that deploy and use commercial solutions, including those based on open source technologies.


Mike Milinkovich

The online survey of more than 260 IoT and edge professionals found that IoT technologies are being adopted at an accelerated rate. 53 per cent of respondents currently deploy IoT solutions and an additional 24 per cent plan to deploy within the next 12-24 months, while 18 per cent are currently evaluating deployments. Edge computing adoption is also on the rise. 53 per cent of organisations are either utilising or planning to utilise edge computing technologies within 12 months, while another 20 per cent are currently evaluating the use of edge deployments.

'IoT and edge computing continued to accelerate in 2022 and into 2023 with no signs of slowing down, despite the current macroeconomic climate,' said Mike Milinkovich, executive director of the Eclipse Foundation. 'These trends suggest that IoT and edge are thought to be strategic investments that deliver true return on investment. The open source model will only augment these benefits.'

Majority of young tech workers perceive improving diversity as a low priority for their employers

Businesses need to do more to demonstrate their commitment to improving diversity to their current tech employees, according to Wiley Edge. When asked if the company they work for is making a concerted effort to increase the diversity of its tech teams, only 27 per cent of workers aged 18-24 said that diversity is a big focus during recruitment.

35 per cent have noticed more efforts recently to improve diversity, but 10 per cent said that current efforts are unsuccessful and 12 per cent said diversity is not a priority. This is despite 53 per cent of UK businesses stating that they are actively trying to address a lack of diversity on their tech teams, one in 10 stating that they have successfully improved their lack of diversity, and nine per cent saying that their tech teams have always been diverse.

The research also found that there are anti-bias hiring practices that many businesses are yet to introduce. Only 40 per cent of businesses surveyed currently invest in anti-bias training for hiring managers, 38 per cent said that they request diverse shortlists from recruiters, 39 per cent use deliberately neutral job descriptions and 32 per cent currently anonymise CVs.

Rebecca Roycroft, senior director of global emerging talent at Wiley Edge, commented, 'These findings highlight the importance of not only implementing anti-bias recruitment tactics, but also ensuring that these tactics are communicated to existing employees. Doing so can make a big difference to the way that young people perceive their employer.

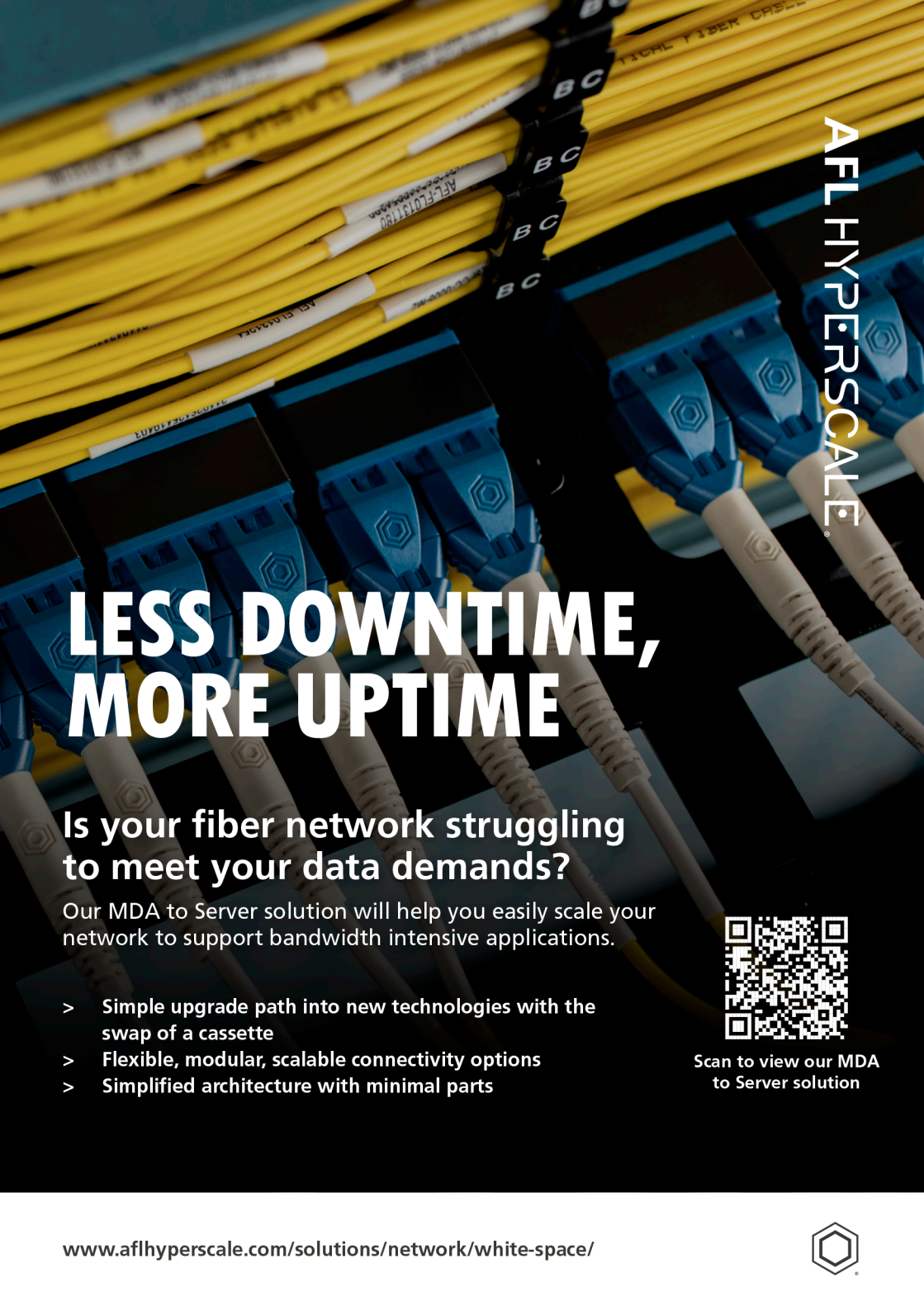
NEWS IN BRIEF

Juniper Research has revealed operators are forecast to generate $625bn from 5G services globally by 2027, rising from $310bn in 2023.

More government funding is needed to help drive smart utility development, according to a survey of over 250 US utility companies commissioned by Wi-SUN Alliance. While government funding/legislation is seen as 'very important' for 70 per cent of respondents, the need for more pilot projects and implementations (75 per cent), and greater cooperation between public and private sectors (72 per cent) is even more important to help drive development and innovation in the sector.

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).

The Association for Passive Optical LAN, the non-profit organisation advocating for the education and global adoption for optical local area networks, has announced an organisational rebrand and is now known simply as APOLAN.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Unlocking the capabiliti

Hi Rob

There is almost no part of our lives that is untouched by technology in some form. From the way we work to social activities, shopping and downtime – nearly all our experiences use connectivity. Now imagine what artificial intelligence (AI) and analytics will bring in the future when combined with advances in devices such as sensors, drones, autonomous vehicles, wearables and batteries.

Connectivity has the potential to completely change our lives. However, to embrace this fully we need private 5G. Today, we might rely on Wi-Fi when using the latest consumer apps, but as we move toward a more complex and converged world, private 5G will be the one technology that can bridge the gap, providing the quality of connectivity, security and scalability that Wi-Fi simply can't – especially in the private sector.

Advancements in connectivity are impacting nearly every industry, from healthcare and transportation to manufacturing and utilities. These businesses are investing heavily in automation and AI to improve efficiency, operational safety, customer satisfaction and sustainability. Still, as they fast-track toward Industry 4.0, the sectors are encountering their own unique connectivity challenges.

Supporting networks need to maintain applications by providing the required throughput and latency with guaranteed availability and security to avoid disruption of business operations. When it comes to public 5G, consumer applications must be guaranteed and catered to.

In my opinion, the advent of private 5G as a solution is not new. Private deployments were predicted to be installed back in 2020 and are set to get going this year. The central force driving the development of private 5G is industry's focus on leveraging digitisation to improve process efficiency, business continuity and agility, operational safety and sustainability. However, deployment of private 5G doesn't come without its own challenges.

Spectrum licensing is a costly barrier to initiating private wireless networks, causing widespread adoption of inherent unlicensed Wi-Fi. On the plus side, the French and German governments have announced joint funding of four private 5G projects. A further barrier to private cellular adoption is its inherent complexity. Enterprise IT staff typically lack the basic skills to design, deploy and manage myriad 4G/LTE and 5G technologies.

The good news is that the 5G ecosystem is moving toward openness, disaggregation and virtualisation. The potential for private 5G is immense, and successful deployments will leverage network adaptability and programmable infrastructures, including xHaul routers with support for hard and soft network slicing combined with the broader ecosystem of Open RAN technology partners.

Intelligent, analytics driven automation and orchestration can simplify overall network management and reduce operational expenses. And to speed up and de-risk the unique journey of enterprises, services partners will be key to ensuring the successful implementation of private 5G networks. Companies can capitalise on this new technology by deploying simple

es of private 5G

and open private 5G networks that are specifically designed for their unique and evolving business requirements.

Is it as easy as unlocking a box and deploying 5G? Certainly not. However, the potential of private 5G holds vast possibilities for the journey to Industry 4.0 and it must be figured out. Ultimately, private 5G networks will become commonplace given their intrinsic necessity to tomorrow's workplace in certain sectors. We've come a long way from unconnected to connected everything in our personal lives, and industry is set to take a similar leap in connectivity using the right technology and partners to unwrap private 5G's complexity.

Jürgen Hatheier
Ciena

Editor's comment

Developments in 5G and its ability to enhance connectivity was one of the big talking points of 2022 and is continuing to be so during 2023. As Jürgen makes clear, companies with private 5G networks will be at the forefront in improving business efficiency, continuity, agility and sustainability.

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An open and shut case

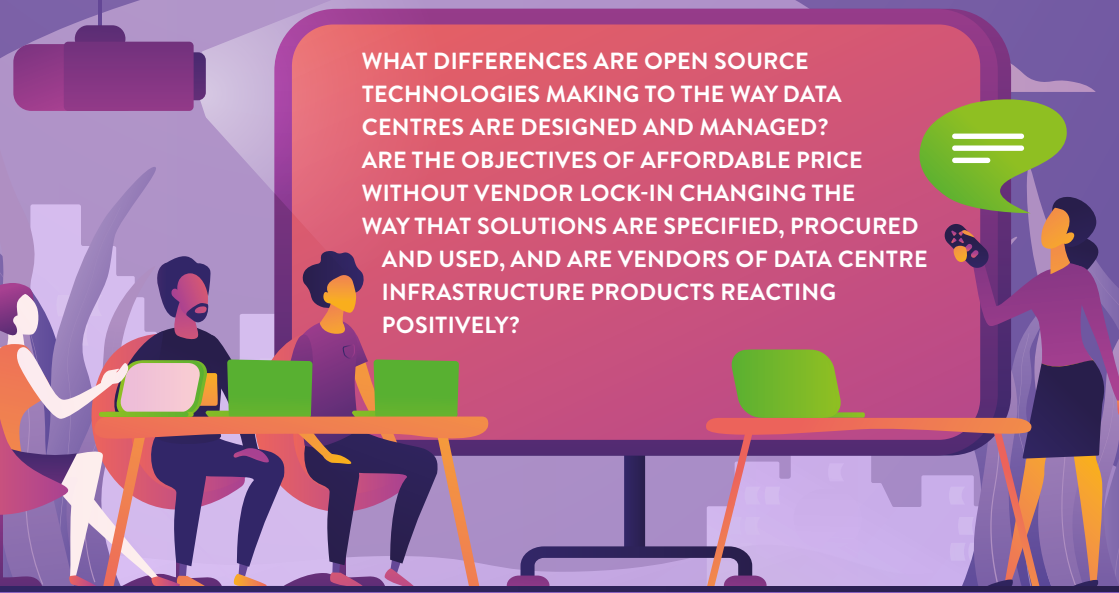
With open source computing gaining traction, manufacturers of data centre technology are rethinking product design and build. Inside_Networks has assembled a panel of industry experts to assess the impact that open source computing is having and what we can expect from it in the future

Since it was formed in 2009, the Open Compute Project's (OCP) ambition to change the traditional approach to the way that data centres are built and configured is becoming more popular. OCP has since been joined by other organisations with a similar ethos and, as open source computing continues to grow its presence within the data centre industry, it has brought with it an era of simplicity.

Open source computing's goal of providing designs for efficient and sustainable data centres has meant affordable pricing without vendor lock-in. Vendors of data centre hardware and components are therefore taking notice, as commodity products that are more efficient, flexible and scalable are redefining network infrastructures. It is encouraging collaborative hardware designs and sharing, which has proven to reduce investments in non-value add technologies.

As open source computing reshapes the way that data centres are created, Inside_Networks has assembled a panel of experts to assess its progress, examine the implications for vendors and discuss its long-term future.

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



JON LABAN

RESET CATALYST AT THE OCP FOUNDATION & OPENUK BOARD MEMBER

For the past two decades the top reasons for adopting open source technologies have been reduced financial costs and simplified operations, direct access to customisable software and hardware, accelerated innovation, improved interoperability, superior software/hardware quality and security, and the elimination of vendor lock-in.

During this decade data centre sustainability, decarbonisation and dematerialisation have rapidly become key drivers for the adoption of open source technologies and there are excellent examples of 90 per cent dematerialisation being achieved. It's worth noting that with embodied carbon emissions contributing more that 80 per cent of the whole life emissions of a data centre, a 90 per cent reduction in ICT hardware has a significant impact on reducing total greenhouse gas emissions.

In terms of reduced financial costs and simplified operations, a cloud native data centre built using open source technologies will comfortably reduce data centre capital expenditure by 50 per cent to 75 per cent. Centralised uninterruptible power supplies (UPS), mechanical chilling, access floors and more are all eliminated, and the operational costs of on-site server hardware support technicians can be reduced by 99 per cent compared to legacy enterprise data centres. One server hardware technician can support 25,000 open source physical server nodes, which is a two orders of magnitude improvement on operational efficiency compared to proprietary enterprise servers.

The supply chains for open source technologies are different from the supply chains of the conventional proprietary vendors. Refer to numerous explainer videos in the OCP YouTube channel to learn more.

There are, of course, benefits to vendors in collaborating with actively engaged prosumers in open source technology communities – these include increased speed of innovation, reduced time to market for new products, and reductions in development costs for each vendor. Today, the mature open source technologies used for a decade by hyperscale cloud service providers to build their vanity free cloud native data centres are now available for all to adopt – you simply need to steal from your friends!

'WITH EMBODIED CARBON EMISSIONS CONTRIBUTING MORE THAT 80 PER CENT OF THE WHOLE LIFE EMISSIONS OF A DATA CENTRE, A 90 PER CENT REDUCTION IN ICT HARDWARE HAS A SIGNIFICANT IMPACT ON REDUCING TOTAL GREENHOUSE GAS EMISSIONS.'

JOHN BOOTH
MANAGING DIRECTOR AT CARBON3IT

Open source software is without doubt growing in popularity. Recent reports suggest that 77 per cent of organisations are more reliant on open source software than they were 12 months ago, with 36 per cent reporting a significant increase, but also that they faced significant challenges in configuration, installation, interoperability and updates.

This would indicate that the use of open source software hasn't made a significant difference to the ways data centres are designed and operated. This is more of skills issue and perhaps more to do with IT departments per se than data centres, as the issue appears to be the testing, integration and support of open source software tools.

Whilst there have been some recent announcements by data centres advising that they are OCP Ready, what this means in practice is more the facilitation of the installation of OCP hardware in terms of rack, floor loadings and the paths to the white space from the delivery bay. To be honest, this is already covered by the EN50600 series of data centre design, build and operate standards.

According to the OCP website only seven data centres are classified as OCP Ready – three in Asia Pacific (APAC), four in Europe, Middle East and Africa (EMEA), and one in the US. With regard to affordable price without vendor lock-in, this is subject to debate – whilst the software may be free, updates, scalability or specific configurations requiring vendor support will mean additional costs.

Hardware appears to be 'badged' as OCP Accepted, so no real difference in one product over one that is not OCP Accepted. If there are any problems in the way that products are specified and procured, these are probably due to internal or external tendering requirements. Procurement departments have yet to grasp the concept of open source software/hardware and may need some education on this.

The need for energy efficient and sustainable software and hardware is a pressing issue for the ICT community to address the climate emergency, so I expect the issues highlighted above to be resolved sooner rather than later.

'ACCORDING TO THE OCP WEBSITE ONLY SEVEN DATA CENTRES ARE CLASSIFIED AS OCP READY – THREE IN ASIA PACIFIC (APAC), FOUR IN EUROPE, MIDDLE EAST AND AFRICA (EMEA), AND ONE IN THE US.'

ANDY HIRST

MANAGING DIRECTOR CRITICAL INFRASTRUCTURES AT SUDLOWS

There are different views on open or closed protocol equipment. With a closed protocol option you are arguably getting an engineer that knows that product inside out, whereas with open protocol, engineers can work on it that are not as experienced on a specific manufacturer's equipment.

Even though there are arguments for and against it, open source is preferred by Sudlows for a number of reasons. These include not potentially putting the client at risk with inflated annual maintenance costs and reliance on the supplier/manufacturer's timescale to carry out any work required.

Some manufacturers stand by their closed protocol approach to protect themselves from competitors, and believe that other companies are not specialised on their product. These are all valid points but manufacturers should perhaps take a step back and look at what is best for the client.

Over the years, Sudlows has delivered multiple data centre solutions and our preference is to work with manufacturers that are open source protocol. This gives us confidence that the client has flexibility on future works, whether that is maintenance or software upgrades and, even when working on open protocol equipment, what still gets overlooked is that you usually need the manufacturer's engineer code to work on them!

That said, we would not dismiss closed protocol equipment and on a number of occasions we have installed it – but explaining to the client the positives and negatives. The manufacturers we deal with that are open protocol are very successful, so it must work for those companies and some manufacturers that are adamant that their closed protocol approach is the right approach must be seeing the opportunities they are potentially missing out on. However, over the years I have not seen many change their view.

Only time will tell if opting for open protocol is more successful for all manufacturers, but the good news is it takes risk away from the client by reducing risk to programme and cost. In the present climate, this can only be a good thing, even though some manufacturers/vendors may be doing this reluctantly.

'SOME MANUFACTURERS STAND BY THEIR CLOSED PROTOCOL APPROACH TO PROTECT THEMSELVES FROM COMPETITORS, AND BELIEVE THAT OTHER COMPANIES ARE NOT SPECIALISED ON THEIR PRODUCT. THESE ARE ALL VALID POINTS BUT MANUFACTURERS SHOULD PERHAPS TAKE A STEP BACK AND LOOK AT WHAT IS BEST FOR THE CLIENT.'

VENESSA MOFFAT

MEMBER OF THE BOARD OF ADVISORS AT DATA CENTRE ALLIANCE

The goal for OCP data centres was to get faster rollout of more efficient, and denser, infrastructure through the standardisation of server and storage equipment.

OCP does impact the design of the building and infrastructure to a degree. For example, floor loadings to carry the weight of the already populated cabinets, plus goods lift size and capacity and access doorway heights. There is no centralised uninterruptible power supply (UPS) in an OCP data centre – instead every rack has a lithium-ion battery back-up unit (BBU). This takes up a bit of room in the rack and, to compensate, OCP racks are taller than conventional racks and also 21-inches wide.

The power supply units in the racks supply a busbar system within the rack. This, in turn, provides direct current (DC) power directly to the servers, so the servers themselves don't have individual power supplies. One of the main areas of improved efficiency across OCP data centres is this DC power distribution, which removes one layer of the existing AC/DC conversion seen in a traditional data centre.

Hyperscalers won't allow vendor lock-in – they have designed new specifications of hardware and go to no less than two suppliers to provide exactly the same products. They work to what's called an Open Architecture Infrastructure which, for example, specifies that servers must have a common chip socket, which has triggered vendors to design to this specification. Because of the volume of equipment required, the main problem has been keeping up with demand.

From a maintenance point of view, the racks come fully loaded, so the speed of installation is much faster. Additionally, one server hardware technician can support 25,000 server nodes, and the toolless design with hot swappable components is much faster to maintain.

A common phrase in the OCP world at the moment is 'software is eating the hardware'. Software and artificial intelligence are allowing central processing unit (CPU) utilisation optimisation and therefore less hardware overall. We're seeing CPU utilisation rates of 50 per cent and upwards, and the use of a new metric – Hardware Utilisation Effectiveness (HUE) – which is similar to the ISO IT Equipment Utilization (ITEU) metric. This optimisation is reducing energy consumption by up to 30 per cent from the IT load.

> 'HYPERSCALERS WON'T ALLOW VENDOR LOCK-IN – THEY HAVE DESIGNED NEW SPECIFICATIONS OF HARDWARE AND GO TO NO LESS THAN TWO SUPPLIERS TO PROVIDE EXACTLY THE SAME PRODUCTS.'

JASON PULLEN
SENIOR DESIGN MANAGER AT KAO DATA

Open source platforms have become a disruptive mechanism for innovation and have fast-tracked the development of many technologies widely used today. They facilitate the agile development of products and designs without the need to worry about complex licencing models or proprietary vendor support.

From the perspective of data centre design, open source technologies are already demonstrating the potential to impact it in a positive way – providing greater flexibility and innovation, alongside the ability to reduce cost and increase operational efficiencies. An excellent example of open technologies within the data centre sector is the OCP, which promotes the use of both open hardware and open infrastructure designs for data centres.

Data centres built to OCP Ready standards must adhere to a series of key principles including, but not limited to, high-capacity goods lifts, sufficiently sized equipment delivery routes and redundant/resilient power and cooling infrastructure. OCP design criteria should also consider overhead power and data cabling, column free technology suites and high capacity slab loading to accommodate liquid cooled workloads. The ability to provide industry leading levels of energy efficiency and sustainability are also vital.

At Kao Data, we encourage our design teams to employ open source software technologies to aid design development by reducing iteration times. For example, the use of Python and Dynamo scripting to run parametric models for structural design and plant space planning greatly reduces the iteration time for data centre building modelling and optimisation.

I am keen to see how open source technologies impact the types of IT equipment and power densities our customers plan to deploy – the direction they take could have a massive impact on the industry and might finally mark the true start of the transition from air to liquid cooled IT equipment.

'I AM KEEN TO SEE HOW OPEN SOURCE TECHNOLOGIES IMPACT THE TYPES OF IT EQUIPMENT AND POWER DENSITIES OUR CUSTOMERS PLAN TO DEPLOY – THE DIRECTION THEY TAKE COULD HAVE A MASSIVE IMPACT ON THE INDUSTRY AND MIGHT FINALLY MARK THE TRUE START OF THE TRANSITION FROM AIR TO LIQUID COOLED IT EQUIPMENT.'

JOHN HALL

MANAGING DIRECTOR COLOCATION AT PROXIMITY DATA CENTRES

We have been watching the development of open source hardware with keen interest and for certain customers we believe it will complement our existing data centre solutions. However, we are also seeing considerably more bespoke hardware developments in our data centres to support new applications around artificial intelligence (AI), augmented reality (AR), virtual reality (VR), the internet of things (IoT) and gaming. This means we have to maintain a flexible approach to the design of the data centre to accommodate these.

Like all data centre hardware there are increasing requirements for more power per rack – for both open source solutions and those supplied by the long established manufacturers. A customer recently deployed a 25kW VR implementation running on the latest 'traditional' industry standard servers. High performance compute and low latency connectivity is seen by them as a prerequisite for delivering immersive extended reality (XR) environments. In our experience so far, we have not seen such a power hungry set-up being supported by an open source server.

Meta's developments of Open Rack v3 with Air-Assisted Liquid Cooling (AALC) and Grand Teton are interesting, and some sectors such as AI will use these solutions in certain situations. But these still need to be hosted in data centres for ensuring the best performance.

While Open Rack v3 can be equipped with a four minute battery back-up for up to 15kW of power, you still require on-site generators that are properly maintained to support the IT infrastructure for longer periods. AALC is a possible solution for single racks demanding a lot of cooling but hot aisle and cold aisle designs are still the most effective design for multiple racks in a data hall.

At the end of the day the key requirements of a data centre in terms of security, power and cooling are as important for our open source hardware customers as they are for all our clients. Where feasible, and on a case by case basis, we welcome a standards based, modular, building blocks approach to hardware design in the interests of optimising costs and facilitating speed of IT deployment to floor – but it remains the customer's decision.

'AT THE END OF THE DAY THE KEY REQUIREMENTS OF A DATA CENTRE IN TERMS OF SECURITY, POWER AND COOLING ARE AS IMPORTANT FOR OUR OPEN SOURCE HARDWARE CUSTOMERS AS THEY ARE FOR ALL OUR CLIENTS.'

Aryaka Networks strengthens its global channel leadership team

Aryaka Networks has announced the global leadership team for its Accelerate Global Partner Program. The company has furthered its commitment to the global channel community by announcing sales, marketing and operations positions.


Craig Patterson

Jon Selway has joined as vice president of channel sales for Europe and will oversee Aryaka's channel team, channel sales, recruitment, sales and pipeline growth, strategic partnerships and alternate routes to market. Layeeque Ahmed was recently promoted to director of channel sales for Asia Pacific (APAC), while Sarah Linford Cothran is now global director of channel programs and operations. She oversees the channel development team, channel programs, partner commissions, operations and support. Finally, Nicole Steele is now global director of channel marketing and enablement.

'The Accelerate Global Partner Program has grown rapidly in its first year,' said Craig Patterson, Aryaka's channel chief and senior vice president of global channels. 'We've adopted a unified global framework and invested in proven channel leaders to align and optimise our shared resources to grow channel led revenue worldwide in 2023.'

Nathan Blom joins Iceotope Technologies as chief commercial officer

Iceotope Technologies has appointed Nathan Blom as chief commercial officer. He will lead the company's strategy for sales growth, expansion of its go to market strategy with channel partners, ongoing transformation of marketing functions, and increase in the value of strategic partnerships within the IT and data centre infrastructure markets.


Nathan Blom

Blom, who joined Iceotope from Lenovo, said, 'I'm excited to join Iceotope because this company's liquid cooling technology can radically transform the industry by saving 30-40 per cent of the wasted electricity normally used for air or water cooling. Unlike air cooled environments, servers are housed in environmentally sealed containers, so air quality and temperature are no longer a barrier to performance, and carbon footprint can be reduced in a meaningful way.'

David Craig, CEO of Iceotope Technologies, added, 'We're delighted to welcome Nathan to the Iceotope senior management team. He brings with him extensive cross industry experience working for world leading technology companies, as well as with both channel partners and end customers of all sizes.'

Mayflex appoints Adam Herring as director of sales for security

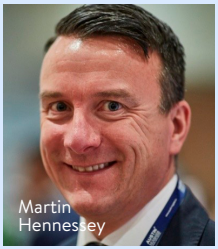
Adam Herring has joined Mayflex in the role of director of sales for security. He has extensive experience in the security industry, having previously worked for Eagle Eye Networks and, prior to that, Hanwha Techwin Europe for over six years in various strategic sales and business development roles.

Ross McLetchie, sales director at Mayflex, commented, 'Adam has great drive, energy and strong leadership qualities, which will all be crucial for driving the continued growth of our security business. He is well placed to lead the uptake of the recently launched AVA solution, and will also be working closely with our security vendors including Avigilon, Axis, Hikvision, Milestone, Mobotix, Paxton, Pelco, Suprema and Wavestore.'

Herring commented, 'I'm excited to join Mayflex and to lead the external security sales team. Having access to such a choice of quality brands really does ensure that we have a solution for every technology and budget requirement. I'm very much looking forward to getting to know the team and then getting out to meet as many customers as possible.'

Austin Hughes makes two promotions to its senior management team

Austin Hughes has announced two internal promotions. On 1st April Martin Hennessey will assume the role of global sales director and Richard Gray will become sales director EMEA.



Hennessey is a founding member of the Austin Hughes EMEA business and has extensive experience across multiple sectors including telecommunications, IT and data centres. His knowledge, expertise and hands on leadership in building out the Austin Hughes EMEA business from the ground up will be a great asset in his new role. Meanwhile, Gray will build on the success of Austin Hughes EMEA by overseeing its team expansion, whilst integrating with the company's global business initiatives.

'We're very excited that Martin and Richard are moving to their new roles,' said Matthew Chow, founder and CEO at Austin Hughes. 'Martin has been a key member of the Austin Hughes company for more than 20 years and brings with him a wealth of knowledge gained in IT infrastructure sales and channel management. Likewise, Richard is a very well known character within our industry who has an excellent reputation for success.'

Schneider Electric and Atea partner to deliver sustainable IT services in northern Europe

Schneider Electric has partnered with Atea to deliver green and sustainable IT services in the Nordic and Baltic regions. Atea has been named Schneider Electric's first Elite IT Solutions Provider Partner in the Nordics, and will harness Schneider Electric's EcoStruxure portfolio to help its customers manage their IT consumption in a sustainable and efficient way.

With over 7,500 employees located in 85 cities in seven European countries, Atea has a powerful presence across all the markets it serves. Schneider Electric has been recognised as one of the world's most sustainable organisations for many years. It has, for example, been awarded a Platinum Sustainability rating by Ecovadis, which has also recognised Atea as a leader in sustainability by awarding the company its highest rating.

'Schneider Electric's net zero commitments align well with our long-term, environmental strategy and it is a great honour for us to be appointed as its Elite Partner in the Nordics,' said Chris Ashby, director of strategic partners at Atea. 'Sustainability is not a sprint but a marathon, and we must persevere for a long period of time if we are to achieve the level of sustainable transformation required. We are also completely dependent on cooperation with likeminded partners, which is why we believe our partnership with Schneider Electric will be integral.'

CHANNEL UPDATE IN BRIEF

Dee Dee Acquista has been named vice president of worldwide channel and alliances at Gigamon. With 25 years of experience in channel strategy, Acquista brings a fresh perspective as she and the team build on the company's channel first strategy to propel the Gigamon Catalyst Partner Program and its deep observability pipeline to new heights.

Altnets has been ranked 35th overall in the Elite Business 100 (EB100).

Spirent Communications and Anritsu have partnered to present a full portfolio of O-RAN testing. The collaboration will provide O-RAN component suppliers, system integrators and carriers with a complete set of O-RAN solutions covering the full breadth of testing needs.

Comms365 has appointed John Whitty as chairman. Whitty has a long background in the channel – he was a member of The Royal Corps of Signals for nearly two decades, followed by leadership roles in Pipex Communications, Kabel-X, GCI Com, Solar Communications, Air IT and Gradwell Communications.

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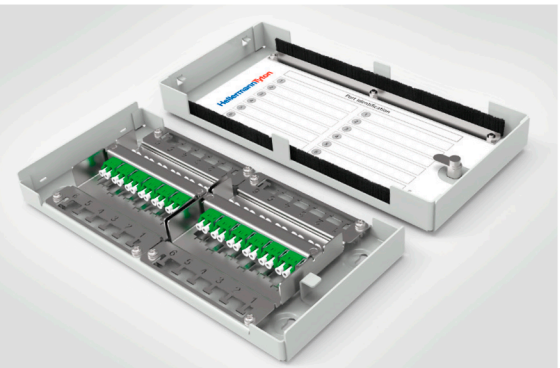
From building entry point, to the comms room all the way to the desk, HellermannTyton has a solution for all of your zone cabling and networking needs.

MADE TO CONNECT



IN-AD-ZC-R10

AEM testers just got eve

Are you fed up with using testers that don't meet your expectations, or had to carr through Mayflex in the UK, AEM is a company that not only values customer feedb

AEM's award-winning CV-100 platform and its Network Service Assistant (NSA) have been improved with the New Enhanced Range of testers, which has now become the company's standard range. AEM has made several enhancements based on customer feedback – the most notable being a capacitive touchscreen that is easier to use and navigate, with much improved screen resolution.

Feature packed

It's not just the screens that have improved. All CV-100 platforms, including the K50E,

now come with a new set of permanent link adaptors. These adaptors feature a ruggedised cable that is built to last and they have also been upgraded to meet Cat 8.1 standards. The shroud to plug has also been improved, making these permanent link adaptors even more rugged and durable, which means more time on-site and less downtime.

For installers that need to carry out optical fibre testing, the K51E and K61E kits now come with more standard equipment including an inspection probe. This allows you to inspect fibre ends for dust or damage, ensuring your fibre connectors are always clean and ready for testing. The testers come with SC connectors and launch leads included, making both the K51E and K61E, LC and SC ready right out of the box!

Perfect solution

Companies that specialise in smart/intelligent buildings should look at AEM's K60E and K61E testers, which are the perfect solution for those requiring even more advanced features. Both testers get all the additional kit mentioned above but also come with a Category 6A patch cord adaptor, allowing you to carry out modular plug terminated link (MPTL) tests – essential for any installer installing Wi-Fi access points or IP CCTV cameras. This ensures that all internet of things

en better

AEM

MAYFLEX
A Sonepar Company

ry multiple testers to find a fault? Available exclusively
back but also strives to offer the best products available

3 YEAR CARE PLAN

(IoT) devices can be installed to the correct standard, ensuring your work is always up to par.

Don't just take our word for it – AEM testers have been tried and tested by real customers who have given glowing testimonials about their effectiveness and value for money. **CLICK HERE** to find out more.

Smart thinking

AEM CV-100 testers have always had advanced smart/intelligent building capabilities and are designed for more than just straight cable certification. They offer features like power over Ethernet (PoE) under load to determine if IoT devices have enough power, network tests that produce MAC and IP addresses, and traceroute to identify faults outside the local network. Plus, now they're even better!

AEM understands that investing in equipment can be a significant expense, which is why it offers a 3-year care plan, including calibration and accidental damage. All adaptors can be swapped out once a year when worn, ensuring that your equipment is always ready when needed. AEM even protects your tester if it's accidentally damaged – if it cannot be repaired, AEM will replace it.

Get in touch

If you don't already deal with Mayflex, you can **CLICK HERE** to open an account.

For more information about AEM from Mayflex **CLICK HERE**, call our sales team on 0800 757565 or **CLICK HERE** to send an email.

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CABLING INNOVATORS AWARDS
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Get it right first tim

Rob Shepherd finds out from Robert Luijten of Fluke Networks about the need for testing as part of a regular maintenance strategy but, more importantly, as part of the installation process

RS: Is choosing the right cable for the job more important than ever? What are the challenges and demands, and has fibre optic cabling been a game changer?

RL: The applications are certainly much more bandwidth demanding these days, so that means the workmanship when cables are installed needs to be top notch. Best practices need to be followed, with no cutting corners. Depending on the applications that you want to run, you need to make sure that you choose the correct cabling type, that you use the right instruments for testing it, and that you have people with the knowledge and understanding to interpret the results that their equipment is showing them.

How do you choose the correct cable? You simply look at your applications and the specified loss limits and that basically defaults to the kind of cable you need. It's pretty straightforward, but choosing the cable is usually the work of a professional consultant – an installer would typically not specify which cable to use.

Of course, fibre optic cable is much more challenging in practice than copper, although there are essentially only two parameters to consider – length and loss. Singlemode cabling has better loss specifications than multimode fibre optic cable. As a result, multimode gets deployed for short range applications, while singlemode is used for long distances. However, singlemode can also be ideal for shorter distances in high speed applications or when a channel consists of multiple segments, due to its low loss specification.

The ultimate question is will the application work or not? In hyperscale data centres, for example, where they operate thousands of servers, they will run links on multiple fibres, using multi-fibre push-on connectors (MPO). In an office building copper twisted pair cabling will run in the horizontal, with fibre transporting data between individual floors (in the vertical) and the data centre. Fibre is also often used in a campus environment to connect various buildings.

RS: How does an engineer know when and how to test fibre optic links?

RL: The first testing can be carried out as soon as a bundle of fibre optic cables is installed. Essentially there are two test approaches. The first one that I recommend, as it is compliant with the industry standards, is to inspect the fibre end faces, clean if

ne

necessary and then do a link loss test using fibre optic sources and power meters.

Some technicians prefer to shoot a trace to an optical time domain reflectometer (OTDR) to see if anything strange is going on, before they do the official loss test. You could say this is doubling up on work but if you're in any way suspicious about the performance of the link, shooting a trace with an OTDR makes sense from an installation perspective because it provides insight into what is happening in the whole link. An end to end loss test will only tell you about loss over the link, it will not tell you about anything that's happening in the middle of the channel.

In any case, if a loss test fails, the use of an OTDR is highly recommended as it can pinpoint the location of events that exceed loss or reflectance limits. Maybe you'll need to replace a connector, clean a dirty connector, or maybe there's a tight bend in the cable. Some people like to use tie wraps but if used incorrectly they can bend the fibre. If you do that with a copper cable, electrons will still run through the cable but in fibre optics the light will exit the fibre and there will be major loss.

When testing for loss you always need to test if it is within the limits that are required for an application to work. The reality is that every piece of fibre and connecting hardware has some level of loss, so testing is essential to see if the allowable loss levels have been breached.

‘When testing for loss you always need to test if it is within the limits that are required for an application to work. The reality is that every piece of fibre and connecting hardware has some level of loss, so testing is essential to see if the allowable loss levels have been breached.’

RS: Can problems in data communications cabling lead to serious downtime in mission critical applications? How important is regular maintenance?

RL: There is often talk about the effects of downtime in mission critical applications and how to prevent it. The good news is that systems have redundancy built into them, so if a fibre goes down the signal will simply be rerouted. Large data centres are even backed-up at multiple geographical locations to have ‘mirrors’ in place. They can even reroute in the event of a major disaster like an earthquake. If mission critical systems go down, then there is almost certainly something beyond the cable that has gone wrong.

In terms of regular maintenance, if a link is running, my recommendation will always

be not to disconnect things. My strong advice is if it works then don't touch it because the minute you detach things, you have the risk of introducing contaminates.

Having said that, what happens in practice is that fibre optic channels will consist of multiple segments, including patch cords, and that's where you need to have the discipline to inspect and clean if necessary. If you reroute, use an OTDR to see if everything is still fine. If you have a new installation, make sure you certify the overall loss. Preventative maintenance is not necessarily something to schedule, it's something that is best practice.

RS: Has testing become easier or more complex over recent years?

RL: Testing in itself is never difficult, certainly not with instruments that have a high degree of user friendliness and a lot of intelligence built into them. When it comes to operating the testers, there are guides that tell people what they need to do, messages if things go wrong. Is it difficult to do? No. Do the people operating the testing devices always have the required experience and knowledge to understand them? Unfortunately not.

Today, almost anybody can operate a tester in the field. However, a lot of errors are made setting-up testers because, frankly, operators often don't have the overall project knowledge about cabling specifications that need to be entered into their device. You really need a project manager to set-up the testing criteria right first time.

Another issue is that if things go wrong, most people cannot really interpret an OTDR trace. They will look for an EventMap and say 'Ah, there's the problem'. Understanding a trace will, however, give you much more insight into what is really going on. Today's operators tend to rely on the tester to tell them what the problem is and most people who take measurements won't really question the results. But it doesn't follow that what it says on the screen has got to be right and make sense.

It's easy to misinterpret readings and you must have a level of familiarisation and knowledge about the equipment you're working with and what it is telling you. Experience is vital when testing data cabling. ■

ROBERT LUIJTEN

Robert Luijten is Fluke Networks' EMEA training manager. A true test and measurement expert, with more than 39 years of experience, he was responsible for the European launches of the Fluke Networks DSP-4000, the DTX CableAnalyzer, as well as the Versiv cabling certification system.

Comtec

Comtec, part of the ETC Group, offers test and measurement solutions for a wide range of applications with many of the industry's leading brands including AFL, Fluke Networks, Honeywell, Tempo Communications, Trend Networks and Viavi. We have solutions for testing copper, optical fibre, voice and electrical cabling, Wi-Fi, gas detection, security cameras and TV signals.

Need help or advice? We offer impartial advice on the most appropriate test and measurement equipment to meet your requirements and budget.

Not sure what you need? Why not try before you buy by utilising our hire services and get up to four weeks of rental fees back if you go ahead and purchase. We even offer finance options if you need to spread the cost of a purchase.

To see the extensive range of test and measurement equipment available from Comtec **CLICK HERE** or call our experts on 01480 415000 to discuss further.
www.comtecdirect.co.uk

Trend Networks

The new PoE Pro from Trend Networks allows users to eliminate guesswork when installing, maintaining and troubleshooting network cabling, and supports advanced PoE test reporting via the Trend AnyWARE Cloud App. The PoE Pro tester connects to the mobile Trend AnyWARE Cloud app to store test results on a phone. Users simply create a job folder in the app, connect the tester to a cable and send the result to the app. There is also an option to add a photo to each test result.

From here, users simply hit 'upload' to transfer the results to the Trend AnyWARE Cloud web based test management system. The test results can then be organised ready for high quality PDF reports to be generated. With detailed test reports, businesses can verify that technicians on-site have completed an install correctly and demonstrate to customers that delivered power is sufficient for their installed devices.

To find out more **CLICK HERE.**
www.trend-networks.com

NetAlly

NetAlly's innovative network test solutions have been helping network engineers and technicians better deploy, manage and maintain complex wired and wireless networks for decades. For more than 25 years, we have been the number one ally of network professionals worldwide. We began by making the world's first handheld network analyser – the LANMeter – and have continued as industry pacesetters ever since.

NetAlly continues to set the standard for portable network testing. We are passionate about innovation and motivated by one purpose – to create the best test equipment possible, designed with your success in mind. Network professionals around the world trust our best in class tools to deliver the visibility needed to get the job done, fast.

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

Mayflex

Available from Mayflex, the AEM TestPro CV100 multifunction cable certifier is the fastest cabling certifier on the market, saving you both time and money on-site. It also comes with specially designed AEM Smart Building Test Kits (K60E & K61E) for all testing requirements in today's smart buildings. These kits even perform innovative tests such as power over Ethernet (PoE) under load, to ensure that your PoE equipment is functioning correctly.

AEM testers have now been 'enhanced' with improvements such as a new capacitive touchscreen that is easier to use and navigate, with much improved screen resolution. You can even scroll through the screen like you would on a modern smartphone, making the use of these platforms a more enjoyable experience. All AEM CV-100 platforms come with a 3-year standard warranty, including a comprehensive 3-year care plan and free calibration – even for accidental damage.

CLICK HERE to find out more. Alternatively, to talk about your testing requirements call Mayflex on 0800 757565 or to send an email **CLICK HERE.**
www.mayflex.com

Networks Centre

In recognition of the significant growth in demand for optical fibre cabling, testing and certification, Fluke Networks and its partners in the Networks Centre Group have created an education programme with benefits.

Simply sign up and attend a demonstration on fibre testing and certification to receive a free Fluke Networks FiberLERT live fibre detector worth £107+VAT, as well as a cashback voucher redeemable against qualifying purchases for Fluke Networks' fibre test equipment. Follow the link below to learn more.

Networks Centre Group not only stocks and supplies Fluke Networks' test equipment, but also employs some of the most knowledgeable people on the subject of testing LANs – providing customers with pre- and post-sales support for the lifetime of the product. Our customers agree and for the last three years Networks Centre has been named top UK reseller by Fluke Networks.

CLICK HERE to find out more or call 01403 754233.

www.networkscentre.com

Spirent Communications

Spirent Communications has announced the availability of its M1 Appliance for testing Ethernet and Automotive Ethernet. The new space saving platform with its built in flexibility is designed to help accelerate time to market and assure successful deployments of new technologies, while also improving product quality and ensuring reliable, high quality user experiences.

The flexibility of the Spirent M1 Appliance makes it an ideal tool for the functional, performance and benchmark testing of new networking products targeting network infrastructure, as well as for validating evolving software defined networking and network functions virtualisation (NFV) technologies. The M1 Appliance's platform architecture delivers high reliability and density, with a maximum of eight network interface card (NIC) slots.

Support for a wide variety of NIC combinations offers the ability to create additional appliance kits for specific testing needs, while the small form factor means lower power consumption compared to larger chassis. The M1 Appliance also enables users to easily distribute test systems among multiple locations, as opposed to installing them in a dedicated lab space, which some users may lack.

For more information **CLICK HERE.**

www.spirent.com

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Practice makes perfect

Lisa Schwartz of AEM identifies best practices for assuring successful power over Ethernet (PoE) device deployment

'If you plan to significantly expand your reliance on PoE, the first place to ensure success is to certify your cabling infrastructure. To be certain that both new and existing cable runs will meet your needs, thorough testing is an absolute must.'

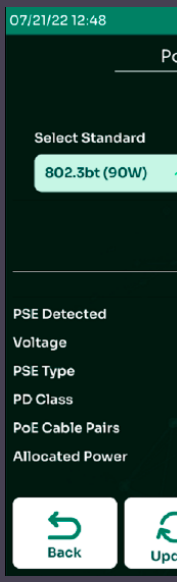
Looking at the challenges of a typical internet of things (IoT) rollout, the biggest hurdle usually isn't how to connect IoT devices to the LAN. Instead, getting power cheaply and reliably to the device is often a bigger problem. For example, installing AC power outlets next to every IoT device is laborious and cost prohibitive. It's also overkill considering the relatively low amount of voltage required by most IoT endpoints. Therefore, PoE has become a must have technology for virtually every enterprise and industrial IoT rollout. That said, PoE installations come with their own set of unique challenges.

NEED TO KNOW

Cable professionals, integrators and administrators must possess a certain level of knowledge when it comes to understanding what is needed from a power delivery perspective. Additionally, because PoE standards and use cases are constantly expanding, deploying and managing PoE endpoints and IoT devices requires a tool that provides granular visibility into whether a PoE device will be able to draw sufficient power across copper cabling for extended periods of time.

When an IoT rollout requires the assurance that PoE across twisted pair cabling will operate in production as expected, three unique testing phases emerge throughout the lifecycle of the deployment:

- During new cable installs – and when no PoE power sourcing or PoE endpoint devices currently exist to test against



– cable installers must use test equipment capable of verifying DC resistance unbalance measurements within a pair and across pairs. This will provide assurance that proper power and data delivery should be able to be achieved over every twisted pair in the cable run.

- Once the cabling and PoE switches/midspans are installed, further testing should be performed to verify that the power sourcing equipment (PSE) is delivering power to PoE endpoints that satisfies the endpoint's load requirements. In this situation, test equipment acts as the PoE endpoint and will run power load tests to provide assurance that the required level of PoE at the powered device (PD) can be achieved.

- PoE load testing is useful to IoT integrators, cable installers and network administrators, as it helps to eliminate any finger pointing between these groups when a problem does arise. It's also a great opportunity for the cable installer or integrator to create additional revenue by adding this critical step into their cable plant installation, verification or device integration process.

Let's drill down a bit further to understand the types of PoE tests that should be run, the different types of cabling to choose from based on PoE needs, the importance of cable certification for new installs and how to choose a test tool.

SCRATCHING THE SURFACE

According to the IEEE, PoE comprises three components – PSE, the PD and the cabling used to deliver power to the device. Examples of PSE are the switch or midspan power injector and an example of a PD is a security camera.

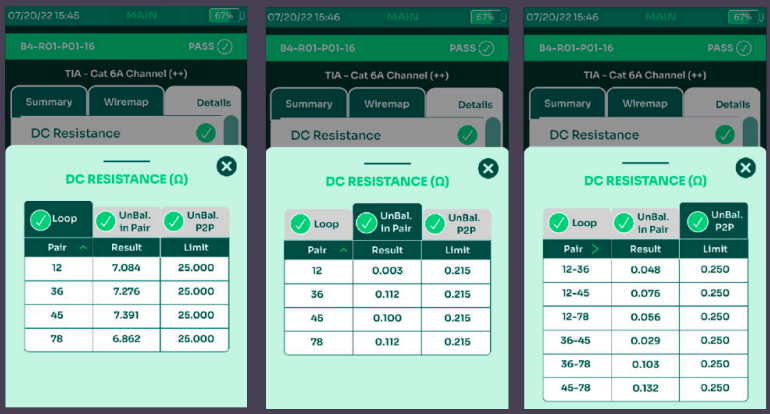
Twisted pair copper cabling is dual purpose in the fact that it not only carries electricity to power the device but is also used to also used for Ethernet data transport. There are several IEEE twisted pair PoE standards that exist today and each one delivers varying power levels from the PSE to the PD.

These standards also provide the necessary signalling that both the PSE and PD will understand. The signalling is used to detect whether the PD indeed needs power, as well as a negotiation process to determine the amount of power the PD requires for operation. Currently, there are eight different power classes available as defined by the IEEE. The power delivered by the PSE ranges from 4W in a Class 1 device to 90W in a Class 8 device.

PLAN OF ACTION

When planning for PoE rollouts, it's important that both the PSE and cabling be thoroughly tested to verify proper operation within the various PoE classes. This includes not only peak wattage capacity but also sustained power delivery over time and whether the cabling can succumb to DC resistance unbalance issues.

Extended testing for DC resistance unbalance has become an essential step within the IoT deployment process, as devices that require PoE++ levels of power at 60W or higher are more prone to causing significant interference problems with data delivery. Thus, for IoT implementations that require higher power delivery levels such as modern wireless access points (WAPs) and pan-tilt-zoom (PTZ) cameras, thorough testing of DC resistance unbalance is highly



recommended. Finally, both PoE load and negotiation testing will ensure a smooth PoE endpoint rollout with far fewer issues related to long-term power delivery use and wattage mismatches.

SETTING THE STANDARD

IEEE standards define different levels of powering. PoE also follows the same distance limitation of 100m that twisted pair cabling runs follow, as power level will decrease as it traverses the wire. This is why the standards define power levels at both the PSE and PD.

There are several Ethernet cable standards that PoE can operate across. Some cable types are better than others depending on the wattage the PDs require. Within common office and manufacturing deployment environments, you'll likely come across existing Category 5, Category 5e and Category 6 copper cabling. PDs requiring lower wattage can utilise this older cabling.

However, it's highly recommended that when powering devices that require 60W or higher sent over the cabling, newer Category 6A and higher cabling should be run. These types of cables use thicker conductor diameters and this helps reduce resistance. This is critical so that power is not lost due to compounding resistance over longer cable runs.

Category 6A and higher cabling is also better insulated and can handle the added heat produced by the higher power loads being sent across the wires. This is especially important when running higher wattage PoE in large cabling bundles. Lastly, thicker cables are far more capable

PoE Type	IEEE Standard	Power @ PSE	Power @ PD
PoE	IEEE 802.3af	15.4 W	12.95 W
PoE+	IEEE 802.3at	30 W	25.5 W
PoE++	IEEE 802.3bt (Type 3)	60 W	51 W
PoE++	IEEE 802.3bt (Type 4)	90 W	71.3 W
PoDL / SPoE	IEEE 802.3bu IEEE 802.3cg	79 W	52 W

End Point Network Device	N Re
VoIP Phones, Wireless Access Points	
PTZ Surveillance Camera	
Video Conferencing, Multi-Band WAP	
Building Lighting Systems, TV	
Building Automation, Sensors, Actuators	

in delivering higher power and faster Ethernet transmission speeds for multi-gigabit connections over twisted pair copper. Thus, running newer cabling future proofs an IoT investment.

To increase the likelihood that your cabling won't be an issue when running PoE, it's necessary for cabling contractors to certify cabling to meet the cable manufacturer's strict standards. This is true not only in terms of ensuring that the cabling can operate at multi-gigabit speeds but also to test and ensure proper power load capacity for IEEE 802.3af, IEEE 802.3at and IEEE 802.3bt standards.

FIRST THINGS FIRST

If you plan to significantly expand your reliance on PoE, the first place to ensure success is to certify your cabling infrastructure. To be certain that both new and existing cable runs will meet your needs, thorough testing is an absolute must. The best way to avoid problems down the road is to use a multifunction test solution that can not only certify the cabling infrastructure but can also verify both data transport performance and assure power load at the end device. Then you can be sure that your cabling is ready for a production environment. ■

Max Power quirements	Max Reach	Applicable Standard
12.95W	100m	IEEE 802.3af
25.5W	100m	IEEE 802.3at
51W	100m	IEEE 802.3bt (Type 3)
71W	100m	IEEE 802.3bt (Type 4)
7W	1000m	IEEE 802.3bu

LISA SCHWARTZ

Lisa Schwartz is director of product marketing at AEM. She has worked in the test and measurement industry for 30 years, spanning five major brands of test equipment for cable certification and network connectivity testing. The primary capacities Schwartz has served in have been product management, business development and marketing. In her current role at AEM, she oversees product marketing, working closely with sales and engineering to ensure AEM's test solutions are competitive and innovative.

Quick clicks

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

Accelerating Sustainable Action Through The Internet Of Things (IoT) is a report from **Inmarsat** that claims most business leaders in major industries doubt their peers' environmental, social and governance (ESG) reporting.
CLICK HERE to read it.

Gurucul has released its annual 2023 Insider Threat Report, which found that more than half of organisations have experienced an insider threat in past year.
CLICK HERE to download a copy.

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

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

the

5G: Where Is The Money? is a white paper from **Juniper Research.** **CLICK HERE** to download a copy.

Sustainable Futures For Data Centres is a blog from **Telehouse.** **CLICK HERE** to read it.

Bare Metal is a documentary by **Brandon Gries** that details the digital infrastructure industry's work to reduce its carbon footprint in an effort to help save the world. **CLICK HERE** to watch it.

The heart of the ma

Nick Edwards of HellermannTyton explains the benefits of using zone cabling and passive optical LAN (POLAN) in intelligent buildings

Intelligent buildings are increasingly popular due to the benefits that they bring to both owners and occupants. An intelligent building is a modern and technologically advanced structure that is equipped with automated systems and devices that are integrated to provide occupants with an elevated level of comfort, convenience and efficiency by offering a range of amenities such as adjustable lighting and temperature, air quality control, security, and access to real time data and streaming media. Crucially, they also give building owners the flexibility to monitor and control their systems to manage energy consumption, which is priority when it comes to cost and carbon footprint reduction.

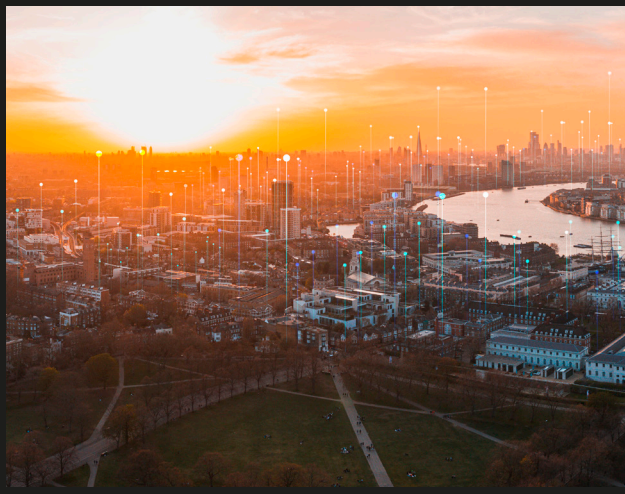
MANY AND VARIED

Sensors and building automation are used to operate numerous services from access control and IP CCTV to lighting and other user-centric functions including wayfinding and conference room scheduling. These sensors and devices require a connection back to the internet, where they are typically controlled by cloud based software. An increasing number of these devices come online each year as the internet of things (IoT) continues to grow.

According to a report by Juniper Research, the number of intelligent buildings worldwide is projected to climb from 45 million in 2022 to 115 million in 2026 – an increase of more than 70 per cent in just four years. This growth will be compounded by the increasing challenge for greater energy conservation and savings, in addition to the increasing demand for IoT enabled building management services.

IN THE ZONE

Intelligent buildings are some of the most technically innovative structures to be developed, but the use of IoT supported devices and services can only be realised if the network infrastructure offers the flexibility, speed and bandwidth required. One of the most flexible network cabling approaches that can support the needs



of an intelligent building is a zone cabling topology.

Zone cabling is a progressive network topology that supports the convergence

tter

of data and voice networks, Wi-Fi systems and other communications media. It also has a greater return on investment (ROI) for the building owner by offering a high degree of flexibility and reduced network maintenance costs.

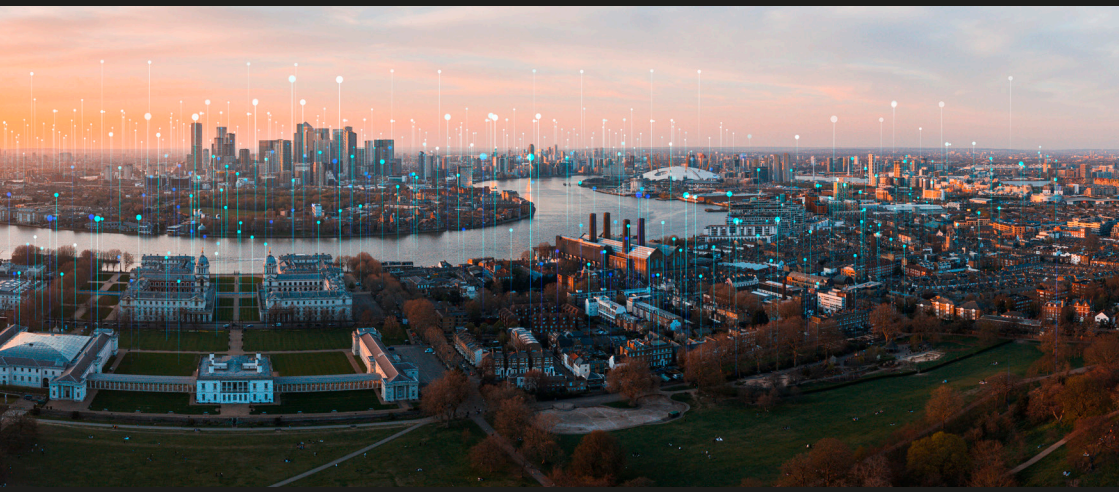
With traditional installations, cables run from the telecommunications room (TR) directly to the device. In a zone cabling topology, network cabling is installed in a hierarchical architecture. Cables run from the TR to a consolidation point (CP), which is strategically located to service a specific area or zone. Cables are then connected from the CP to the device that requires a network link or remote powering.

NO LIMITS

Most zone cabling installations are based on passive connectivity. In this scenario the network infrastructure is limited by the usual 100m channel lengths when using a twisted pair Ethernet system such as Category 6A cabling. The benefit of a passive zone cabling design is that upon installation, the building owner can choose to flood wire from the TR into the CPs but not necessarily utilise all ports on day one. This leaves capacity to connect further devices or services in the future as the demand grows or changes.

The ROI comes over time with the reduction in network maintenance costs. Any additional links required to connect devices are installed from the CP. A very simplified example would be to imagine a small office floor with a CP or zone termination box (ZTB) located to service a particular area.

Upon install, the ZTB is flood wired from the TR, offering 100 per cent of its port capacity. However, on day one the building owner utilises only 50 per cent. In the future the end user employs more staff who require desk points to be brought online. The engineer simply connects the work area to the ZTB CP, which is easily done by utilising a modular plug terminated



‘Unlike traditional copper based networks, POLAN uses optical fibre cables to provide high speed connections that are not only more dependable, but also more energy efficient. The energy savings from POLAN can be substantial, with reports showing power savings of up to 75 per cent.’

link (MPTL). Equally, any device that requires moving can be disconnected and reconnected at the CP. This alleviates the need to install long cable runs from the TR.

MAKING LIFE EASIER

In some cases, it is not unusual to decommission links and remove them completely to run new ones. This is an inconvenience not just to the building occupants, as it can result in disruption from the physical work being conducted, but it also increases the risk of network downtime, which can have a negative effect on the enterprise itself. Zone cabling can relieve the requirement for such disruptive and costly moves, adds and changes (MACs).

Zone cabling topologies can also employ the use of active equipment within the zone consolidation area. This would typically involve the use of a much larger zone cabling enclosure (ZCE) to house an additional switch or media convertor. This design allows building owners to push beyond the 100m channel limitations of twisted pair media, which can be solved by deploying optical fibre closer to the device. This is typically referred to as fibre to the desk (FTTD) or POLAN – the latter being a more generic term.

SEE THE LIGHT

Unlike traditional copper based networks, POLAN uses optical fibre cables to provide

high speed connections that are not only more dependable, but also more energy efficient. The energy savings from POLAN can be substantial, with reports showing power savings of up to 75 per cent. Furthermore, POLAN is flexible and can accommodate a wide range of applications – from video streaming to voice over IP. It is also easier to maintain, expand and repair than traditional copper based networks, resulting in fewer downtime and technical issues.

POLAN utilising a zone cabling architecture not only gives the benefits of distance, speed and bandwidth, but the use of smaller cables can help reduce the capacity required in containment systems. Larger intelligent buildings can benefit from a much higher density of cabling without sacrificing critical real estate, with the use of ruggedised micro cables achieving 24 fibres in a 3mm jacket. In many cases now we can install internal micro ducting and have fibres blown around the building to designated areas of demarcation.

One of the biggest draws with using fibre is the fact that it is not affected by electromagnetic interference (EMI) or other external sources that can induce noise in copper based cabling systems. Fibre also offers improved security features such as encryption and physical separation of the network components, which can prevent unauthorised access to the network. This is ideal if you are running critical applications or have the need to protect sensitive data.

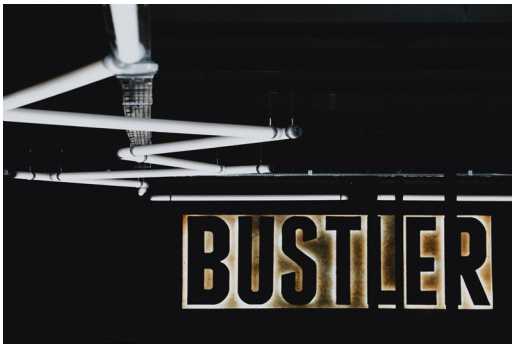
MOVING ON UP

To provide occupants with an improved user experience and working environment, anyone involved in infrastructure cabling consultancy specification, design and implementation within the intelligent building market should seriously contemplate an alternative network cabling solution that is scalable and repeatable. Think about the benefits a zone cabling topology can offer, with its ability to increase future capacity, network flexibility and overall ROI. Pair this with the use of a POLAN and you can reap many more options to create a lean and dynamic network infrastructure that services your intelligent building now and in the future. ■

NICK EDWARDS

Nick Edwards is LAN connectivity product manager at HellermannTyton. He has been with the company since 2018 and has over 10 years of product management experience across the network infrastructure sector. At HellermannTyton, Edwards has streamlined and relaunched the LAN connectivity product range, spent time developing the multi-dwelling unit (MDU) product range and plays a key role in delivering installer training for copper connectivity to a wide network of customers.

Comtec



The Chocolate Factory is the UK's smartest street food market and independent events space. Based in Derby, it has been provided with cutting edge technology delivered via a high quality network infrastructure. The CommScope cabling infrastructure, supplied by Comtec, was designed and installed by Scenariio to deliver fast, high quality and responsive networking and connectivity.

The design means that smart building technology such as the smartengine intelligent lighting system sits at the heart of the building, delivering lighting powered by data cables. This gives staff remote control over each individual light, reducing power consumption and allowing for the setting of different lighting scenes and programmes to be tailored to each event.

Each light has a smart sensor in it to monitor temperature occupancy and motion. This is supplemented with people counters, environmental data sensors, smart CCTV and access control. All data sources are then fed into a dashboard to monitor the space.

For the full story **CLICK HERE.**
www.comtecdirect.co.uk

Siemon

Siemon provides a range of Category 6A solutions that are perfectly aligned to intelligent building requirements. The Z-MAX Category 6A copper cabling system has best in class performance, fast termination and remote powering capabilities. It provides an ideal IP based physical infrastructure to effectively converge data, voice, video, lighting, security, building automation and other low voltage building systems in intelligent buildings.

For field termination needs, the Siemon Z-PLUG enables the seamless connection of power over Ethernet (PoE) devices for a range of applications including lighting, wireless access points, audiovisual equipment, distributed antenna systems (DAS) and building automation systems (BAS). Z-PLUG can be terminated to both shielded and unshielded, as well as solid and stranded cables.

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

HellermannTyton

HellermannTyton has a connectivity solution for every phase of your network infrastructure – from cable entry into the building and distribution across the building, to the data outlet at the desk.

From the moment fibre optic cable enters the building, HellermannTyton's products come into their own. The S5 MDU enclosure will distribute any incoming fibre to the comms room or to multiple zones in the building. From the comms room, HellermannTyton has a number of copper and fibre solutions that can then be used to connect offices, active equipment and hardware to the outside world.

HellermannTyton manufactures a wide range of innovative solutions that are designed to provide connectivity to different zones within a building. Whether it's the Zone Termination Box, an under the floor cable distribution box, a work area pod or a pre-terminated 'to the desk' solution, HellermannTyton has a product that can meet the network infrastructure demands of any intelligent building.

For more information **CLICK HERE.**
www.htdata.co.uk

Working the room

Mike Hook of LMG takes a look inside the internet of things (IoT) powered smart building

An increasing amount of the true value of a building lies in the intelligence embedded in the fabric of its infrastructure. It's no surprise that the phrase 'smart building' has become something of a buzzword in recent years – it is used to describe a bewildering array of spaces including relatively traditional ones. I've previously written about the elements that make a building truly smart, but this understanding continues to evolve in tandem with technology.

MAKING LIFE EASIER

Recent innovations in IoT tech have made it possible for a building environment to be fully connected with its technology, space and inhabitants. Until relatively recently, creating a building wide IoT network was a technically challenging and expensive

task, especially for existing buildings – and owners were struggling to access meaningful data about their spaces.

Now, however, we are seeing the first integrated cloud based solutions that not only significantly simplify the deployment of IoT networks, but also bring optimal connectivity between devices across disparate networks. This means data can be consolidated into a single view for building owners and operators. It's a brand new kind of smart building – powered by a new era of tailored IoT platforms and services.

THE WHOLE PACKAGE

Delivering these integrated IoT solutions can take many forms. But at the core of any such service are four key components:

• Sensors

At the heart of any IoT package are the sensors that collect data and transport it into the system. These sensors can monitor an array of parameters including basic temperature and humidity, as well as indoor air quality, zone by zone power usage, occupancy and space utilisation. The key is to select the right sensors for the desired outcome and ensure they are properly deployed and configured.

• IoT gateways

Wireless gateways act as the bridge between the sensors and the backhaul connectivity. They are responsible for consolidating the data from the sensors and transporting it to the cloud for processing. The quality of the gateway is critical to ensuring the data is cost effectively and accurately transmitted.

• Backhaul connectivity

Backhaul connectivity is the means by which the data is transferred from the gateways to the cloud. This can be achieved through either cellular or local area networks (LANs). The choice of backhaul connectivity is determined by the specific requirements of the deployment and the desired level of ownership and control.

• Software for handling and representing data

The final component of a successful IoT network is the software that processes and presents the data in real time. This software is vital for analysing the data, presenting it in a meaningful manner and providing actionable insights. The software must be visual, scalable, secure and user friendly, with the ability to handle large amounts of data in real time.

Crucially though, these technical elements must be packaged in a way that makes deployment seamless. Flexibility and speed are key – ensuring that the IoT platform can be overlaid on, or in parallel to, a customer's existing network without disruption and that the time to data analysis and return on investment is as short as possible. Once the IoT platform is in place, the building owner or operator is ready to start reaping the benefits. So what does that look like?

PERFORMANCE ART

You now have an integrated system that captures all of the granular building performance and usage data that was once easily overlooked. This technology adds an entirely new layer to a smart building's infrastructure.

'Today, the real value of a building often lies in its intelligence. Tomorrow, the value will lie in how seamless, safe and accessible the experience is for the building's occupants.'

Ultimately, the purpose of this kind of IoT solution – this new layer – is to track and optimise building performance and improve the occupant experience. The integration of this technology can provide essential insights into various aspects of building management such as power usage, air quality, occupancy and room/desk usage. As a consequence, it becomes easier than ever for building owners and operators to measure up against building certifications such as WELL2 and SmartScore – allowing their facilities to be as attractive as possible to prospective occupants.

Another major benefit is a greater understanding of the indoor air quality of a building. The sensors installed throughout can provide information on CO2 levels, humidity, dust, mould, volatile organic compounds (VOCs) and other unwanted airborne particles. With this data, the building manager can quickly identify and resolve any issues in the building environment – ensuring compliance with industry and public standards and keeping tenants healthy and happy.

FEATURES AND BENEFITS

The arrival of easy to deploy, integrated IoT solutions marks a sea change for smart buildings. But it's also transformative for those who live and work in them.

In addition to attracting and retaining tenants, there are hard cost savings to be had with regards to power usage. Data on energy consumption can be collected and presented in a user friendly interface for the building manager to analyse. The data can highlight areas of high consumption, such as a specific room with inefficient lighting, and help the building owner make informed decisions, such as switching to more energy efficient equipment. Additionally, the data could also indicate instances of unnecessary energy usage, such as electronics in rooms that are not in use, allowing the building manager to implement rules to conserve energy.

Finally, room and desk usage patterns are easily identified with IoT occupancy sensors. Information around foot traffic can help the building owner determine if the building's layout is efficient and user friendly and identify any issues, such as awkward room

layouts that may be contributing to over or underutilised spaces. This information is also necessary to create an occupant room or desk booking system within the building. These booking systems can massively improve the productivity and experience of the occupants.

THE COMPLETE PICTURE

Today, the real value of a building often lies in its intelligence. Tomorrow, the value will lie in how seamless, safe and accessible the experience is for the building's occupants. All of the aforementioned benefits, while providing clear efficiencies and savings for the building owners and operators, ultimately create a superior experience for occupants. For corporate landlords looking to fill their buildings with healthy, happy tenants, there's never been a better time to smarten up and take note of these latest developments. Smart buildings are about to get a whole lot smarter. ■

MIKE HOOK

Mike Hook is executive director at LMG. Over a 30 year career he has acquired a unique combination of technical and business skills that enable him to convert technological innovation into valuable business outcomes. He joined LMG in 2007 when it acquired 2iServices, a company he founded, and the world's first organisation dedicated to creating automated infrastructure management solutions.

Delivering the goods

As one of the data centre sector's most forward thinking entrepreneurs, Antoine Boniface has developed cutting edge facilities all over the world. Rob Shepherd recently caught up with him to find out more about his life and career, and his thoughts on some of the big issues affecting the sector

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

AB: I am president for Europe, Middle East and Africa (EMEA) at Vantage Data Centers. I'm responsible for driving Vantage's ongoing expansion across the region, as well as overseeing the business operations of all our campuses. I also oversee the sales for hyperscaler customers in the Asia Pacific (APAC) region.

I am especially focused on managing the capacity requirements of large customers while ensuring on time delivery. At the same time, a key priority is to optimise build costs and capital expenditure.

'On-time delivery and 100 per cent uptime performance should be top priorities and non-negotiable, no matter how challenging the location. The availability of scalable, future proofed power and resilient critical infrastructure are also prerequisites.'

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

AB: When I was growing up various members of my family were in real estate, so my interest in property stemmed from there. At school I was heavily into computer programming and video games, so much so that in 2007, while still at college doing a master's degree in industrial and entrepreneurial engineering, I co-founded my first IT company – an internet application dedicated to car parking rental.

After completing my education in 2008, including a master of science in programme, project management and business development, and having started a social gaming company, I secured a job as a project manager at Linkcity. Here I was able to combine my passion for computer science and growing interest in real estate, as my first assignment was a data centre. One might say my entry into the data centre sector was a happy coincidence!

For three years I led the development for some of the largest data centres in Paris before moving on to co-found and run my own data centre business – Etix

Everywhere – in 2011. Etix provided edge data centres in Europe, Africa and Latin America, high performance computing (HPC) facilities in the Nordics and hyperscale data centres in some strategic Tier I cities such as Frankfurt. The company was acquired by Vantage Data Centers in 2020.

RS: What excites you about the sector at present?

AB: The sector is very dynamic and the demand for hyperscale data centres is very strong, both in Tier I and secondary markets. Customers are very demanding and I get a buzz from making sure we meet their requirements – from design, construction and critical infrastructure to service delivery.

The sector has also changed significantly in the last three years – we are now seeing many more customers requiring large custom design data centres for their own use both in established locations and emerging markets. I like the variety of operational demands this presents us, as well as the business opportunities. Working in a growing number of EMEA locations also means plenty of travel, which is something I have always enjoyed.

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

AB: A good one is one that assures customers that their technology and applications are powered, cooled, protected and connected, when and how they want, irrespective of geographic location. It also provides optimised energy efficiencies, industry leading Power Usage Effectiveness (PUE) ratings, and compliance with environmental, security, quality and operational regulations.

On time delivery and 100 per cent uptime performance should be top priorities and non-negotiable – no matter how challenging the location. The availability of scalable, future proofed power and resilient critical infrastructure are also prerequisites. An operator's processes and technologies should not simply be written into a service level agreement (SLA) but practiced with rigor at every level of responsibility. Key to this are well trained on-site engineering teams, fully certified to perform ongoing and preventive maintenance for non-stop performance.

Being totally confident in critical infrastructure also requires it to be rigorously tested. Ultimate proof comes with black testing where, under strictly controlled conditions, incoming

mains power is isolated to allow the uninterruptible power supply (UPS) to take the full load before the emergency back-up generators kick in.

Comprehensive environmental health and safety (EHS) is a further differentiator, as it's inextricably linked to operational excellence. Major hyperscalers already recognise this and include stringent EHS as part of their SLAs. They and their data centre partners are focused on the entire lifecycle of safety. They recognise the benefits it brings for ensuring zero incidents to meet demanding delivery deadlines on time and within budget, and ensure compliance with international standards and local regulations.

RS: How will investment in edge computing change the profile of the data centre over the next few years?

AB: Small edge data centres close to end users, machines and devices certainly have an increasing role to play. They will increasingly interact with large facilities when sharing, prioritising and optimising IT workloads, for example.

However, the hyperscale end of the market continues to grow rapidly and shows no sign of slowing down. At the end of 2021 there were 728 hyperscale data centres in operation globally according to Synergy Research Group. Over 300 more are already planned and the global number is set to hit 1,200 by 2026. The average size of data centres is also growing to accommodate growing demand for capacity.

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

AB: Ensuring optimal levels of stable power for resilience and continuous availability is, of course, the priority. However, customers also expect green power at competitive rates and maximum energy efficiency. It's a fine balance to achieve but one that industry leading data centre providers, customers and suppliers are successfully addressing.

Modern energy management and building management systems go a long way in providing the comprehensive monitoring, measurement, alerting and reporting that operators and customers need. However, the industry's move to net zero also clearly impacts on data centre design and requires a holistic approach.

This must consider the impact on carbon, energy, water, waste and communities wherever data centres operate. This can be achieved by designing facilities to limit waste and lower carbon footprint by making them as energy efficient as possible and run on renewably sourced power. Opportunities to reduce the carbon intensity of the fuels used for back-up power generation should also be explored.

Innovative and creative thinking is also a necessity. At one of our campuses in South Africa, for example, we have put in place a long-term solar power purchase agreement (PPA) with SolarAfrica – this enables us to supplement the local grid that powers the data centre with renewable energy so local businesses and residents have access to competitive stable renewable energy, as well as our customers. And for cooling we design our facilities to use virtually no water. In areas where we need to use water because of climate conditions or customer requirements, we explore solutions that minimise any negative impact.

RS: What more should be done to address the industry skills shortage and encourage more young people to have science, technology, engineering and mathematics (STEM) based careers?

AB: With skills shortages across the

IT industry, chief information officers (CIOs) can, and should, turn to the convenience, flexibility and productivity benefits afforded by colocation and host more IT workloads in the cloud. However, it is equally important to develop longer-term strategies for attracting new blood into their organisations, while also retaining and leveraging the latent skills that may already exist within the workforce.

'Practicing diversity and inclusivity in the widest sense will ensure significantly more people from all walks of life, and irrespective of gender or ethnicity, are equally considered for positions of responsibility.'

This means thinking more creatively, going beyond the norm and looking past the conventional wisdom that has seen the industry remain too inward looking when it comes to recruitment. Practicing diversity and inclusivity in the widest sense will ensure significantly more people from all walks of life, and irrespective of gender or ethnicity, are equally considered for positions of responsibility.

For key positions that cannot otherwise be accommodated from within the current workforce, CIOs should consider potential candidates working in related industries. For instance, in the data centre this might include those working in the wider construction sector such as rail and gas, where there is significant opportunity for the transference of skills. Equally, for more general roles – project management, for example – be more open to considering graduates from non-engineering backgrounds. Moreover, consider recruiting from further afield, not just from within the local region or country concerned.

At Vantage we have a Women Leadership Forum and the Justice, Equity, Diversity and Inclusivity Council (JEDI). These support actionable programmes or protocols that can lead to a more diverse and inclusive workplace. The Women Leadership Forum ensures women are well represented and have a voice in the continued growth of our company, and in the data centre industry as a whole.

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

AB: An abundance of sustainably produced power is key, as rack densities are being driven up to unprecedented levels. Use of on-site multifuel gas generators and solar energy will also help to deliver on requirements for more and more renewably sourced green power.

Meanwhile, multifuel power generators will generate uninterrupted power cleanly using gas in an economical and environmentally sustainable way. Imagine also, a data centre built in the not too distant future that captures the heat generated by servers and uses it as a supplemental source of power.

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

AB: Our chief executive officer (CEO) once advised me the best way to manage customer expectations was by not over promising. This helps ensure delivery deadlines are always met on time and within budget. ■

Yorkshire Water invests in smart sensors and mobile network technology to provide remote water quality monitoring

Yorkshire Water has improved connectivity for its remote smart sensor technology and enabled up to 1,000 Nidderdale residents, businesses and visitors to benefit from new mobile phone coverage, thanks to a partnership with BT which saw a new EE 4G mast installed. State-of-the-art monitors have been installed on water courses feeding Scar House reservoir to help monitor and improve water quality.

The data from the monitors will be transmitted to Yorkshire Water by the newly installed EE 4G mast, and this will allow scientists and engineers to proactively select the best available water sources for transfer to its water treatment works. Weather, temperature and the condition of the moorland can impact the quality of water sources, as they can influence things like the amount of peat found in the water. The better the water quality is at source, the less energy it takes to process at the treatment works, reducing Yorkshire Water's carbon footprint and supporting its net zero carbon ambition.

The Berlinale welcomes Asian filmmaking talent with Colt Technology Services' fibre optic network

The 73rd Berlin International Film Festival – the Berlinale – is using Colt Technology Services' international fibre optic network and on-demand service for the first time for the delivery of film contributions from Asia, via a hub in Singapore. This enables film producers from the Asia-Pacific (APAC) region to transfer their work to Berlin faster and more securely.

The service supports the Berlinale's strategy to make it as easy as possible to upload contributions from around the world, especially where stable bandwidth capacity is a challenge. The digital infrastructure integrates Colt's existing High Bandwidth Service, a direct line between the Berlinale servers and the DE-CIX central internet hub in Frankfurt, which studios around the world use for uploads.

Filmmakers from the APAC region upload their work via the internet to a server at the partner data centre in Singapore. From there, Colt establishes an end to end on demand connection via Ethernet between the data centre and the Colt node in Berlin, where the Berlinale's film servers are located.

Keysource awarded Timeline TV critical facilities management contract

Timeline TV has awarded Keysource a critical facilities management contract. Under the terms of the deal Keysource will provide maintenance and operational management support for the company's data centre. The data centre is based at its Ealing Broadcast Centre (EBC) – a 9,700ft² state-of-the-art broadcast facility, which provides a wide range of services such as virtual studios, remote production, playout and post production.

The data centre is central to Timeline TV's ability to deliver outside broadcasts, post production, studios, radio frequency and satellite, managed services, and systems integration to the international TV market. With resilience a key driver, Keysource will deliver a fully comprehensive, self-delivered preventative maintenance solution across all mechanical and electrical (M&E) equipment. This will be backed-up by 24/7 support from the field engineering team that will provide emergency response utilising back office technical analysis to reduce mean time to recovery.

PROJECTS & CONTRACTS IN BRIEF

Bulk Data Centers' customers will now be able to verify that their data is powered exclusively by 100 per cent renewable energy 24 hours a day, seven days a week. The 24/7 power matching service will initially be available at Bulk's OS-IX facility in Oslo, with power being matched against the nearby Bingsfoss hydropower station.

Secure IT Environments has carried out two uninterruptible power supply (UPS) upgrades for a leading UK retailer.

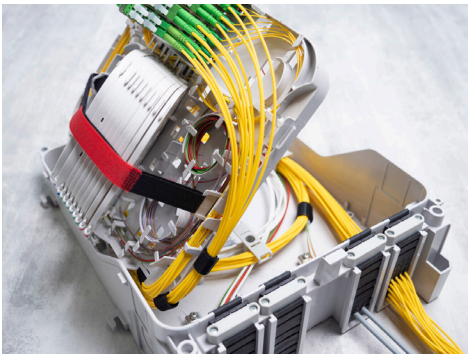
Equinix is building its second data centre in Barcelona. The new site will serve as a strategic connection point for data communications between Europe, Africa and the Middle East.

Greenergy Data Centers (GDC) has deployed Juniper Networks' cloud ready data centre and artificial intelligence driven enterprise solutions to support its business and data centre operations. GDC is the first and only large scale data centre in the Baltics, offering enterprises, government agencies and managed service providers a place to safely store their mission critical data.

Damac Data Centres will go live with facilities in Riyadh and Dammam before the end of 2023. A further 35MW IT capacity will be built in addition to the 20MW already under construction. Each facility will launch with 5MW IT capacity in Q4 2023, followed by a further 5MW in Q1 2024.

R&M

R&M is expanding its portfolio of fibre optic based above ground cable laying solutions. The portfolio now includes splice closures, box and terminal systems for cabling to masts and above ground fibre optic distribution, as well as outdoor adaptors and cables.



The global Precon program is also new. This offers network operators an opportunity to order ready to install all in one solutions.

R&M's aerial offering supports fast, large scale FTTx network connectivity in suburban and rural regions. R&M can also advise fibre to the home (FTTH) providers worldwide on aerial network topology planning, cable routing and split ratios. R&M housings can be retrofitted for subsequent network expansion and unused ports can be plugged in at any time.

A FTTH rollout can be implemented around two and a half times faster than usual with above ground cable laying. Existing masts can continue to be used and there is no need for digging and trenching.

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

Huber+Suhner

The latest addition to Huber+Suhner's Polatis all optical switch portfolio provides operators with 80 per cent more capacity than any other solution on the market.

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Something in the air

Bart Giordano of Ruckus Networks looks at how shared spectrum, converged networks will shape enterprise connectivity

Private wireless networks that drive enterprise environments are on the threshold of a massive evolutionary leap forward. After a decade of incremental progress, 2023 will be the year that we will likely see widespread and large scale convergence of Wi-Fi and cellular in the enterprise space. This convergence will unleash incredible new potential for bandwidth, efficiency, security and flexibility in these networks, as theoretical goals finally achieve practical reality.

LONG AND WINDING ROAD

The typical process of leaping from the drawing board to the enterprise involves publication of new standards, earning regulatory approvals, the introduction of compatible connected devices and then, finally, broader marketplace adoption. It's been made even more complicated by the very element of both Wi-Fi and cellular that makes convergence possible in the first place – the availability of shared, unlicensed and licensed spectrum and the challenges in managing that spectrum responsibly and efficiently. Assisted by an increasingly cooperative regulatory environment, the future of enterprise networks is about to be born on a global scale.

Today, many large enterprise environments rely on a mix of Wi-Fi and indoor/outdoor small cell or distributed antenna systems (DAS) for cellular connectivity. The two networks run side by side, each with its own strengths for

‘Both Wi-Fi and cellular technologies have recently gained immense new bandwidth through the addition of unlicensed shared spectrum. In Wi-Fi’s case, this is the 6GHz band accessible to Wi-Fi 6E and Wi-Fi 7, which basically quadruples throughput.’

particular applications.

Wi-Fi is well suited to most connectivity needs, as it’s an economical and efficient way to connect users, internet of things (IoT) devices and other infrastructure. Cellular networks, on the other hand, offer superior mobility over large distances and high speeds, automatic SIM card authentication and security and, of course, lower latency. Most enterprises that employ both networks see about 80 to 90 per cent of traffic moving over Wi-Fi and the remainder over cellular, reinforcing Wi-Fi as the workhorse of connectivity, and cellular as the specialised option for critical applications.

SHARE AND SHARE ALIKE

Both Wi-Fi and cellular technologies have recently gained immense new bandwidth through the addition of unlicensed shared spectrum. In Wi-Fi’s case, this is the 6GHz

band accessible to Wi-Fi 6E and Wi-Fi 7, which basically quadruples throughput.

It's commonly held that private wireless networks are exclusively cellular networks. Indeed, some wonder if and when cellular advances will finally overwhelm Wi-Fi's advantages and replace the technology altogether. But the future we see is one where there isn't conquest of one network over the other, but a convergence of the two that is greater than the sum of the parts.

DEFINING MOMENT

New IEEE standards aim to make Wi-Fi 7 approach similar latency and reliability as that found in cellular networks. There is also a solution to troublesome per network authentication procedures in the development of Hot Spot 2.0, or Wi-Fi Certified Passpoint, which eliminates manual device authentication on participating Wi-Fi networks. Likewise, new private LTE/5G architectures are employing all digital fronthaul over shared IT infrastructure to power virtualised single cell coverage of larger areas and mixed indoor/outdoor environments, reducing or eliminating cross sector interference and greatly improving both performance and energy efficiency.

As their capabilities approach parity in 2023 and beyond, we're expecting to see these two fast evolving network technologies crosspollinate to become a converged, user transparent unified platform that shifts seamlessly between technologies as needed – no more manual logging into a Wi-Fi network and no concerns over cellular roaming. This federation of networks means more powerful IoT capabilities and consistently superior user connectivity across the enterprise – from the lowest parking level to the highest office suite, from the warehouse to the manufacturing floor, and across the entire logistics chain. Shared spectrum will enable applications that will redefine industry and commerce as we know it today.

TREND SETTING

With the growing adoption of compatible devices, we see this trend accelerating as issues of efficiency and security grow more and more important for enterprises worldwide – and the applications are virtually unlimited. For example, large physical plants or campus environments are best covered by cellular networks, but indoors, Wi-Fi is the more flexible option. When workers and their devices are travelling around a 20 acre yard before coming inside, seamless transitions on a unified platform can help ensure both productivity and worker safety.

Likewise, industrial robots are being used alongside human workers more and more often, moving at speeds that require precise control to avoid accidents and injuries. These robots rely on superfast, low latency 5G connectivity to operate safely – indoors or out. Meanwhile, automated inventory systems can work perfectly well on Wi-Fi.

Hospital and clinical settings rely on total network availability, top shelf security and maximum network speed. They are also loaded with connected devices, telemetry and equipment inventory sensors. While many of these applications are suited to Wi-Fi connectivity, others – including remote robotic surgeries – demand the low latency of 5G networks. To deliver medical services, modern healthcare needs both networks

but they don't need the extra overhead of managing them independently.

A GROWING THREAT

Another important consideration is the proliferation of new connected devices in intelligent building applications. While a boon to efficiency and cost control, IoT devices are also an increasingly popular entry point for bad actors looking for network access. As far back as 2016, it was demonstrated that ransomware could be introduced via connected thermostats, with building occupants either roasted or frozen until ransom was paid. You can even learn how to do it in a 30 minute YouTube video.

IoT devices require special attention to keep them secure. While the tools exist to lock these devices down, they can be difficult to use for those without specialised security training. The silicon within IoT devices works with security credentials from certificate providers to ensure that every connection is legitimate but getting these two sides to mesh – the silicon's toolbox and the certificate provider's credentials – is an accountability gap that falls to the enterprise IT staff.

A converged private network provides the foundation for a software based credentials management system that can protect all IoT devices – whether connected by Wi-Fi or cellular networks – and continuously evolve to address new threats as they emerge. In a sense, such a credentials management system is the IoT of IoTs, in that it automates access and control to secure the entire IoT environment.

THE FUTURE'S BRIGHT

The alignment of friendlier regulation, increased adoption of compatible devices and the compelling business case for private networks in the enterprise all point to amazing things. Vast new bandwidth allocations, smarter management of shared spectrum and the approaching near parity of Wi-Fi and cellular network capabilities mean that we won't see a 'winner' emerge from the competition between the two. Rather, we're going to see something incredible emerge from their convergence ■

BART GIORDANO

Bart Giordano is senior vice president for Ruckus Networks at CommScope. He leads the global go to market team consisting of focused and inside sales, US federal, and system engineering teams dedicated to Wi-Fi, switching, cloud/analytics and IoT portfolios in the venue and campus networks segment. Giordano's 20 year career spans various technical and business roles in networking, wireless and cloud companies.

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