Inside_Networks

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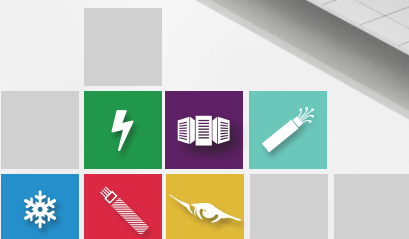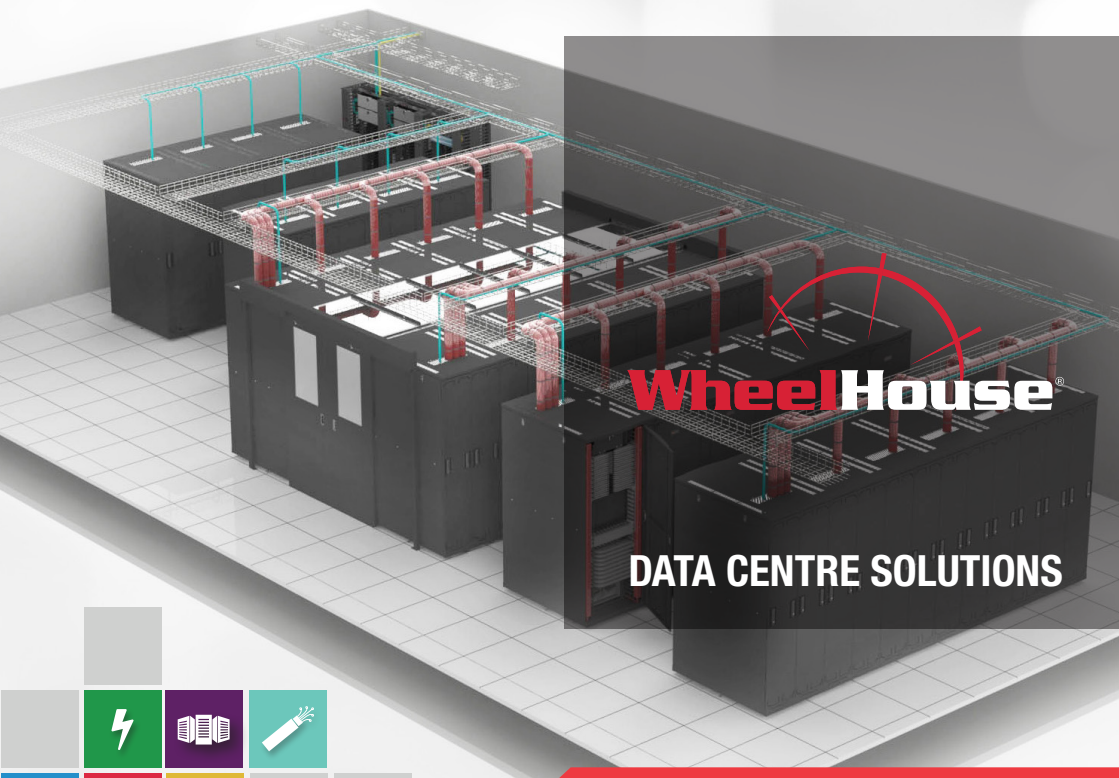
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The impending widespread rollout of 5G is already causing excitement and concern in equal measure. Excitement because all the data that will be produced will have to go somewhere and concern because the amount of data being stored in data centres will increase dramatically. At present questions are being asked about whether there are enough facilities to deal with expected demand and whether those that do exist have the latency, reliability and redundancy to cope.

With 66 per cent of organisations planning to deploy it by 2020, there's no doubt that 5G represents a step change in the way that data is generated and used. Therefore, we've asked a panel of experts to explain the implications of 5G on the data centre sector and suggest what owners and managers should be doing to prepare for it. **CLICK HERE** to read it.

The rise of the intelligent/smart/connected (select according to preference) building is one of the most interesting topics within the area of network infrastructures. This issue has two excellent articles on this subject and in the first Matt Salter of ExcelRedstone explains how the occupants of smart buildings will drive the functionality of tomorrow. In the second piece Bob Allan of Siemon and Mike Brooman of Vanti take a closer look at how energy consumption analytics can be used to improve smart building operations. **CLICK HERE** to read Matt's article and for Bob and Mike's **CLICK HERE.**

The importance of testing and test equipment should never be underestimated and you can **CLICK HERE** to read what Mark Mullins of Fluke Networks thinks are the challenges and trends currently affecting the sector. Furthermore, with the rise of IP based CCTV, Dan Payerle Barrera of Ideal Networks looks at how camera settings impact bandwidth, network congestion and how to measure it. **CLICK HERE** to read Dan's article.

With much more besides, I hope you enjoy this issue of Inside_ Networks. Don't forget that if you'd like to comment on any of these subjects, or anything else to do with enterprise and data centre network infrastructures, I'd be delighted to hear from you.

R.Shepherd

Rob Shepherd Editor

Inside_Networks
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London remains top destination for European tech funding

London has maintained its position as the top destination in Europe for technology investment, according to a recent report released by Pitchbook and London & Partners. The UK's capital city saw close to double the amount of investment than its closest rival, Berlin.

In 2018, technology companies in London attracted £1.8bn in venture capital funding, 72 per cent of the total £2.5bn raised by UK tech businesses. These figures stand against the backdrop of the UK's departure from the European Union (EU), something London's tech sector had previously warned could hinder its appeal. Across the UK as a whole, investment in artificial intelligence (AI) rose 47 per cent to £736m, while £1.2bn went into the flourishing fintech sector. Other growth sectors included big data, blockchain and cryptocurrencies, which also saw all-time high investment numbers.

Commenting on this trend, Michael Winterson, managing director of Equinix Services, said, 'Despite Brexit, London is still the most important market in Europe with regards to data. A key driver of London's data growth is its strategic positioning, where fintech companies are nearby to a world leading financial district and health tech companies operate in close proximity to pharmaceutical and life science firms. London is also a global leader in AI and broader technology, due to its links to world renowned universities.'

Michael Winterson

TIA launches task group to develop industry standards for edge data centres

The Telecommunications Industry Association (TIA) has announced the launch of a new standards task group to develop industry best practices for edge data centres. The task group, under TR-42.1 Premises Telecommunications Infrastructure, will be co-chaired by Cindy Montstream, director of technical support and training at Legrand and Jonathan Jew, president of J&M Consultants.

Wes Johnston

'In the race to 5G, we are proud to take a big step for next generation technology and the telecom industry,' said Wes Johnston, CEO of TIA. 'TIA is a trusted ICT industry standard developing organisation and we, with our members and partners, are leading the important evolution of thinking about where data is processed, and how to ensure its consistency, reliability, safety and integrity.'
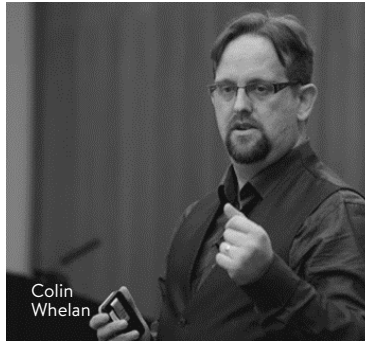
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Traditional communications channels are becoming a last resort for consumers

According to Aspect Software, the growth in choice when it comes to interaction – as well as the changing preferences of younger generations – means that traditional channels such as telephone are now becoming more of a last resort rather than a first port of call. This underlines the need for a more agile, nuanced approach to customer engagement in the long-term, while maintaining traditional channels for when they are most needed.

According to Dimension Data's Global Contact Centre Benchmarking Report, telephone is the most popular communication channel amongst those born before 1945 (cited by 90 per cent). However, this drops to 64 per cent for baby boomers, 29 per cent for Generation X and just 12 per cent for millennials.

Colin Whelan, principal solutions consultant at Aspect Software, said, 'Younger generations prefer to use automated self-service or online options first and foremost, before turning to telephone as a last resort when their favoured channels are unable to answer their queries sufficiently. Given the tech native characteristics of millennials and the younger Generation Z, this trend is only likely to continue.'

Colin Whelan

Network efficiency found to be the number one priority for optimising data centre performance

A research report from Mellanox Technologies, spanning medium to large enterprises across China, the USA and UK, has provided detailed analysis of how today's data centre professionals are addressing the challenge of supporting high power applications such as AI and big data analytics across public, private and hybrid clouds.

The study reveals high interest in software defined virtualisation and network optimisation strategies. It shows that processor offload and SmartNICs are now the favoured solution for improving data centre performance, while deploying more servers is least favoured. It concludes that the network, a key engine of performance to the cloud, needs specific adaptations to keep up with data centres that have ambitions to be cloud-scale.

Kevin Deierling, vice president of marketing at Mellanox Technologies, said, 'There was a lot of interest in SmartNICs – just 10 per cent did not know what they were. Their applications included improving the efficiency of VMs and/or containers (56 per cent), virtualising and sharing flash storage more efficiently (55 per cent), isolating and stopping security threats (47 per cent), accelerating hyperconverged infrastructure (50 per cent), and enabling software defined networking (54 per cent).'

Cloud service providers under siege from cyber attacks

NetScout has released the first findings from its Worldwide Infrastructure Security Report (WISR), revealing a clear trend of targeted attacks against providers of cloud services.

In 2018, 47 per cent of service providers reported distributed denial of service (DDoS) attacks against cloud services, a 14 per cent increase over 2017 and a 22 per cent increase since 2016. With increased reliance on cloud based services across the connected world, and cloud rapidly becoming an integral part of providers' offerings, successful attacks have the potential to inflict significant damage both to the providers and their customers.

'It should come as no surprise that attackers are increasingly targeting cloud infrastructure and services with DDoS attacks,' said Darren Anstee, NetScout CTO for security. 'As hybrid and multi-cloud environments will be with us for the foreseeable future, and as attackers increasingly use more sophisticated and dynamic multi-vector attacks, consistent multi-domain visibility and security capabilities are becoming ever more important.'

SMEs are placing their bets on AI, IoT and blockchain to fuel digital transformation

Although UK SMEs are increasingly convinced about the opportunities presented by next generation technologies such as AI, the Internet of Things (IoT) and blockchain, many are struggling to incorporate them into their technology roadmaps. This is the key finding from a new research report by the Cloud Industry Forum (CIF) and Ingram Micro Cloud, which warn that more must be done to help drive digital transformation within the small to medium sized enterprise (SME) community.

It found that around 40 per cent of respondents had already invested in AI (39 per cent), blockchain (46 per cent) or IoT (43 per cent) to some extent and that a similar proportion thought these technologies would be critical or very important for their organisations over the next five years. However, just 29 per cent of SMEs have a formulated digital transformation strategy in place, indicating a lack of clear guidance and leadership, 45 per cent lacked digital transformation skills, and 64 per cent struggled with security.

Scott Murphy, cloud and advanced solutions director at Ingram Micro, said, 'SMEs are leveraging cloud infrastructure to explore a range of next generation technologies and are, in fact, further along that road than large enterprises. However, it's clear that many SMEs don't have the skills, guidance, and support to safely transform their businesses.'

Scott Murphy

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Pink Elephant Regatta gets ready to set sail again

Following the successful inaugural Pink Elephant Regatta last year, when four teams and 40 competitors took part, this year's event will be held on Friday 5th July in Lymington, Hampshire. 10 yachts are available to sponsor, with each having a fully trained skipper, and eight guests/crew can be on board. The event is suitable for both experienced and non-experienced crew

Once again, the event will raise funds for The Ellen MacArthur Cancer Trust's, whose aim is to help children and young adults to regain their confidence through sailing. Each year 2,800 young people in the UK finish cancer treatment. Happily survival rates are increasing, but studies show teens and young adults remain vulnerable post-treatment because it comes at a time of rapid social and emotional development.

'There are three planned races on the day, followed by lunch at The Royal Solent Yacht Club on the Isle of Wight, with prize giving and awards,' said Tim Clogg, Pink Elephant Regatta organiser. 'We will then sail past the Needles and Hurst Castle, cruising back to Lymington Yacht Haven.'

Those wishing to find out more about the 2019 Pink Elephant Regatta should call Tim Clogg on 0788 9939386 or **CLICK HERE** to send an email.

NEWS IN BRIEF

Cisco's 2017-2022 Mobile Visual Networking Index (VNI) predicts that by 2022 mobile traffic will represent nearly 20 per cent of global IP traffic. The forecast reveals that 28.6 per cent of all mobile data traffic in the UK will run on 5G by 2022 – second only to the US in terms of 5G concentration – higher than China, France and Germany.

Kao Data has secured investment from Legal & General Capital. This investment demonstrates a commitment from Legal & General to deliver the digital infrastructure required for Future Cities, and marks the first step of an ambitious partnership with Goldacre to drive the strategic expansion and accelerated growth of the UK data industry.

Cloud Gateway has been appointed to lead the UK government's migration to the cloud following its PSN accreditation for its hybrid cloud platform as a service (PaaS).

Gemalto has become the first company in the world to make 5G SIM cards to meet mobile operator requirements for the next generation of network deployments expected to emerge later this year.

Laptops Direct has revealed that 37 per cent of Brits who have challenged themselves to get fitter in 2019 admit their choice of tech is helping to achieve their goals. 67 per cent feel that they would have already failed without the motivation that these technologies have been providing.

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Great **expectations**

Hi Rob

In a society increasingly dependent on technology, there is a rising expectation from clients and employees that business networks must seamlessly support their data requirements. For small to medium sized enterprise (SME) owners and IT managers, this means that easily accessible and secure business Wi-Fi is no longer a luxury but a necessity to remain competitive in the modern business world.

Finding the right balance between a network that is flexible and secure has historically been very expensive and complicated. Many smaller businesses have fallen behind with redundant solutions that are often little more than home Wi-Fi networks that simply don't offer business grade bandwidth or security.

SMEs that are at a sensitive stage of growth may will suffer greatly if there is an under investment in their networks. Growth will be restricted if they can't support their processes or ways of working, or if sub-par network security leads to a network outage or data breach. SMEs therefore cannot afford to be restrictive on increasingly important business requirements such as mobility and security and stump their growth potential.

For SMEs that experience seasonal network peaks and troughs, it is important to have a scalable network that is flexible enough to cope with the added strain of a sudden surge or dip in users and devices joining the network. By implementing visibility and control measures, SMEs can determine when bandwidth demands are at their highest and can plan to boost access in the areas where it's needed most to balance out supply and demand.
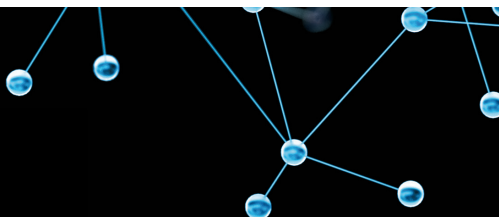
With the rise of bring your own device (BYOD) culture among the millennial workforce, app usage within business is much higher for both internal and external communications. More and more individuals, especially the younger

generation, are attuned to this way of working. This makes it imperative that businesses of all sizes pursue a 'networking first' approach to ensure they can keep new entrants in the workplace in the manner to which they are accustomed. Only then will employers be able to attract the best talent, while supporting fast paced growth and keeping the company assets secure.

Many SMEs still wrongly assume that they don't need to invest in business or enterprise class technology, mostly down to the assumption of high associated costs or that they simply don't have the requirement – but the truth is they do!

Businesses of all sizes need to have full visibility of their network. By investing in flexible and low cost enterprise level cloud managed network solutions, businesses can manage their networks on the go and gain insight into network demand to support flexibility and scale as needed. Rather than adding and upgrading when things start to fall over.

In turn, if investments aren't made to bolster the network, any security breach, misstep or downtime could cost a small business its livelihood. By bolstering networks with advanced threat prevention (ATP) technology, business owners can be safe in the knowledge that cyber threats are automatically addressed with the most up to date cyber security.

Planning for future threats and demands will stand any SME in good stead to not only cope with peaks and troughs now, but to plan for the more demanding applications and expectations that come with fast-paced growth.

Rachel Rothwell
Zyxel

Editor's comment
All too often SMEs simply think that if their business network is up and running then it must be OK. Rachel provides a useful overview of some of the important considerations that should be made to ensure business continuity and the implications of ignoring the issue.

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Banking on **it?**

Hi Rob

2018 brought us headlines describing the 'meltdowns' and 'litany of failures' of IT systems in the banking sector. The periods of downtime that followed caused thousands of customers to be locked out of their online banking and account details, derailing something that has become a necessity of everyday life – the instant access of data.

You may think that the loss of a couple of hours here and there in the grand scheme of things might be minimal, but this is a chink in the armour which users of the service notice and it can significantly knock their trust in a business.

For businesses and stakeholders in any industry, the currency of 'being reliable' and the concept of 'availability' are firmly in the zeitgeist. As we become an increasingly 24/7 economy its value will only increase. Turn the spotlight on to your company and think of your customers' reaction if your IT network goes down for even a day. What sort of impact would that have for your workplace? Furthermore, it's not just a case of everything correcting itself and going back to normal the following day – major blackouts can have ramifications that cause workload backlogs for many weeks.

In more and more situations today, employees are working remotely, doing non-traditional hours and streaming meetings with teams based around the world. The constant striving for more output per employee and better service for customers via electronic means ensures that the weight of responsibility is squarely on the shoulders of your IT infrastructure.

To ensure your IT network can withstand the increasing demand it's wise to undertake both a regular appraisal of your equipment to make sure it is up to the task and a review of the environment in which it operates.

Maintaining a protective environment for your IT equipment is crucial as it can reduce the probability of unexpected downtime. What's more, if the right systems are in place, it can detect potential issues before they arise, so corrective action can be undertaken and failures such as I've described can be avoided.

There are many important factors that contribute to a protective environment, such as appropriate redundancy, the correct housing of equipment, a stable power supply and adequate and effective climate control. These can all play a factor in delivering the best environment and delivering the longest life span for your IT equipment, plus, more importantly, keeping your infrastructure online so your customer can receive your goods and services.

The impact that neglecting your IT infrastructure can have on your customers can be boiled down into one quote from Warren Buffett – 'It takes 20 years to build a reputation and five minutes to ruin it. If you think about that, you'll do things differently.'

Karl Lycett
Rittal

Editor's comment
Excellent advice from Karl that applies across all vertical sectors, not just banking. Regularly reviewing a network infrastructure should be considered an integral part of any preventative maintenance schedule.

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High five

5G will offer faster speeds and more reliable connections than ever before and data centres will have a massive role to play in providing the infrastructure needed deal with this huge amount of data. Inside_Networks has assembled a panel of industry experts to examine the impact of 5G and whether enough is being done to prepare for it

▶ Short for fifth generation mobile network, 5G will mark a step change in how we use data and could make the process of loading websites, downloading songs and streaming movies at least 10 times faster than 4G. It has been suggested that 5G will mark the moment where the Internet of Things (IoT) truly comes of age and the data created will facilitate a more connected world.

32 years since the internet started. This means that the amount of data being stored in data centres will continue to increase dramatically. However, although the 5G network operates on very fast speeds, its signals cannot go for very far and this means that data centres will continued to be deployed at the edge. AT&T, for example, has already announced

> **HOW WILL THE ROLLOUT OF THE 5G MOBILE COMMUNICATIONS NETWORK – AND THE SIGNIFICANT INCREASE IN DATA THAT WILL NEED TO BE PROCESSED, STORED AND DISTRIBUTED – IMPACT THE DATA CENTRE SECTOR? IN WHAT WAYS WILL 5G AFFECT HOW DATA CENTRES OPERATE AND WHAT SHOULD OWNERS AND MANAGERS BE DOING TO PREPARE FOR IT?**

5G is set to be rolled out across a number of countries in the very near future and South Korea successfully deployed its at the 2018 Winter Olympics. At CES 2019 in Las Vegas demos highlighting the potential of next generation of internet speed were in abundance, with Qualcomm, Intel and Samsung amongst those hyping it up.

66 per cent of organisations have plans to deploy 5G by 2020, according to Gartner. Meanwhile, the new Visual Networking Index (VNI) by Cisco predicts that by 2022 more IP traffic will cross global networks than in all prior 'internet years' combined up to the end of 2016. In other words, more traffic will be created in 2022 than in the

plans to build edge computing data centres. At the same time, services providers have to deal with 5G's other limitations including that fact that it doesn't go through solid objects. Therefore, we can expect to see more small antennas and mobile base stations.

As the data centre sector enters the brave new world of 5G, Inside_Networks has assembled a panel of experts to give us their thoughts and opinions on its impact and what should owners and managers be doing to prepare for it

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.

JOHN BOOTH
MANAGING DIRECTOR AT CARBON3IT

The principle infrastructure for 5G mobile will be centred on the concept of the edge, in which case the simple fact is that most data centres are already 5G ready. However, there are three aspects that will need to be considered by owners and managers.

Firstly, 5G operates on incredibly low latency – this means that data centres will need to install ultra-fast low latency networks both internally and externally. There really is no point in having a mobile system that is fast, only for bottlenecks to occur inside the data centre. Expect to see additional optical fibre and associated transmission systems being installed.

The second is that reliability and redundancy will be absolutely vital. 5G is not very tolerant of downtime, so the speed at which data will travel over the network means that everything needs to be at a high degree of resilience and availability, meaning that a data centre will need to be operated and maintained to a very high standard.

This may mean that data centres may need to be demonstrate that the design and operation is at this standard, indeed some 5G providers may make it a mandatory requirement to be certified to some of the various ISO standards, or at least comply with the requirements of emerging standards such as the ISO TS 22237 series, which are based upon the EN50600 series. I understand that certification process is in the pipeline but not scheduled for 2-3 years, although there may be some assessment bodies that may offer this service in the near future.

The third is that operating data centres to this high standard means that the staff running them will also have to be performing at a very high standard and will need to demonstrate their knowledge of data centre systems, most probably through individual certification and regular training courses. Indeed, one of the new EU Code of Conduct for Data Centres (Energy Efficiency) best practice areas for 2019 is the training and development of mission critical staff.

We all know that IT is the fourth utility and fundamental to todays society, but we've never really been under intense government scrutiny in terms of direct legislation. Long may it be so, but as IT systems become ever embedded into our lives and where failures can have a real impact, 5G may be a catalyst for serious legislation.

'As IT systems become ever embedded into our lives and where failures can have a real impact, 5G may be a catalyst for serious legislation.'

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RUSSELL POOLE
UK MANAGING DIRECTOR AT EQUINIX

With smartphones an integral part of our lives, there is much hype around the upcoming launch of the 5G mobile communications network, the next generation of wireless networking. The Ericsson Mobility report estimates that by 2023 there will be one billion 5G subscriptions, accounting for approximately 20 per cent of all mobile data traffic.

There is no question that 5G holds tremendous promise, delivering major advances in data transfer speeds, latency, connectivity, capacity, reliability and mobility – but none of this will be effective without data centres in place to support this proliferation of data.

Traditionally, data centres were solely large warehouses all about the securing, powering and cooling of data and the stacks it lives in – a neutral place for enterprises and networks to connect. This has evolved over time as companies have become digitally focused, collaborating with their customers to improve customer service and meet consumer demand – a place for network service providers to directly connect with cloud service providers and enterprises across all industries. With the advent of 5G, they will evolve again.

Data will need to be hosted and streamed at significantly higher speeds, volumes and lower latencies if the full promise of 5G is to be seen. Data centres will need to prepare for the new wave of mobile networks by ensuring incredibly low latency and an abundance of bandwidth to manage the high volume of 5G data and edge computing requirements such as artificial intelligence (AI) processing in the cloud.

One of the major trends we've seen at Equinix, as businesses prepare for this influx of data, is a huge uplift in the number of companies embracing interconnection – where customers can directly connect to each other through private connections, bypassing the public internet. Interconnection provides a solution to the challenges of rising data demands, disparate customers and the need for ever-lower latency and increasingly high performance.

5G will mean data centres becoming increasingly vital to the global economy – the hubs through which the world's most valuable information passes, and on which the digital economy itself is built.

> 'Data will need to be hosted and streamed at significantly higher speeds, volumes and lower latencies if the full promise of 5G is to be seen.'

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EMMA FRYER
ASSOCIATE DIRECTOR AT TECHUK

As someone closely involved with data centre policy, connectivity is permanently on my agenda – when I'm outlining critical location factors for investors, differentiating carrier based and carrier neutral, or discussing why interconnection is such a big deal.

Wireless connectivity for end users generally sits outside those conversations but, in reality, the way we use personal devices profoundly impacts data centres. Workers are increasingly mobile, taking their office with them on portable devices and using collaboration tools. 5G will accelerate that trend, increasing demand outside traditional peak times.

We will cross a new frontier when we start moving from 4G to 5G in 2020. Connection and download speeds will rocket and capacity can be segmented for specific uses, continuing the trend to transmit larger and larger packets of data. But 5G is also optimised for small packets, enabling the IoT, connecting autonomous vehicles with roadside infrastructure, and making smart cities real. These changes will fuel the ongoing explosion in digital data, and observers fear a parallel explosion in data centre numbers and energy consumption.

Data centre energy use is growing, but not in line with data volumes. Thanks to factors like Moore's Law and virtualisation, the energy needed to process a given amount of data has decreased by over six orders of magnitude in 30 years. On the other hand, communications are price elastic – remember Jevons Paradox? – so the more efficient we get, the more we consume. Then we need to consider what all these data hungry smart things are doing – if they are improving efficiency, streamlining processes and enabling dematerialisation then they will deliver net reductions in energy use.

Secondly, if data centres really start gobbling our power, regulators or market forces would soon throttle back activity. Thirdly, the sector itself will adapt, perhaps with edge moving into centre stage, perhaps through consolidation, perhaps with both, perhaps with neither. What we know for certain is that it's hard to predict a future based on disruptive technologies. So, no point in panicking.

'Thanks to factors like Moore's Law and virtualisation, the energy needed to process a given amount of data has decreased by over six orders of magnitude in 30 years.'

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"It takes 20 years to build a **reputation** and 5 minutes to ruin it. If you think about that, you'll do things differently."

Warren Buffett

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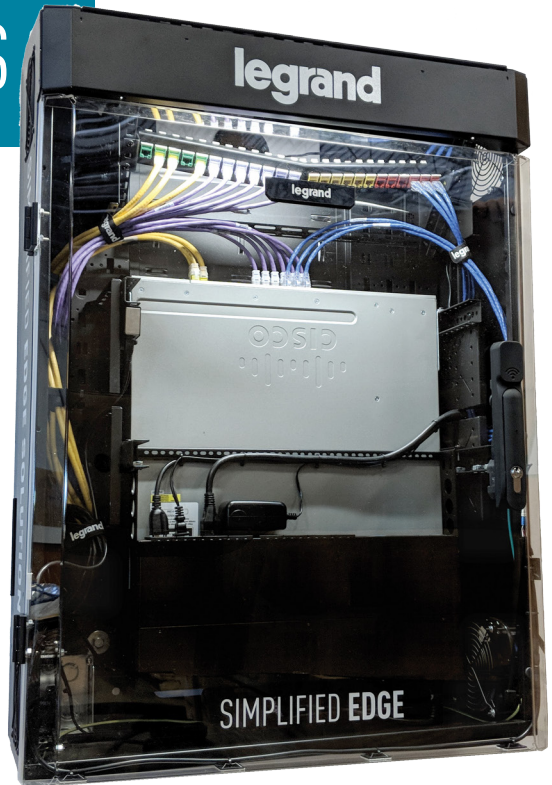
CLIVE PARTRIDGE
PRODUCT MANAGER IT INFRASTRUCTURE AT RITTAL

The 5G mobile communications network rollout is just around the corner, and is designed to revolutionise the mobile experience for us all, promising to match and surpass the wireless network currently on offer.

5G will combine faster upload speeds and increased mobile capacity with much lower latency in order to reduce page loading times to a breath-taking one millisecond. 5G will also help support the expansion of IoT devices, allowing the use of wireless sensors in the home as well as in factories and warehouses to direct industrial robots and machine-to-machine communication, not to mention autonomous vehicles – granted still on the horizon.

While the UK rollout is expected to begin imminently, clearly we won't get full coverage overnight. Most commentators agree that the rollout will start in the main conurbations with rural areas following on. Even so, data centres need to be prepared for a tsunami of data that will be processed/stored in the cloud.

Data centres will also need to support the low latency delivered by 5G in order to facilitate this very agile service and give users instant access to a constant flow of data. To a degree, this could be alleviated by decentralising IT infrastructure through the expansion of local edge data centres. Data can then be processed at source to take advantage of low latency and support the real time applications required to run systems, supported by connection to the cloud to enable less time dependent data analyses. Operators will, of course, need to tailor future investment in this area to meet the needs of their clients.

Many data centre owners have already anticipated the arrival of 5G – those that haven't may need hardware refreshes or upgrades to deliver the low latency and bandwidth needed for both 5G and edge computing processing within the cloud.

The general trend towards standardisation should help deliver both the fast deployment time and scalability, which the market is now demanding from data centres.

'Data centres will also need to support the low latency delivered by 5G in order to facilitate this very agile service and give users instant access to a constant flow of data.'

ANDY HIRST
MANAGING DIRECTOR CRITICAL INFRASTRUCTURES AT SUDLOWS

The rollout of the 5G mobile communication network is just the tip of the iceberg of what is to come. Once deployed, it will help kick start the next generation of disruptive technology innovation.

Why is this? Well, 5G will provide additional bandwidth, higher speeds and improved latency – all the ingredients needed to enable new technological applications and real time requirements. Examples of this are the impact it will have on technologies that are on the brink of exploding on to the market – from autonomous cars through to instantaneous web services and complex applications, to name just a few.

However, the highly anticipated technology jump will not be adequately realised until this next generation network is significantly energised. 5G is certainly more efficient, unlike current 4G technology where the signal simply radiates out, the 5G signal is more directly focused and therefore utilises energy more efficiently.

The release of the 5G is an exciting time for the telecommunication network, but as with most good things you always have to exercise some caution! The issue here is that even though 5G is more efficient than 4G at the front end, the power requirements and demands of the server will significantly increase.

In turn, data centre owners and managers will also need to be prepared to upgrade their own server and storage requirements to enable all this additional computing power as these new technologies are rapidly introduced. Unfortunately, this will only add to the carbon footprints of data centres.

It will be an exciting time watching what impact 5G will have on innovation and being part of it. Outside the excitement of what new technologies will be developed from the 5G rollout, and from a humanitarian level, I hope this does not become a poisoned chalice, whereby more pressure is heaped on employees as internet speeds and apps gets faster, increasing expectations and workloads in an already pressurised world.

> '5G will provide additional bandwidth, higher speeds and improved latency – all the ingredients needed to enable new technological applications and real time requirements.'

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- **Faster camera login** using the unique QuickIP function

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STEVEN CARLINI
SENIOR DIRECTOR INNOVATION, DATA CENTER IT DIVISION AT SCHNEIDER ELECTRIC

5G will impact different components of the data centre sector at different periods. The network speeds and response times promised by it will require a proliferation of antennae much closer to the point of consumption than is currently needed for today's mobile technologies. In order to support this, we expect a staged rollout of localised edge data centres, hosting applications and virtualised network functions closer to the point of use.

Network function virtualisation (NFV) will be a key enabler of 5G, allowing virtual networks to be created on shared physical infrastructure, which will, in turn, permit some applications to be assigned greater priorities based on their importance. Medical robotics and self-driving cars for example, the applications requiring the fastest connectivity speeds, will be assigned higher priority than email.

So although over time we expect a massive deployment of localised edge data centres, this will not happen immediately. 5G will enable a distributed cloud computing environment, named cloud-based radio access networks (cRAN), which will be scalable, resilient, and fault tolerant. However, there is still a complex technical challenge involved in network traffic coordination within NFV and cRAN.

To overcome this, it is likely we will see the deployment of metro core clouds with much of the initial build taking place in regional or metropolitan data centres. These will enable significant performance improvements but, due to their physical location, they will not deliver the promise of sub 1ms latency. It is more probable that we will only see sub 1ms speeds when the massive metro edge core cloud rollout happens, which is currently expected to begin in 2021 and continue beyond.

To begin with, it is likely that it will affect the applications deployed at the local edge. New consumer applications will also make their appearance, but the success of 5G also depends on greater collaboration, integration and standardisation from vendors, allowing solutions to be pretested for reliability and faster, more co-ordinated deployments. Only in this way can we ensure that the infrastructure supporting 5G will deliver on its promise of sub 1ms latency.

'5G will enable a distributed cloud computing environment, named cloud-based radio access networks (cRAN), which will be scalable, resilient, and fault tolerant.'

Satellite over fibre

Mayflex has announced an exciting new partnership with Global Invacom

▶ Following the launch of the Excel PON Solution, Mayflex has formed a distribution agreement with Global Invacom. As a result, Global Invacom's FibreIRS range will be added to the existing product portfolio.

CLICK HERE to find out more about Global Invacom's range of FibreIRS products.

Team work
The Excel Networking Solutions team has been working closely with Global Invacom over the past three months to gain an understanding of the product and the market opportunities offered by FibreIRS – this coincides with the launch of the Excel Passive Optical Network (PON) Solution.

The vision behind the partnership is for Global Invacom to work alongside Excel to promote the FibreIRS range and access new markets that it has so far been unable to penetrate. Excel has an excellent existing customer base that is involved in cabling and data, and many of the company's partners also cover security and satellite TV, which goes hand in hand with the Global Invacom solution.

CLICK HERE to read more about the partnership

The Excel PON Solution
Excel recently launched its new PON Solution. PON is an umbrella industry term for fibre based access networking architecture that is designed for both residential environments (FTTx) and enterprise environments (passive optical LAN).

Excel offers a comprehensive selection of PON solutions, delivering fibre to a range of environments across FTTx and POL network infrastructure systems. Regardless of the size of the building, the Excel range of PON products offers flexible options in fibre connectivity and distribution.

Environ Enclosures

Floor Distribution Boxes

Splitters, Panels and Modules

Outlets

Exterior Splice Enclosures

Power Distribution Units

CLICK HERE to discover the Excel PON Solution

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FibreIRS

Similar in concept to passive optical LAN, FibreIRS technology is a new method of carrying satellite signals via fibre rather than coax. Global Invacom has developed the FibreIRS range to help customers expand systems, ease installation and have

Loud and clear

Aaron Ghera from Global Invacom, commented, 'We're thrilled to work alongside the Excel brand and Mayflex, and are looking forward to collaborating more with them in the future. At Global Invacom, we are continuously striving to

HEADEND EQUIPMENT
ODU32, ODU32 kit, O2E and optical/wholeband LNB

GTUS
Multiswitch, Switchblade, DSCR, Quad, Quatro and DCSS adaptor

ACCESSORIES
Cleaning kit, connectors and adaptors, optical attenuators, FC/PC cables and optical meter

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a complete optical system as opposed to a traditional coaxial based system.

CLICK HERE to learn more about Global Invacom

There are various advantages of deploying a fibre based system such as:
- Reduction in signal loss
- Increased distance capacity
- Improved cost efficacy
- Maximised use of space
- Increased security
- Easier network management

improve the FibreIRS range and are currently working on new products that will complement our existing portfolio. We've seen great interest in our product range over the years and we are continuously working with mechanical and electrical contractors, as well as consultants, to increase awareness and drive the adoption of fibre based systems.
For further information call **0800 757565** or **CLICK HERE** to send an email.

FibreIRS
Fibre Integrated Reception Systems

Mayflex installs EV charging points at its Birmingham headquarters

Mayflex has introduced six dedicated parking bays with electric vehicle charging stations for staff and visitors to utilise. Many of the company's fleet car owners have made the switch to a hybrid vehicle in a move to become more environmentally friendly.

The charging points are accessed via a simple app that can be downloaded upon arrival at the main reception at Excel House, the Mayflex headquarters in Birmingham. There are a total of three twin pod points providing the capacity to charge six cars at any given time.

Andy Cooper, chief operations officer at Mayflex, commented, 'This is one of the many initiatives introduced by Mayflex to work towards improving the company's sustainability rating and ISO accreditations, whilst also helping to reduce the cost of running the company fleet. More of our company car owners are opting for electric, meaning the installation of pod points was something that the business could not afford to ignore.'

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Uninterruptible Power Supplies Limited becomes Kohler Uninterruptible Power

Uninterruptible Power Supplies Limited (UPSL), a subsidiary of Kohler Co, has changed its name to Kohler Uninterruptible Power (KUP). UPSL's name change is designed to ensure the company's name reflects the true breadth of the business' current offering

David Renton, managing director at KUP, commented, 'It is 10 years since we became a part of Kohler Co and in that period, we have seen the UPS market and our business develop significantly, both in the UK and overseas. Our membership of the Kohler Co organisation, one of the largest privately held US companies, gives us significant benefits in terms of financial stability, infrastructure and world class management and employee development processes. The rise of digitalisation and the rapid adoption of new technologies such as edge and the Internet of Things (IoT) create countless opportunities for us as a business. With the commitment of our incredible team and the support of our parent company, we see major opportunities to broaden our portfolio further and take a leading position at the forefront of these exciting developments in the coming years.'

David Renton

Colt Data Centre Services appoints Sujeet Deshpande as new country head in India

Colt Data Centre Services (Colt DCS) has appointed Sujeet Deshpande as country head in India. The appointment comes just months after Colt DCS announced its entry into India, with a major investment in a hyperscale data centre campus in Mumbai.

Deshpande brings nearly 20 years' experience in the data centre industry. He was previously senior vice president and head for data centres at Jio and, prior to that, senior vice president of the data centre business at Tulip Telecom.

'Colt DCS' innovation and vision on global footprint growth in hyperscale data centres was a large part of my decision in joining the team,' said Deshpande. 'I've already started to work with the management team on the strategy surrounding India expansions plans, and am excited for what the future holds.'

'We are excited to welcome Sujeet to Colt DCS,' said Detlef Spang, CEO of Colt DCS. 'He is a critical member of the team as we set foot into India, a key market with growing demand for quality digital services, and further extend our presence in Asia. Sujeet's experience and extensive network will be a key ingredient in propelling our international expansion efforts.'

Sujeet Deshpande

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CHANNEL UPDATE IN BRIEF

Martello Technologies Group has joined the Paessler Uptime Alliance. The move is designed to help the company's partners integrate comprehensive, advanced IT infrastructure monitoring in their offerings to help prevent downtime of critical IT systems.

Nimans has further strengthened its flourishing network connectivity pedigree by gaining complete access to TP-Link's entire product portfolio. As an official distribution partner thousands of Nimans' resellers can take advantage of a wealth of TP-Link support services, as well as the latest routers, switches, business class access points and WLAN solutions.

NetFoundry has announced its partnership with BalanceOn to bring next generation networking to the Middle East and Africa region. Their focus is to provide game changing, smart connectivity solutions that are instant, simple, secure, cost sensitive, and allow customers to become cloud-native and digital.

Pulse Secure has announced the global launch of its new Access Now Partner Program. Access Now provides an enhanced opportunity for partners to enjoy top line revenue and bottom line profit growth, while setting them apart from the competition.

Put to the test

Mark Mullins of Fluke Networks identifies the challenges and trends currently affecting test equipment

▶ Passive optical networks (PON), multiple push-on (MPO) fibre connectors, the new IEEE 802.3bt four pair power over Ethernet (PoE) standard, modular plug terminated links (MPTL) and singlemode 'penetrating' multimode applications will prove to be challenging to deal with for existing network test equipment.

'The latest generation of fibre test equipment offers additional intelligence and automation to allow novices the ability to test like experts and make experts more efficient.'

LIGHTING THE WAY

Instead of switches, PONs use simple splitters to divide network signals to between 8-32 users. Splitters are unpowered and extremely reliable, making them inexpensive to install and operate. Passive optical technology has been widespread in delivering fibre to the home, office and other applications, commonly lumped together as FTTx. They've also found a home in multiple dwelling unit applications and in the hospitality industry.

The International Standards Organization (ISO) has just begun an effort to define a new standard for PON testing (IEC 61280-4-3).

PONs are now starting to enter the enterprise market as well, in the form of passive optical local area networks (POLAN) – a simplified approach to horizontal office wiring. Instead of connecting a high speed fibre uplink to a switch with each port connected to a user with a long copper link, the uplink is connected to a passive splitter, with each port connected to a small (8-16 port) workgroup switch in the work area. Users connect to the switch with a simple patch cord. This approach is especially attractive in newer 'collaborative' office environments, where such a number of users could easily be connected with cords of less than 10m. Reconfiguring is easy as well – instead of having to move, say, a dozen outlets, only one fibre link needs to be moved – and remaining changes are simple patch
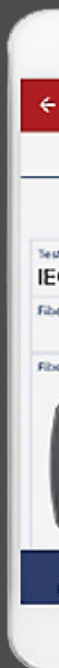
cord moves.

While this approach offers several advantages – and some disadvantages too – the biggest impediment to its adoption might be the fact that it's so novel that network engineers may avoid it in favour of what they know and are comfortable with.

PUSH IT

When it comes to MPO fibre connectors two trends are appearing. First, a new connector standard is available – FOCIS 18, with one or two rows of 16 connections, has been added to the existing FOCIS 5, with its single or double rows of 12 connections. FOCIS 18 is designed to handle up to 400Gb/s interconnections (400GBASE-SR32 and eventually 400GBASE-SR16), and will likely find a home in hyperscale data centres. While

these two connector types are similar in size and geometry, much of today's FOCIS 5 compatible test equipment will not support the new standard.

The second trend is the adoption of MPOs outside of the data centre. Fibre to the antenna for 5G applications will require high bandwidth fibre – a prefect application for MPOs. They're also cropping up in multiple dwelling units and even in enterprises, connecting the data centre to distribution points closer to end users.

POWER RANGER

After being on the horizon for several years, IEE 802.3bt was adopted last summer, and this year will see the wide availability of these high powered sources and devices. The new 'bt' standard switches
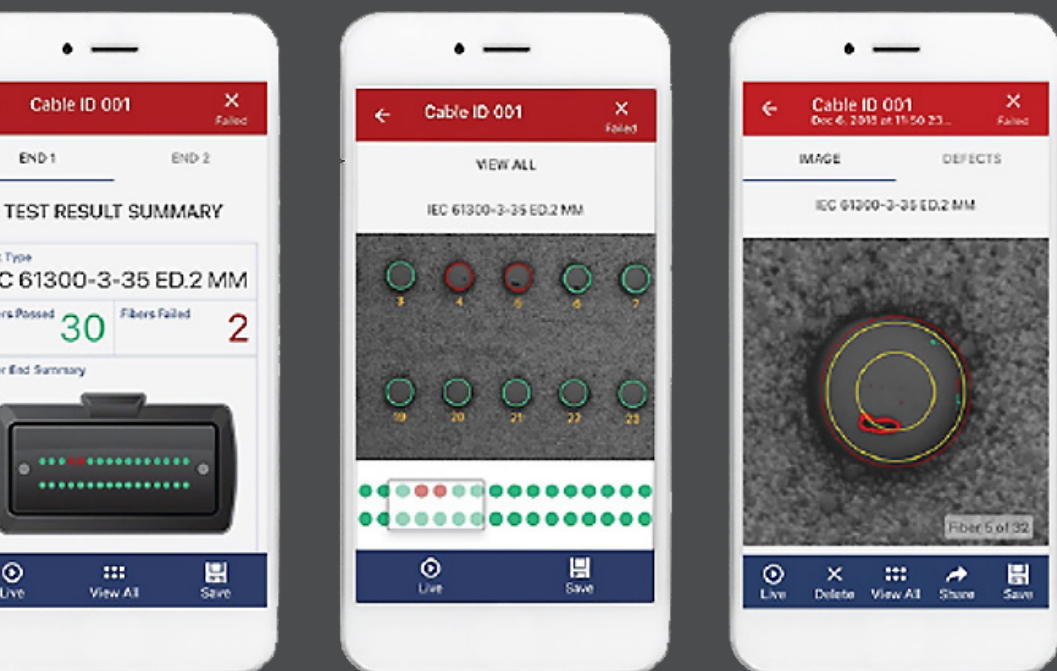
will be able to source up to 90W of power over four pairs of twisted pair cabling. This allows designers to avoid the cost of installing outlets for power hungry devices such as lighting, network attached storage and large flat panel displays.

The plethora of power levels and names offers an opportunity for confusion and difficulties with interoperability. Thankfully, the Ethernet Alliance has stepped in to reduce the confusion with a simplified certification program for power sourcing equipment (PSE) and powered devices (PD). This program labels PSEs with their available power class and PDs with their required class of power, meaning designers and installers need only make sure that the PSEs class is greater than or equal to the PDs.

used for long distance connections of a kilometre or more, requiring high powered laser based transceivers that were more than five times the cost of the LED based multimode transceivers. But hyperscale data centres, with the future in mind, are adopting singlemode fibre for shorter distances. Suppliers have responded by developing lower cost laser transceivers, and the large scale adoption of these solutions has led to a decrease in price to the point where singlemode connections are often competitive with multimode. This means that network engineers and the contractors that support them will be working with singlemode more than ever before.

These lower powered transceivers are designed for much shorter distances

More and more vendors are offering field terminated plugs, which allow a more direct connection to devices such as access points and cameras, as they eliminate the need to separate equipment cord and wall plate.

Class Number*	Input Power to Powered Device (watts)*	Output Power from Power Sourcing Equipment (watts)	Powered Device Type
0	12.95	15.4	1
1	3.84	4	1
2	6.49	7	1
3	12.95	15.4	1
4	25.5	30	2
5	40	45	3
6	51	60	3
7	62	75	4
8	73	90	4

* Note that PoE sources do not always meet the wattage specification for their class.

While this is not new, what is new is that the TIA has defined specifications and test methodologies for this approach. Called the MPTL, it requires a special set-up in a tester to make sure that the field installed plug has been tested.

SINGLE LIFE
Traditionally, singlemode fibre has been

than their more powerful long distance counterparts but can still provide much longer distance support than multimode. For example, 100 Gigabit Ethernet can be run up to 500m on singlemode – five times the maximum distance of multimode. But keep in mind that short range singlemode applications require loss budgets that are similar to those of

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multimode – 3.0dB for 100GBASE-DR. These singlemode applications are also more affected by reflectance (return loss) in the link – that's why they use angled physical contact (APC) connectors, which minimise this factor. It's also important to know that singlemode's smaller core size makes it more susceptible to end face contamination, so cleaning and inspection becomes more important.

Some test equipment, such as most light sources and power meters, will work in with both singlemode and multimode fibre and UPC and APC connectors. You'll need to be sure they support the right wavelengths for singlemode and you'll probably need new test reference cords. OTDRs, on the other hand, need to be specifically designed to support multimode and/or singlemode, as well as the appropriate connectors. Most inspection cameras and cleaning tools support both, although your camera will likely need a different adapter to view APC end faces.

TREND SETTING

The latest generation of fibre test equipment offers additional intelligence and automation to allow novices the ability to test like experts and make experts more efficient. A new generation of automated fibre inspection tools can grade single or multiple fibre end faces automatically, cutting inspection time and reducing user errors. For users with limited fibre troubleshooting experience, the latest OTDRs provide the ability to interpret traces and provide simple pass or fail results. And for customers testing high performance fibre links with engineered limits, automatic calculators built into the loss test sets will determine the expected performance of the link based on vendor proprietary formulas, allowing novice users to determine if the link is installed properly. Tools such as these allow the workload to be shared by less experienced technicians, freeing the experts up for truly complex tasks. ■

IEEE Standard
802.3af (2-pair PoE)
802.3at (PoE+)
802.3bt (4-pair PoE, 4PPoE, PoE++, UPOE)
802.3bt (higher-power PoE)
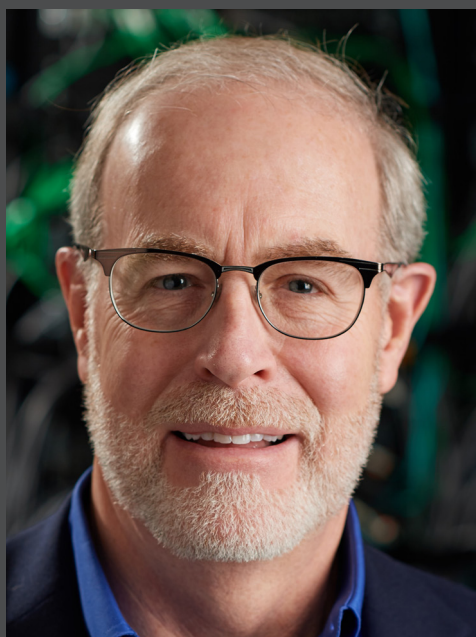
MARK MULLINS
Mark Mullins is one of the founding members of Fluke Networks, starting in 1993. He has been involved in all of the key areas of the business including cable testing, network troubleshooting and analysis. As global communications manager, Mullins currently oversees the company's efforts to keep customers and prospects up to date on cable testing products and technologies.

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Mayflex

Ideal Networks provides solutions for testing data cable, networks and security camera installations. Its product portfolio includes the VDV II Pro, an easy to use cable tester that checks the integrity of copper cables.

If you install or maintain data cabling, the SignalTEK CT allows you to generate PDF test reports that prove installed links run at Gigabit Ethernet transmission rates.

To help increase productivity from start to finish installers can use the SecuriTEST IP, a single tester that can power, configure and document. It is an installation and troubleshooting tester for digital/IP, HD coax and analogue CCTV camera systems.

An easy to use cable certifier that meets existing TIA and ISO/IEC performance requirements for testing up to Category 6A/500MHz is the LanTEK III. Ideal Networks currently has a promotion running until the 30th June 2019, where customers can trade in a Fluke DTX model towards the cost of new LanTEK III cable certifier.

Speak to the Mayflex team for further details about the Ideal Networks product range.

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

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Ideal Networks

LanTEK III data cable certifiers from Ideal Networks now feature a Partner Finder feature to save time, reduce guesswork and simplify cable installation and troubleshooting.

The LanTEK III certifier will now emit an audible alert to let users know when both the display and the remote handset are connected to the same port, such as when one technician is based in a server or switch room and the other is at the outlet. The installer with the display handset can then simply press the 'test' button to test the copper or fibre cable.

With Partner Finder, communication between technicians is improved, as there is no longer a need to contact one another by phone, or to shout across the site, to verify that both handsets are connected to the same port. This also reduces guesswork and also enables installers to move around the building to conduct tests more simply, increasing productivity.

To find out more
CLICK HERE.
www.idealnetworks.net

Comtec

Comtec offers a wide range of test equipment from manufacturers such as AFL, Anritsu, EXFO, Fluke Networks, Greenlee, Ideal Networks, Patch App & Go, SAGAB and Telves.

We have solutions for testing copper and fibre optic cabling, Wi-Fi, network performance, mobile antenna, security cameras, television and satellite signals and much, much more. Test equipment ranges from a simple wiremap and continuity tester to a high end spectrum analyser, with something for everyone in-between.

So, whether it's a Category 6A copper cabling certifier, a fibre Tier 1 OLTS or Tier 2 OTDR, a passive interference modulation (PIM) tester or an infrared laser thermometer, Comtec has the product for you.

As the UK's largest independent distributor of cabling and accessories, which has an in-house test and measurement service team offering a maintenance, repair and calibration service, we have more than 40 years of trading experience and a wealth of knowledge to provide fast and effective support.

To discuss your test equipment needs call 01480 415000 or **CLICK HERE.**
www.comtecdirect.co.uk
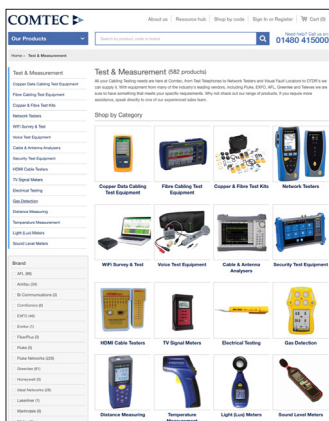
Fluke Networks

Fluke Networks' FI-3000 FiberInspector Pro is the industry's most efficient multi-fibre push on (MPO) end-face inspection camera. Those using the FI-3000 can view the fibre end-face instantly using the Live View feature and then use the gesture based interface to zoom in on individual fibres or perform a pass/fail test in seconds.

A speck of dust that's invisible to the human eye can cause intermittent errors or even complete failure on a fibre optic connection. That's why it's essential that every fibre interconnect – even on cables straight from the factory – be inspected before it's connected.

The FI-3000 FiberInspector Pro offers an extensive feature set that makes testing MPO trunks easy and efficient. The multiple camera design with autofocus provides a Live View of the entire end-face on a smart phone or Versiv instantly. Touching 'test' provides an automated pass/fail result compliant with IEC 61300-3-35 in seconds – for any one and two row configurations or 8, 10, 12 or 16 fibres.

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

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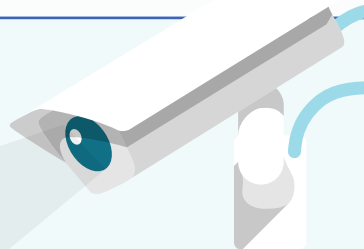
Seeing is
believing

Dan Payerle Barrera of Ideal Networks looks at the importance of verifying that CCTV cameras are properly configured and the benefits of documenting an installation with professional looking reports

▶ With the goals of deterring crime, preventing fraud and capturing valuable evidence when a security event occurs, high quality CCTV footage from dependable installations cannot be taken for granted. Factors that impact the networks that support CCTV are the number of cameras, resolution, frame rate and compression CODEC. Designers of CCTV networks must balance video quality with network performance, and they rely on the integrators/installers of a system to configure the cameras per the specification. All too often the end user of the CCTV system is dissatisfied with the video performance or quality and the resulting finger pointing between the designers and installers does nothing to get to the root cause of the problem.

CRYSTAL CLEAR
Resolution is the image size in pixels that the video sensor is capable of capturing. Higher resolution sensors allow for increased digital zooming of recorded video with less image degradation. The advantage of high resolution CCTV cameras is that a single camera with a

wide-angle lens can be used to survey large areas like car parks, where several low-res cameras would normally be required, allowing for simplified installations and reduced labour costs.

The positive is that video of objects far from the camera can be enlarged while retaining details, with the negative being that the video stream contains more data that needs to be transported by the network.

Resolution	1280 x 720	1920 x 1080	2592 x 1520	3296
Format	720P 1 MP	1080P 2 MP	4 MP	4K 8
Frame Size (HQ JPEG)	125 kB	230 kB	560 kB	1.2

IN THE FRAME
Frame rate is the number of video frames per second (FPS) transmitted by the video stream. A higher FPS results in smoother, natural looking video. One of the most common complaints from users of IP CCTV is stuttering video, especially if they are accustomed to analogue video with a rate of 25-30FPS. In contrast, the default

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frame rate for most IP cameras is 10 or 15FPS to reduce network load. The typical data rate for a 4K UHD camera is shown below.

4K UHD	10 FPS	15 FPS	20 FPS	25 FPS	30 FPS
H.264 Data Rate	7 Mb/s	11 Mb/s	14 Mb/s	18 Mb/s	22 Mb/s

To achieve the smooth real time video that end users expect, an NVR/NAS with a 1Gb/s interface could support about 30, 4K UHD 30FPS cameras at most to keep the combined bandwidth under 70 per cent of the link rate.

CODE BREAKER
CODEC stands for code/decode and refers to the type of compression used by the camera to reduce the data rate of a video stream. Nearly all IP CCTV cameras support motion JPEG (MJPEG) and H.264, with manufacturers beginning to ship camera models that also support H.265 compression.

An MJPEG video stream provides the best video quality with a huge impact on network bandwidth. With MJPEG, each frame in the video stream is a full resolution image. The quality setting on the camera adjusts the image compression, though no network compression is utilised.

x 2472	6576 x 4384
UHD	8K UHD
MP	29 MP
2 MB	4.25 MB

H.264 and H.265 are versions of MPEG compression commonly used by digital terrestrial, satellite and cable TV broadcasters to reduce the bandwidth of each channel, allowing more channels to be transmitted

on the carrier's system bandwidth. Broadly, MPEG compression works by transmitting a complete frame – key-frame or I-frame – with a number of change frames in between. Essentially, the change frames show only information that is different from the key-frame.

PITCH PERFECT
Imagine video from a football game where most of the screen is pitch with players and the ball being the only things that move. The change-frames will be of the moving objects with full key-frames sent at intervals to refresh the image.

Cameras allow the key-frame interval to be adjusted to reduce compression artefacts at the expense of bandwidth. With a 30FPS video stream and the key-frame rate set to 15, a full image will be transmitted every half second. If the key-frame is set to 60 a full frame is sent every two seconds. The best setting depends on the scene being recorded. Satisfactory video of a car park with relatively little activity can be had with a high key-frame interval. The same setting will result in poor video quality in a scene with lots of activity like an airport or train station.

The table below demonstrates the effect of video compression on bandwidth.

	MJPEG Quality		H.264 Quality		H.265 Quality	
	High	Average	High	Average	High	Average
1080P @ 15 FPS	37 Mb/s	26 Mb/s	2.8 Mb/s	1.8 Mb/s	2.1 Mb/s	1.4 Mb/s
1080P @ 25 FPS	61 Mb/s	43 Mb/s	4.6 Mb/s	3.0 Mb/s	3.6 Mb/s	2.4 Mb/s
4K @ 15 FPS	144 Mb/s	100 Mb/s	11 Mb/s	7.2 Mb/s	8.4 Mb/s	5.6 Mb/s
4K @ 25 FPS	240 Mb/s	168 Mb/s	18 Mb/s	12 Mb/s	14 Mb/s	9.3 Mb/s

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'Comprehensive IP CCTV field testers are available that automate the process of verifying camera installations and generate test reports that document the operation and configuration of cameras.'

GETTING IT RIGHT

With the parameters described above having such a huge impact on network and video performance, is there a way for network integrators and installers to verify that cameras are properly configured during installation, prove the work to customers and reduce troubleshooting time?

The process of network cable certification has been common for more than two decades and in more recent years network integrators have begun testing every installed network outlet to document the link speed, virtual LAN (VLAN) configuration, power over Ethernet (PoE) capability, connection to the internet and other key parameters. Testing CCTV installations is more complicated because of the wide range of data to capture and the inconvenience of accessing installed cameras with assorted test equipment.

The common tools used by CCTV installers have been PoE injectors to power the camera, battery for the injector, a laptop with special software to connect to the camera and to see the video for aiming, wire map checkers for troubleshooting cable problems and other assorted devices. Yet with all of this, there still is no way to document an installation with professional looking reports like cable certifiers have been providing for years.

DOCUMENT MANAGEMENT

The main reasons to document camera set-up at installation are to show that the camera is aimed and focused at the prescribed location, is the correct resolution, has the desired frame rate and CODEC set, and has the correct network configuration.

Complete documentation also reduces service time because the report from a dead camera can be used to configure the replacement with the same network and video settings, so it can be swapped out with minimal disruption.

HELPING HAND

Fortunately, comprehensive IP CCTV field testers are available that automate the process of verifying camera installations and generate test reports that document the operation and configuration of cameras. Integrated testers like this allow users to access camera settings and adjust all of the parameters described above, while monitoring the video stream bandwidth in real time to see the effects of their changes. Technicians can ensure that each camera is configured to provide the video quality required for a specific location, whilst minimising bandwidth impacts on the network. ■

DAN PAYERLE BARRERA
Dan Payerle Barrera is global product manager – data cable testers at Ideal Networks, where he manages product development, sales and marketing of the group's data cable and network installation and maintenance test equipment.

He first began work in the LAN cabling industry with Wavetek in 1997 where he held several positions in the engineering, marketing and sales groups. He enjoys public speaking and facilitation of technical presentations and hand-on training seminars for industry organisations such as BICSI, IBEW/NJATC and CEDIA, and represents Ideal Networks at the Telecommunications Industry Association (TIA) TR-42 committee, developing the latest standards for copper and fibre optic cabling systems.

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Quick clicks

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

Clearing the Path For Innovation is a report from **KCOM** that examines attitudes towards innovations and organisations' ability to exploit it. **CLICK HERE** to download it.

FAQs for Using Lithium-ion Batteries with a UPS is a white paper from **Schneider Electric.** **CLICK HERE** to download a copy.

A new research report by the **Cloud Industry Forum (CIF) and Ingram Micro Cloud** warns that the channel must do more to help drive digital transformation within the SME community. **CLICK HERE** to download Cloud - The Next Generation.
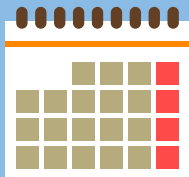
The Digitization of the World – From Edge to Core is a white paper by **IDC,** sponsored by **Seagate** that assesses data readiness in the manufacturing, financial services, healthcare, and media and entertainment sectors.
CLICK HERE to obtain a copy.

How AI is Changing Data Centre Cooling is a blog by Christian Wray of **Sudlows.**
CLICK HERE to read it.

The Future of Fibre – The Emergence of PON is a white paper from **Excel Networking Solutions.**
CLICK HERE to read it.

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What's Wrong with My Cable? is the question posed in a blog from Andrew Bui of **Fluke Networks.**
CLICK HERE to find out the answer.
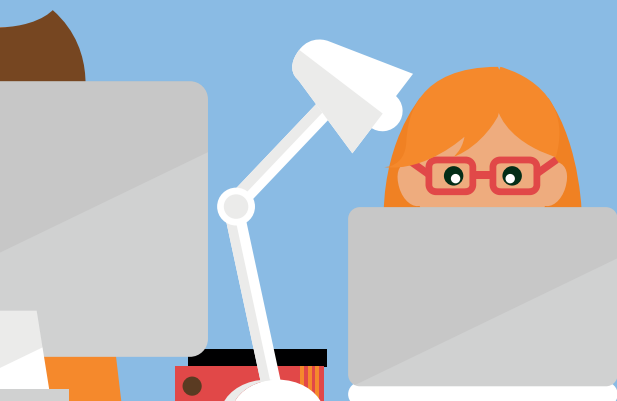
Monitor and manage

Bob Allan of Siemon and Mike Brooman of Vanti take a closer look at how energy consumption analytics can be used to improve smart building operations, and how the underlying unified infrastructure can be leveraged to support this

▶ According to the International Energy Agency (IEA), the buildings sector accounts for 30 per cent of total final energy use globally, more than 50 per cent of global electricity consumption and 25 per cent of energy related CO_2 emissions. In addition to this, figures provided by the US Energy Information Administration show that a third of the energy consumed in commercial buildings is usually wasted.

INSIDE THE WALLS

It is interesting to note that the five building categories – service buildings such as shops and malls, offices, education institutions, healthcare facilities and the lodging sector – use about half the energy consumed by all commercial buildings, according to US Energy Information Administration. And a closer look inside a building reveals that heating, cooling and lighting systems are amongst the biggest drivers of energy consumption in the commercial building space in the US, accounting for a total of 57 per cent of all energy use in the building.

Understanding what the energy consumption of a building looks like and being able to monitor and control energy use plays a fundamental role in the process of reducing power consumption and optimising building systems. All too often

commercial buildings are still lit up after hours, whilst only a very small number of maintenance and cleaning professionals are left in the property, often concentrated in the same space working to get the facilities ready for the next day. Collecting and analysing building occupancy data can greatly assist in determining where exactly in the building energy is needed without wasting it in unoccupied spaces.

The same principle of energy monitoring and control applies to office hours. In rest rooms and utility areas, for example, traffic is typically a lot lower than in the actual office space. Knowing traffic levels in certain areas provides a huge opportunity to lower energy use, as heating, cooling and light settings can be pre-set in accordance with demand.

In addition, monitoring changes, such as manual overwrites of pre-defined temperature settings that lead to higher energy consummation and the ability to trigger alarms in these events to then automatically change settings back into a pre-defined mode is another example of how energy spend can be lowered.

MORE THAN MEETS THE EYE

The associated benefits of reduced energy consumption are more than evident. Not only does it lead to substantial cost savings and lower operational expenditures for building owners

and operators, with a distinct impact on the total cost of ownership of a property, the more globally impacting factors include resource conservation and climate protection. After all, the buildings sector is also responsible for 25 per cent of energy related CO_2 emissions, according to the International Energy Agency.

One of the most effective ways of reducing energy consumption is through the implementation of integrated systems that allow a complete understanding of building usage. Key to this is developing an accurate picture of how a space is used, thus enabling building stakeholders and facilities managers to make educated decisions on how to optimise systems to maximise efficiency.

FRONT AND CENTRE

At the front line of an integrated system are sensors that are constantly collecting data on variables like light levels, building occupancy, how people move between spaces, and what the temperature in any given room is. These sensors can form part of a network that also includes heating, ventilation and air conditioning (HVAC) and lighting components, as well as a monitoring and management facility that typically produces a graphical interface for building control. In the simplest of integrated systems, sensor data can be used on its own – for example, by automatically reducing the heating and turning off lights when the building closes for the night.

For a space to be considered 'smart', these systems should be designed in a way that supports the building's users and helps occupants achieve what they're there to achieve. Simply turning off a light if movement hasn't been detected in a while isn't smart, especially if the room

'One of the most effective ways of reducing energy consumption is through the implementation of integrated systems that allow a complete understanding of building usage.'

is actually in use by individuals who are simply out of range of the sensors. Instead, these devices can be linked to calendars or booking systems so rooms can remain dormant but power and heat up ahead of time to be ready for the next meeting. Powering rooms based on usage is a relatively straightforward way of keeping energy costs low.

MAXIMUM EFFECT

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For maximum energy efficiency, systems should be designed holistically, taking into account external data sources such as the weather. This means the building can be optimised on a day-to-day basis rather than simply turning the heating on once colder weather rolls around. It makes much more sense for a space to be able to sense these factors and respond accordingly with minimal human instruction.

Continual optimisation is also a key feature of a smart building, which should produce data that enables facilities managers to make informed decisions about how systems can be better organised, and resources reallocated. For example, if energy management software reports that a space is underutilised but is being powered as normal, it could be repurposed in a way that results in increased energy efficiency. The continued development of machine learning technologies will mean this process is increasingly automated in the near future,

to the point where a building will essentially be able to run itself.

MAKING A DIFFERENCE

Building owners and operators looking to implement technology in this manner in a new or existing location would do well to engage a master systems integrator (MSI) as early as possible in the project.

A good MSI will start by understanding how the spaces are used, examining the typical day-to-day experiences of a number of different user types in order to design an integrated system that has people at its core. This results in intelligent usage and a reduced number of independent systems, all of which would consume their own power. Keeping the user experience at the core of a building's technology represents the difference between efficient buildings and smart building and has the benefit of creating happier users, as well as lowering energy consumption.

SINGLE LIFE

The foundation of any smart energy monitoring and management system forms the underlying network infrastructure of the building and the concept of using a single IP network for support of data, voice, video and low voltage building automation systems such as lighting, HVAC, security and fire and safety systems. Rather than operating disparate systems, building services are supported by a single, unified structured cabling infrastructure that can also supply low voltage power via advanced power over Ethernet (PoE) technology to many

of these systems' IP enabled devices.

A converged intelligent building infrastructure allows for the integration of the wide range of sensors, control panels and detectors for energy monitoring and control. A zone cabling topology that uses either a 12 or 96 port zone enclosure to facilitate connections to building devices and sensors best supports the infrastructure. The enclosures allow for rapid initial deployment and the integration of new devices into the existing structured cabling system with minimal disruption to the occupants. As for the type of cabling to be considered, PoE technology and 10Gb/s data transmission that's required for high throughput Wi-Fi networks, for example, are best supported by high performance shielded copper cabling solutions such as Category 6A and Category 7A.

THINK AHEAD

Figures show that the buildings sector accounts for a huge proportion of energy use globally. Deploying integrated energy monitoring and control systems that utilise the low voltage network infrastructure of a building is a smart way to address this issue. ∎

MIKE BROOMAN
Mike Brooman is CEO of Vanti. He has led major integration projects using cutting edge technologies and a holistic methodology to help those organisations achieve their business goals. By championing an approach that puts the user at the core of building technology design, Brooman focuses on creating extraordinary user experiences within the built environment.

BOB ALLAN
Bob Allan is global business development manager for intelligent buildings and strategic alliances at Siemon. He has over 15 years' experience in the ICT industry and currently works to educate customers on intelligent buildings and the use of a single converged, IP-based structured cabling system to connect and integrate multiple building systems.

Allied Telesis

Network complexity can significantly increase demands on network management and add to the costs of any network deployment.

Take advantage of Allied Telesis' automation solutions and make life simpler and more affordable:

• Control. Increase network control with centralised management, enabling services such as back-up, recovery and provisioning

• Automate. Analyse wireless traffic patterns and automatically reconfigure access points to meet demand

• Secure. Work with third party security software and services to automate network responses to viable threats

• Optimise. Deliver a high performance WAN by ensuring your most important applications always use the best path

With a portfolio of products and technologies providing end-to-end networking solutions for enterprise, government, education and critical infrastructure customers, Allied Telesis is the smarter choice.

For more information contact the UK sales team on 0844 8007699 or **CLICK HERE** to send an email.
www.alliedtelesis.com

Mayflex

When deploying intelligent building infrastructures, you need to create a dynamic and converged network with a robust and powerful switch at the core. These networks are responsible for running multiple applications such as HVAC, IP CCTV, access control, data information, internet, industrial switch gear, wireless back haul to controllers and VoIP.

Edgecore's ECS4620-28F is flexible and agile enough to handle all manner of traffic on these new intelligent infrastructures. With its ability to have singlemode, multimode and RJ-45 copper SFPs all in the one box, connectivity, speed and network scale is never an issue.

This high performance Gigabit Ethernet Layer 3 switch features 28 ports with 22x100/1000 SFP ports, 2x10/100/1000 Combo Ports, 2x10Gb/s SFP+ ports, and one 10Gb/s dual port expansion slot.

Edgecore's ECS4620-28F is a feature packed and cost effective solution that brings continuous availability, enhanced security, and advanced quality of service to the network edge, while maintaining simplicity of management.

Mayflex distributes the Edgecore product range, so **CLICK HERE** to find out more.
www.mayflex.com

Siemon

Siemon's Z-PLUG Category 6A field terminated plug is leading the way in supporting advanced IP-based, power over Ethernet (PoE) technologies.

In the era of the IoT virtually every device is, or can be, connected to the network cabling infrastructure. Siemon's Z-PLUG enables the seamless connection of lights, wireless access points, security cameras, AV equipment, DAS and BAS systems and more to the infrastructure via plug terminated links.

Z-PLUG eliminates the need for work area outlets and patch cords, enabling custom length cables that can be terminated on-site for quick connections directly to the end device. Z-PLUG ensures higher performance, enhanced flexibility and enhanced deployment due to faster termination. It exceeds all Category 6A performance requirements and can be terminated to shielded, unshielded, solid and stranded cables.

Z-PLUG's intuitive outlet style termination process results in best in class termination time and repeatable performance. With a robust, low profile design and the option to eliminate or shorten the boot, Z-PLUGs are also ideal for fitting into end devices with limited space such as cameras and access points.

CLICK HERE to watch the Z-PLUG video.
www.siemon.com

HellermannTyton

HellermannTyton manufactures a wide range of zone cabling solutions for applications in every area of the network infrastructure. Starting at the point where fibre cable enters the building, all the way to the desk where a user operates their PC, HellermannTyton provides connectivity throughout.

The MDU series provides a building entry point solution that can distribute fibre around the building for high speed networking. With a wide range of patch panels, patch leads and the world famous RapidNet pre-terminated solution, HellermannTyton has a number of products for the communications room or data centre.
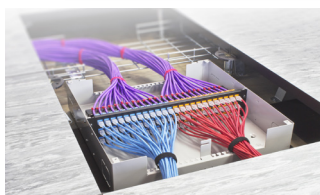
HellermannTyton's zone cabling solutions provide flexibility and networking options across the network, allowing for additional connectivity, with intelligent space saving products including the zone cabling enclosure and the pod box. The zone cabling enclosure is the ideal solution for data centre or office applications where raised floors or suspended ceiling provide suitable hosting space.

HellermannTyton products provide reliable, resilient network connections, as well as high performance across a number of zone applications found in today's infrastructure environments.

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

Trend setting

Matt Salter of ExcelRedstone explains how the occupants of smart buildings will drive the functionality of tomorrow

▶ We live in interesting times and the rapidly evolving technologies for smart buildings really are exciting. However, we should still consider that the technology utilised is really just a means to an end. I want to take a step back and discuss what I think are some of the underlying drivers we'll see affecting the smart buildings market, and sooner than we think.

SMART THINKING

When we say smart buildings, what we often mean are buildings using smart systems, and we still think in somewhat siloed ways, as it's what we've always known. We think of a building management system (BMS), the facilities team and meeting rooms separately, but if it's modern and clever and connected, then it's smart.

And this is great to a degree. We're seeing huge leaps and bounds in technological innovation and the benefits being delivered. I don't want to diminish the great work the industry and its customers are achieving, but there's more to be done.

SHIFT WORK

I think we'll increasingly see people shifting their thinking about a building to seeing it as an entity in itself – greater than the sum of its parts. Considerations about a building's purpose, what it should stand for and what it must deliver will become the first consideration – then the technology deployed within it becomes the means of achieving those aims.

It's a bit like building an aeroplane. You don't start with a nice wing and then build a plane around it. You start with the objectives around distance, capacity, comfort and profitability – then the thousands of systems work together in harmony to deliver that objective.

We must start moving our thinking from 'We need lighting, so how can smart lighting benefit our occupants?' to 'What can we do to make our occupants happy and more productive?' If lighting is one of the answers, we'll start seeing a shift in mindset. When we start looking at things from that angle, I think we'll start taking a more open view to technologies and how they can work together to deliver truly smart buildings.

KNOW HOW

In the retail sector a bad experience can mean a one star review online moments later. Whether it's the experience of your staff in an office, or customers in a shopping centre, there are many common factors in terms of occupant comfort and making sure everything is working smoothly and delivering the right experience.

Buildings will increasingly become predictive or, at the very least, much quicker to react to issues as they arise and able to solve them faster. If one system goes down, the smart building fault finds, checks if a part is available in stock – and if not, orders it – then queues a work order for maintenance to fix it. This proactive response will dramatically reduce the

impact of waiting for someone to report an issue then going through manual processes to resolution.

I foresee a time when buildings actively predict and alert us on, for example, usage trends. One example could be advising us when to increase staffing levels at peak times, or what about a building that automatically allocates temporary parking spaces for visitors when it can see increased demand for meeting rooms? The data we will collect and analyse will drive building performance, predicting our needs and resolving issues before they are barely noticed – and I think it's safe to say we haven't even thought of some of the ways it will do it.

ALL WELL AND GOOD

Companies are tuned into tangible health benefits for their staff such as healthcare, gym facilities and fresh fruit. But there's growing awareness around other physical factors that can influence wellbeing, and also the growing importance of mental health.

Returning to the lighting example – not only can we ensure lighting is flexible and comfortable for occupants, but we're also seeing the rise in the concept of human centric lighting (HCL). OK, I'd argue that it was always human centric, but this signifies a shift in understanding the nuances of light and how it can help productivity. Think of lighting that changes tone and brightness in tune with natural light to help support circadian rhythms as one possible outcome.

OPEN MIND

There's also been coverage in the press

recently that has taken a negative view on open plan workspaces – largely driven by questions over whether interruptions and noise make them productive spaces. Preferences will change over time, but I stand by that fact that flexibility is what we need to be delivering – comfortable offices, meeting pods, quiet work areas – do what's right for your environment and the working habits of the people within it.

As well as flexible working, there also needs to be more consideration around the environment design including furnishings, sound absorbing materials, and breaking up open plan spaces with
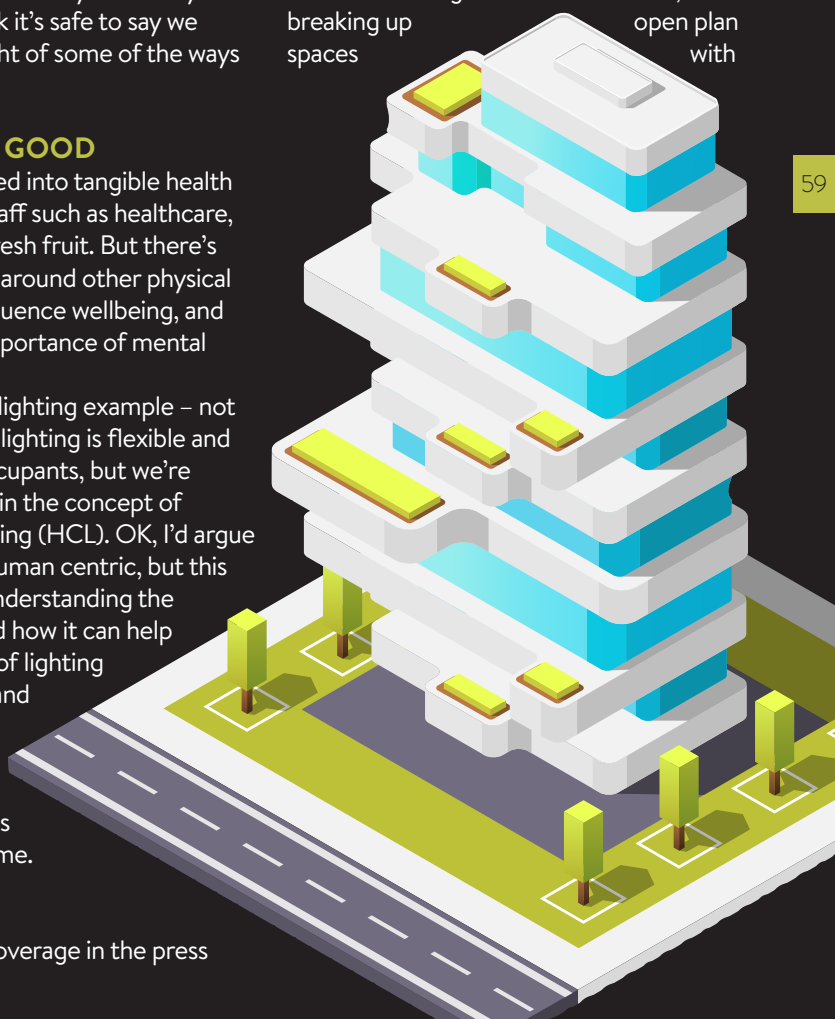
'Companies are tuned into tangible health benefits for their staff such as healthcare, gym facilities and fresh fruit. But there's growing awareness around other physical factors that can influence wellbeing, and also the growing importance of mental health.'

dividers. We need to be steering the conversation towards the types of versatile spaces available and their benefits, moving beyond the simple topic of open verus non-open plan.

PRIVACY CONCERNS

I think we'll increasingly see buildings do more to take care of their occupants. It's where many of us are spending up to 40 hours a week, sometimes more. It makes sense that buildings will proactively try to monitor our welfare. I expect an increase in environmental monitoring to check metrics like air quality and, over time, more proactive metrics – like how long a member of staff has been in the office this week, noise levels, and are occupants taking adequate breaks etc.

It makes sense that our buildings will remind us what's good for us, and companies can demonstrate they are looking after both our physical and mental wellbeing – both vital to good health. But these will need to be balanced with the spectre of 'big brother', which looms over anything that begins to measure us and our activity on a more individual level. We must respect these concerns, and open communication is key. But we must not be scared off by new technologies that will undoubtedly

enter the market to improve the health of occupants and aid compliance for organisations.

ENVIRONMENTALLY FRIENDLY

This issue is going nowhere. If anything, people are becoming more engaged with each passing day. Look to the spike in awareness around the use of plastics and more environmentally conscious lifestyles over the last year or two.

Both customers and employees will be looking for similar information – how is the building helping them support their personal environmental goals, and how is the building's overall environmental performance? Look to greater recycling, food grown on-site, a backlash against

unnecessary material waste and simple things like a need for water fountains. We've gone full circle on that one – great ideas are not always new ideas!

Occupants will want to see and understand their building's performance and how they can make an impact within it. With the trifecta of legislation, money saving and now occupant pressure, the green agenda is going nowhere and will only intensify.

LISTEN AND LEARN

Most of what I've discussed above isn't particularly technology focused. It's not big corporate topics – a lot of it is on a more local level – what matters to the people who inhabit the space. You'll only really understand that by talking to your occupants to find out what drives them. We too, in the industry, can learn a lot by talking. When we come together and share learnings, we can truly seize the amazing opportunities that will exist for us all within the smart building. ■

MATT SALTER
Matt Salter is sales director of ExcelRedstone. A visionary in the smart buildings space, Salter is leading the charge for buildings to work harder and more efficiently for the benefit of those that own and occupy them. He fundamentally believes that buildings have yet to exploit the technological advances of recent years and, with the ways we communicate and work rapidly changing, that buildings need to up their game.

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Keysource supports data centre migration for ECMWF

Keysource has won a new contract with the European Centre for Medium-Range Weather Forecasts (ECMWF) to provide on-site engineering consultancy, as the organisation migrates its data centre.

The seven month contract includes a secondment of a Keysource engineer to advise on critical facilities, data centre infrastructure management (DCIM) and the ongoing operation of the estate at ECMWF's supercomputer data centre in Reading. Keysource will also provide technical advice on mechanical and electrical maintenance activity.

ECMWF holds the world's largest archive of numerical weather prediction data, supporting 34 member and co-operating states. The intergovernmental organisation provides global numerical weather prediction, monitoring and metrological analysis of the Earth system and it operates one of the largest supercomputer facilities in Europe.

Equinix expands its global footprint to South Korea with data centre in Seoul

Equinix has announced the expansion of its global footprint to South Korea with its new International Business Exchange (IBX) data centre in Seoul.

This carrier neutral data centre – called SL1 – will provide interconnection and colocation services to businesses in support of their digital transformation initiatives and adoption of cloud. SL1 will provide more than 1,680m² of colocation space, offering an initial capacity of 550 cabinets in the first phase, and is scheduled to open in Q3 2019.

This expansion into South Korea coincides with the impending nationwide launch of 5G networks in March 2019. The introduction of 5G will usher in a new era of next generation services and breakthroughs in industries such as Internet of Things (IoT) and artificial intelligence (AI) that will require data transactions at higher speeds and volumes, with lower latencies. With data expected to continue to grow exponentially, the need for data centres that are able to meet the demands of businesses through colocation or interconnection services will be further amplified.

Boston Networks launches transformational IoT Scotland

Boston Networks has launched the UK's most advanced Internet of Things (IoT) network at Glasgow Science Centre. IoT Scotland will provide a wide area wireless sensor network for applications and services to collect data from devices and send that data without the need for cellular or Wi-Fi. It will support businesses to develop new and innovative applications, changing the way they work.

The £6m network, which will work via 500 LoRa wireless gateways situated throughout Scotland, is part funded by £2.7m from the Scottish government, with further support from Scottish Enterprise, Highland and Islands Enterprise (HIE) and private sector investment from Boston Networks itself.

Glasgow will be over 99 per cent covered via 22 gateways that are being installed across the city – making it the most LoRa covered city in the UK, with the potential to become the smartest. Argyll and Bute Council has also signed up as an early adopter, which will see early installations in Oban and Helensburgh, and negotiations are underway with other local councils and other organisations throughout the country with a full rollout planned by March 2021.

Scott McEwan and Falk, Boston Networks

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PROJECTS & CONTRACTS IN BRIEF

Google has announced details of its plans to invest $13bn to build data centres and offices in the USA.

IX Reach has expanded into East Africa in partnership with the Djibouti Data Center (DDC). DDC has been selected as the strategic hub for IX Reach's African expansion owing to its position as the first and only Tier 3 carrier neutral ecosystem in east Africa, with direct access to all major international and regional cable systems connecting Africa to Europe, Middle Eastern and Asian markets.

Grupo de Telecomunicaciones de Alta Capacidad (GTAC) has deployed the Infinera mTera universal switching and transport solution to scale long haul service capacity and increase efficiency in its high speed fibre optic backbone network throughout Mexico.

AFIBER has expanded its service footprint with the maincubes AMS01 data centre located in Schiphol-Rijk, part of the Amsterdam metro area.

Problem solver

Having been at the forefront of the structured cabling sector for over 30 years, Paul Cave has been instrumental developing its current status as the backbone of the intelligent building. Rob Shepherd recently caught up with him to find out more about his life and career, and his views on the big issues affecting the sector

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

PC: I am the technical pre-sales manager for Excel Networking Solutions – my role involves helping our customers get the correct solution for their needs.

RS: What excites you about the industry at present?

PC: I think the industry is going through a very interesting period. Having worked

> 'Early engagement with a chosen systems manufacturer can be crucial to success. I cannot remember when my years of experience didn't help guide an installer or customer to the most appropriate solution.'

in it for over 30 years I can't remember a time when so much was happening – ISO 11801 and EN50173 completely revised in the last year, publication of the new 4PPoE in IEEE 802.3bt, and technology/standards developments for single pair Ethernet on the horizon.

The maturity in passive optical networking is interesting, as it is starting to have a real impact not just in the hospitality and residential space but some enterprise customers are really starting to see the possible rewards. Add all of that to the challenge that the industry faced over the inclusion of cables within the Construction Products Regulation (CPR) a couple of years ago and we are certainly not going to get bored by stagnation!

RS: What will be the next big 'game changer' to affect the network infrastructure sector?

PC: I remember giving a talk to a group of facilities managers in the late 1980s. The main premise of the presentation was the view that structured cabling was going to be the nervous system for intelligent or smart buildings in the future – something I repeated on many subsequent occasions. Now, nearly 30 years later, we are finally getting there. When the first talk was given we were nearly 15 years before PoE came along, which has been a key driver – all of which gives me great hope for the future.

RS: If you could change just one thing about the industry that you work in what would it be?

PC: We still have an archaic contracting

process that usually ensures a 'race to the bottom' that, at times, stops the end user getting what he/she really wants by value engineering the structured cabling element, rather than other areas, to save a very small percentage of the overall capital expenditure of a project. This is very short-sighted given the operational expenditure related benefits a truly connected system

could bring.

If you were to ask me one of the things that I would like to change in our industry, it is this. In my experience when the integrator/installer gets more recognition by, and access to, the end user and their agents (consultants), along with direct involvement with the system manufacturer, the improvement in the final system is almost immeasurable.

RS: Is training given the status it deserves and what could be done to

encourage more people to gain relevant qualifications, certifications and accreditations?

PC: Our industry desperately needs more training qualifications that mean something. With the new Electrotechnical Certification Scheme (ECS) we may start to see this, however, the majority of the 'cable pullers' I come across learn on the job, rather than going through an accredited training program.

I strongly believe an apprentice scheme and insistence on real qualifications by end users and main contractors is vital if we are to progress and improve the overall quality of the installations we see. At the end of the day it makes sense when you consider everything that is now connected by the structured cabling – voice, data, access control, security, lighting control, building management systems to name just a few.

RS: What single piece of advice would you give an end user looking to purchase a structured cabling system?

PC: Early engagement with a chosen systems manufacturer can be crucial to success. I cannot remember when my years of experience didn't help guide an installer or customer to the most appropriate solution.

Due to non-disclosure agreements I cannot mention the names of specific projects, however, I have gained great satisfaction in helping the customer by using my knowledge from a previous project to come up with a simple quick solution to a design problem, or doing some 'out of the box' thinking.

RS: What is your greatest business related achievement?

PC: Rather than one specific instance it is the ability to come up with solutions to problems that gives me the most

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satisfaction.

RS: Who is the person you most admire from the industry and why?

PC: It is very difficult to whittle down the list of people I admire – I could come up with at least 10 names, however, there are two people I admire the most in our industry, both of whom demonstrate determination and commitment.

I may be accused of being sycophantic with the first one, who is Andrew Percival managing director of Mayflex. He is one of the key figures that 22 years ago was behind the inception of Excel and in all that time his passion and commitment has never waned. What a lot of people don't realise is that Andrew started at Mayflex as a 16 year old in the warehouse, before first moving to an internal sales role, then external sales, sales management and sales director, before becoming managing director. Anyone in the company knows very well his drive and commitment towards customer excellence.

The second person is Andrew Stevens, CEO of CNet Training. I first met Andrew over 25 years ago when discussing training courses for the vendor I was working for at the time. Apart from a few grey hairs he hasn't changed in all that time – very passionate, completely committed and

> 'We still have an archaic contracting process that usually ensures a "race to the bottom" that, at times, stops the end user getting what he/she really wants by value engineering the structured cabling element.'

determined that training is vital and key towards the success of our industry and how we are viewed. He has spent a great deal of time lobbying both vendors and government with these views. I can only imagine some of these conversations having been on the receiving end of them myself.

I am proud to call them both friends.

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

PC: Interestingly I never took the best piece of advice I ever received in the first instance – part of that was probably the teenage rebel syndrome! How often do 16 year olds accept advice from adults?

Way back when at the dawn of time I applied to join the Royal Air Force (RAF). I thought I knew what I wanted to do, however, the RAF in its wisdom said I had to do an assessment to join as an apprentice. After the requisite IQ and aptitude tests over a couple of days they informed me

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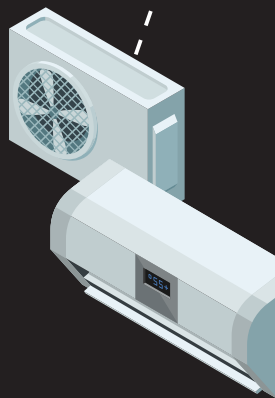
I should study ground communications, which was a two year course. However, less than a year in I became totally jaundiced with being back at school after I thought I had escaped it 18 months previously. So, I learned to become an adult entry airframe mechanic, which was a much shorter hands-on course. I subsequently became an airframe fitter before leaving the RAF.

Less than six years after leaving the RAF in the mid-1970s I was again immersed in communications, initially selling ThickNet and ThinNet devices and cables and then the last 30 years in structured cabling. Whilst retirement may be beckoning I have committed to continue for the next few years as the day-to-day buzz I get has not diminished and for me that is what it is all about. ■

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Excel Networking Solutions

Excel Networking Solutions' Paul Cave will host the first series of the company's passive optical network (PON) training courses, which comprise informative and practical hands-on elements.

The training courses come shortly after Excel launched its PON Solution. PON is an umbrella industry term for fibre based access networking architecture that is designed for both residential environments (FTTx) and enterprise environments (POL). Regardless of the size of the building, the Excel range of PON products offers numerous options in fibre connectivity and distribution, and the training courses aim to support designers, consultants and engineers to design and install the PON Solution efficiently.

If you're interested in attending one of Excel's PON training courses **CLICK HERE.**
www.excel-networking.com

Schneider Electric

Schneider Electric's EcoStruxure IT Expert is a cloud-based data centre infrastructure management (DCIM) solution that brings secure, vendor agnostic, wherever-you-go monitoring and visibility of all Internet of Things (IoT) enabled physical infrastructure assets.

As part of Schneider Electric's EcoStruxure architecture, IT Expert operates with all IoT enabled physical infrastructure assets like secure power and cooling – including the cloud enabled Smart-UPS with APC SmartConnect.

IT Expert addresses the data centre industry's need to simplify how data centres, distributed IT, and local edge environments are managed. Providing proactive recommendations and consolidated performance and alarming data, IT Expert can significantly reduce alarm noise and improve overall site resiliency.

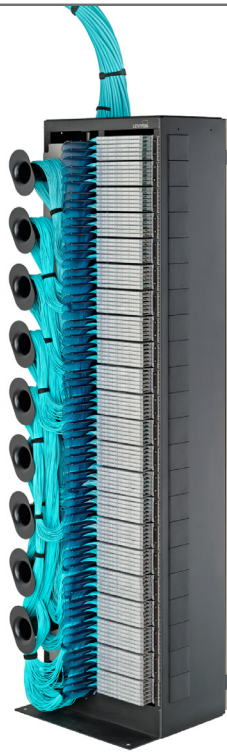To find out more **CLICK HERE.**
www.schneider-electric.co.uk

Leviton

The Leviton HDX Fiber Distribution Frame prepares data centres for growth, minimises patching footprint, reduces installation time, and saves you money.

One frame consolidates patching into an incredibly small footprint, with capacity for more than 3,168 LC fibres, or 15,552 fibres using 24 fibre MTP connections.

The system accomplishes such high density through its unique patch deck design. One frame holds 22 decks, each configured with fibre cassettes, adaptor plates, or splice trays. And since it occupies only one data centre floor tile, it easier than ever to access space beneath a raised floor.

By reducing overall floor space requirements, the HDX Fibre Distribution system creates significant yearly cost savings over a traditional main distribution area.

CLICK HERE to learn more. **www.leviton.com**

R&M

R&M's FO Field 2.0 field mountable FO connectors can be used in a wide range of fibre cabling installations. Permanently stable clamping technology – now available for all cable types – means faster, easier installations and lower connection costs.

For the very first time, optical fibre can be fixed along with the jacket without compromising the cables' excellent transmission properties and attenuation values. The mechanical connection is significantly more stable and resistant than comparable solutions.
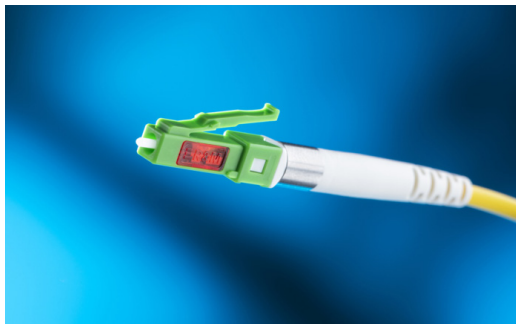
Optimised mechanical stability makes it possible to use the connector in a much wider application range than earlier solutions. Depending on the cable type, links can even be realised in the -25°C to +70°C range.

Connectors can be wired on-site in less than a minute. Tests show it takes 30 per cent less time to install an FO outlet in an apartment than splice cabling and connection costs per subscriber fall by up to 20 per cent.

CLICK HERE to watch the FO Field video. **rdm.com**

All you need to know

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More than
meets the eye

Chris Gilmour of Axians UK explains why next generation networking is
not all software and bots

▶ Now is not an easy time to be a
communications service provider
(CSP). On one side there's pressure to
expand infrastructure to deal with growing
customer demands for data and, on the
other, an increasing level of competition
and constant pressure to provide
customers with new, innovative services.

LOOK TO THE FUTURE
Future-gazers are constantly predicting the
'next big thing' in tech, with many seeing
automation and artificial intelligence (AI)
as the keys to differentiation that can
increase profit margins and solve network
complexity problems that hold businesses
back. But infrastructure changes are
not restricted to software and bots. It's
entirely possible that the fundamentals of
tomorrow's networks are already in place,
just waiting for the innovation that will

bring them to life. Modern platforms –
that is to say those built within the
last three to five years – frequently
hold vast amounts of functionality and
programmability that are simply not being
used at the moment.

For any given business there can be
hundreds of opportunities to 'tweak' an
existing network configuration to make
it work better, more efficiently or more
distinctively to add value to the enterprise.
The network is the key enabler of any
CSP's business, and while it is complex
it is also the place where costs can be
contained and services managed and
generated. The fact remains that any
modern platform is likely to contain a
substantial amount of unused capability
that the CSP could be exploiting to reduce
costs, reduce customer churn and increase
revenue – but they're not. Why?

> '**Somewhere, probably closer than you realise, is somebody who can get under the skin of your network, ascertain its potential and explain how you can turn that to your advantage.**'

BUSY BEES

Very often, the issue is one of resource. Communications service providers are so busy, with their heads down doing the day job, that it can be hard to look up and survey the possibilities. It's hard enough launching new products, let alone reconfiguring the very core of the business.

CSPs also know that they simply can't afford to neglect their infrastructure and pin their hopes on 'the next big thing'. Network efficiency, meeting customer demand and creating new services are the keys to their continued success – they must be able to respond to current challenges and future proof the business. The good news is that there is often more help and expertise to be had, closer to home and more easily, than CSPs realise.

FIVE ALIVE

It is possible to more with what you have, and here's a five-step approach:

Step 1 – There is expertise everywhere.

Somewhere, probably closer than you realise, is somebody who can get under the skin of your network, ascertain its potential and explain how you can turn that to your advantage.

Perhaps you can programme the network to automate certain tasks, or tweak a product to provide that little extra something that your competitors don't have. You won't know until you ask your expert. If you can then build that expertise into the ecosystem of your network, you probably have a solid recipe for growth and future proofing.

The obvious place to look for expertise is with your trusted suppliers. After all, who is likely to know your own particular network any better? A further advantage, as we shall see, lies in that provider's winning combination of expertise, connections and objectivity.

Step 2 – Take control of your data.

The better your understanding of customer use, engagement and uptake, the more advantageously you can configure your offering to the market. You can use data to identify new revenue streams, troubleshoot, inform product development and establish likely return on investment (ROI) for new concepts. Whether this is through enhanced network monitoring, the use of network management support and/or network telemetry, data combined with expertise is a powerful tool that will greatly extend the potential of 'day-to-day' analytics.

Step 3 – Use automation for cost per gig saving.

Leveraging the programmability of your platform to automate takes you a step closer to next generation networks. But remember, just because you can automate doesn't mean you have to use your analytics and expertise to build a case for change and quantify your expected ROI first.

When you know what you want to change, have a chat with your local expert – chances are that they have seen your automation done before and will know the likely pitfalls and if not how to avoid them, then how to tackle them. Typical of services that can be enhanced by automation are self-service portals for customers, and templates to expedite and enhance the design of processes and systems in house with accompanying audit trail.

Step 4 – Envisage and design new services.

This is where the flexibility and programmability of modern platforms really give businesses power. In a typical CSP, departments tend to work in silo and focus solely on their own area of expertise – it's very rare to find a business that has people with enough spare time to sit down and imagine new products.

Many don't realise that if they bring in their supplier partners, not only can they share expertise gained from experience with a wide range of customers and tell you what your network is capable of, they are also objective enough to gather feedback from multiple areas of the business and share learning and insights in exactly the same way, effectively integrating product and network teams.

If you consult with a top-flight network integrator partner, the chances are good that they

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will have encountered similar scenarios elsewhere and know the challenges and solutions that others have deployed.

They may also suggest ways of tweaking a solution into a bespoke fit for a given CSP, or even possibilities for creating an entirely new product. Sometimes, leveraging the power of the network, even in relatively minor ways, can transform a workaday product facing massive competition into something else entirely.

Step 5 – Test concepts in the most appropriate places.

This may seem obvious, but a surprisingly large number of CSPs fail to leverage the resources that their partners can offer. For example, do they have a test rig or replica network that can be used for proof of concept? Communications service providers often forget that their partners are partners in network design and architecture as well as straightforward provision, tending instead to consider them merely fellow members of a supply chain and missing out on substantial resource as a result.

GETTING IT RIGHT

Getting the basics right might seem obvious, but it can be all too easy to overlook those basics when customers and colleagues are crying out for 'the latest thing' today.

Automation and AI have the potential to set CSPs apart from the competition and provide innovative new services, but this is pointless if there is not a good, future proof network underpinning it all and driving the business forward. The seeds of tomorrow's networks have already been sown in today's –the network of today is the workplace for future success. ∎

CHRIS GILMOUR
Chris Gilmour is technical practice lead and mark holder, account director at Axians UK. He has over 20 years' experience in the telecommunications industry.

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