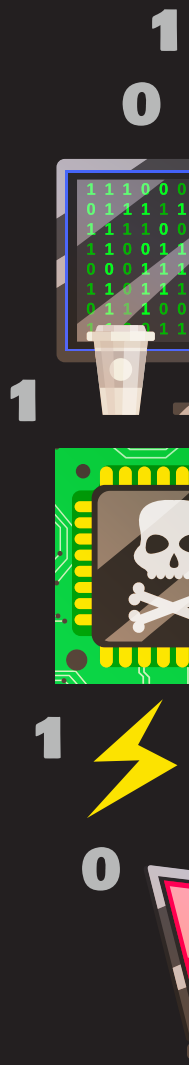# Inside_Networks

Danger zo

IDENTIFYING WI-FI
THREAT CATEGORIES
AND PROTECTING
NETWORKS

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Impact
assessment

HOW HAS GDPR
AFFECTED THE DATA
CENTRE SECTOR?

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Progress
report

THE INNOVATIONS
THAT ARE
REVOLUTIONISING
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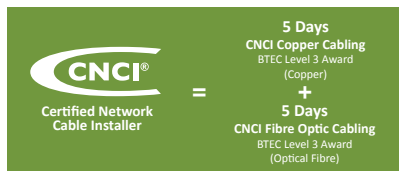
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Finding the time

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6

It's clear from the response to last month's Question Time that 5G marks a huge step change in the way that data is generated, stored and used. With more data comes more responsibility in the way that it is handled, so it is perhaps timely to assess the impact of the General Data Protection Regulation (GDPR) almost one year on from when it came into effect.

The months preceding its arrival were full of differing opinion and it felt that sorting fact from fiction was a seemingly impossible task. Hopefully, things have now settled down, so we've asked a panel of experts to examine its impact on those who operate, manage and use data centres, and whether there are still those who are failing to take it seriously. **CLICK HERE** to read their comments.

The humble power distribution unit (PDU) might seem unworthy of serious consideration but nothing could be further from the truth. With more choice than ever and a vital role in making sure that components work as they should, Neil Staley of Mayflex identifies the seven key issues to think about when choosing a PDU. **CLICK HERE** for his advice. On a related subject, our ability to take energy for granted is something that Mark Guest of Rittal believes is to our detriment and you can **CLICK HERE** to read why we cannot assume our energy sources can be guaranteed.

This issue also contains a special feature dedicated to wireless networking and Martin Lethbridge from WatchGuard Technologies explores the best known Wi-Fi threat categories, while Donna Johnson of Cradlepoint explains why now is the time for an agile wireless network. **CLICK HERE** for Martin's article and to read Donna's **CLICK HERE.**

Last and certainly not least, I'd like to say thanks to everyone that has entered a team and provided sponsorship for the Inside_Networks 2019 Charity Golf Day in aid of Macmillan Cancer Support, which is set to take place on 22nd May at Hanbury Manor PGA Championship Course. This year's event is set to be the best yet and I'm looking forward to seeing you there!

R.Shepherd

Rob Shepherd Editor

Inside_Networks
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OCP Foundation exceeds 2018 forecast for non-board member adoption

The Open Compute Project (OCP) Foundation has released a follow up assessment of the market impact of the OCP worldwide. Since its inception, OCP has worked to drive innovation in and around the data centre industry, bringing together thousands of engineers from nearly 200 member organisations.

Among the preliminary findings were that 2018 non-board OCP revenue topped the 2017 forecast, reaching $2.56bn, compared to a forecast of $1.84 billion. It also found that servers, storage and networking are the fastest projected growth categories, with passive optical networking (PON) a potential high-growth area. Furthermore, the

drivers of adoption of OCP are growing more diverse – cost reduction and power efficiency are still the biggest reasons why, but the market is now realising that feature flexibility and conformance to those specifications approved by OCP provide a measure of comfort to the market.

'We are pleased that the adoption momentum continues and accelerates, and we value the insight provided by the study regarding barriers, challenges and opportunities. We are committed to continued improvement in the entire ecosystem to support future growth,' stated Rocky Bullock, CEO for the OCP Foundation.

9

Uptime not a priority despite almost half of businesses suffering data centre downtime

Guaranteed uptime failed to break into the top three of CEO and IT professional's priorities, despite almost half (46 per cent) of businesses saying they had suffered data loss in the past 12 months, according to a new report from Volta Data Centres.

On a scale of 1-10, CEOs and IT managers said securing company data (8.34), customer data (8.3) and infrastructure security (8) were bigger priorities for their businesses than guaranteed uptime (7.95). UK businesses admitted to making cutbacks on critical IT infrastructure in the past year in order to meet budget requirements, with flexibility

(31 per cent) and guaranteed uptime (27 per cent) the top factors businesses are having to surrender. Only nine per cent of businesses said they have had to make compromises over security.

Jon Arnold, managing director at Volta Data Centres, said, 'Security is rightly a top concern for businesses, and it is good see that uptime comes a close second.

Jon Arnold

However, with the research showing a huge amount of companies experiencing data loss from downtime, are companies actually following through with what they consider as high priority?'

Financial services businesses say multi-cloud is central to their plans

An independent report by 451 Research – Multi-Cloud Fundamental to Financial Services Transformation – has found that financial services businesses are looking to emerging technologies at a higher rate than organisations in other sectors.

The study, commissioned by Canonical, found that AI and machine learning (36 per cent), containers (29 per cent) and blockchain (24 per cent) are highlighted as the industry's top priorities. However, when it comes to adopting emerging technologies, skills shortages in cloud platform expertise (46 per cent), were cited. Implementing a

Liam Eagle

multi-cloud environment is a key part of financial services organisations' overall IT strategy – 62 per cent of the sector's IT managers believe multi-cloud will allow them to improve application performance and availability demands.

Liam Eagle, research manager for cloud, hosting and managed services at 451 Research, said, 'Executing on transformation in the finance sector means tackling challenges such as regulatory compliance and information security. We expect hybrid IT strategies and partner-led managed services to be key elements in overcoming those obstacles.'

Kao Data achieves multiple ISO certifications

Kao Data has successfully and simultaneously attained International Organization for Standardization (ISO) accreditation across the four key standards to engage stakeholders throughout all aspects of data centre management and operations – ISO 9001, ISO 14001, ISO 27001 and ISO 45001 – with zero non-conformities.

Paul Finch, COO at Kao Data, said, 'With

Paul Finch

today's heightened sensitivity to assured and secure data centre and data continuity, our customers and their end users require a robust and independent validation that their chosen service provider is standards compliant across the board, from corporate governance and regulatory requirements, to organisational resilience, proactive risk prevention, innovation and continual improvement.'

SolarWinds finds 78 per cent of tech professionals lack time to train

SolarWinds has released the findings of the SolarWinds IT Trends Report 2019: Skills for Tech Pros of Tomorrow. This year's annual report studies the state of skills and career development for technology professionals.

It found that UK tech professionals have prioritised systems and infrastructure, security management, and hybrid IT skills development in the past 12 months. When it comes to the next three to five years, they are looking to develop skills in areas like artificial intelligence (AI) and big data analytics, while eyeing career paths such as data science and coding. However, without improvement in time and budget constraints, 70 per cent say they will be unable to confidently manage future

innovations. Furthermore, Nearly eight in 10 (78 per cent) say their day to day tasks extend into time earmarked for career development,

Joe Kim, executive vice president and global chief technology officer at SolarWinds, said, 'The results highlight that businesses need to focus even more on developing these professionals charged with running and pioneering technologies for the businesses. By removing day to day barriers, arming technology professionals with the right technology and management tools, and prioritising skills and career development in the IT budget, they can be better equipped for the future and help with business growth.'

11

Better access to education and healthcare top aspirations for the next 30 years of the internet

To mark the 30th anniversary of the world wide web over 11,000 survey respondents from across Europe shared what the web has made possible for them today, and what they hope it will make possible for future generations.

Whilst the internet has delivered many 'firsts', from the first website and the first online takeaway order, to the first internet connection in space, people's ambitions for the internet's future overwhelmingly highlight what it can make possible for society. Enabling 'better access to healthcare' tops the list of citizen aspirations for the future of the internet (51 per cent), followed by enabling 'better access to education' (48 per cent).

Wendy Mars, president of Cisco EMEAR, said, 'By 2022, we are going to see more traffic crossing global networks than in the entire history of the internet combined. This traffic comes from all of us, and increasingly, our machines. The survey shows the impact that the world wide web has had on our lives, and what people expect for the future. To realise that potential, organisations – be it in healthcare, education, or any other industry – must be able to understand the power of connections and securely extract value from them.'

Wendy Mars

Cost to economy of DDoS cyber attacks may exceed £1bn per annum

The cost to the UK economy of distributed denial of service (DDoS) attacks may now exceed £1bn each year, according to research from NetScout. 91 per cent of major enterprises that had a DDoS attack in 2018 experienced network downtime as a direct result. That downtime lasted for 30 minutes or more for nearly half the companies questioned, and an unlucky, or ill-prepared, nine per cent found their systems impacted for more than four hours. The average cost for each business that had seen downtime due to DDoS exceeded £140,000.

Darren Anstee, NetScout CTO,

commented, 'The tools to initiate DDoS attacks are cheap, freely available and easily deployed – as a result, there are more than 10,000 DDoS attacks every day around the world. The size and complexity of attacks continue to grow and businesses must make sure their key resources are adequately protected.

'Our research data revealed that around 86 per cent of major enterprises questioned were attacked at least once in 2018. 90 per cent of these businesses experienced downtime, which averaged 67 minutes for the year, and the downtime costs were estimated at £2,140 per minute.'

NEWS IN BRIEF

The Telecommunications Industry Association (TIA) TR-42.7 Engineering Committee on Telecommunications Copper Cabling Systems (568) has issued a call for interest for document TIA-568.2-D-1 titled Balanced Twisted-Pair Telecommunications Cabling and Components Standard. TR-42.7 is developing an amendment to designate balun specifications used for testing Category 8 cabling and components described in ANSI/TIA-568.2-D.

R&M has appointed Christopher Stratas as new executive vice president for its North American business

The worldwide server market continued to grow through 2018 as revenue increased 17.8 per cent in the fourth quarter of 2018, while shipments grew 8.5 per cent year over year, according to Gartner.

The Open Compute Project (OCP) Foundation has granted Switch Datacenters OCP Ready status.

UKFast has announced its commitment to meeting stringent emissions targets under the government's Climate Change Agreement (CCA) for data centres, administered by techUK.

maincubes has received ISO/IEC 27001:2013 information security certification for its recently opened AMS01 colocation data centre in Amsterdam Schiphol-Rijk.

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Planning a path for dec

Hi Rob

Data traffic will keep developing dynamically for decades to come. If you're planning a network today, you will need to design it to accommodate requirements that we have never seen before.

Infrastructures for fibre to the home (FTTH), mobile communications, the cloud and a wide range of digital applications must be able to deliver sufficient capacity. Therefore, I would strongly recommend an unprecedented level of precision when it comes to planning for public broadband networks, private data networks, data centres or any other kind of network.

In every project, and at every level, it is essential to plan and build infrastructures for huge volumes of secure, instantaneous and continuous data transmission. There are several factors driving this. Take the Internet of Things (IoT), for example. All manner of devices are being connected to the internet, from ultra-small sensors, measuring devices and control systems to light sources, safety systems and even medical equipment. The IoT allows them to be managed efficiently and the data they generate can be merged and used for multiple functions.

Another example is blockchain, which can protect money transfers, goods, merchandise, industrial and digital products, and more. The technology is based on cryptographic, continuous and remotely organised daisy chaining of data sets. Multiple data centres work in parallel and permanently synchronise blockchains via fast networks. Furthermore, trends such as smart business, smart factory, smart mobility, smart city and smart buildings have the potential to bring the internet into all areas of life and increase the amount of digital information people generate and move around in the long-term.

Currently, the volume of data generation is 2.5 quintillion (2.518) bytes a day and

14

cades **ahead**

around 90 per cent of the world's data has been generated during the last two to three years. According to Cisco's comments in the latest Visual Networking Index (VNI), that's just the beginning. The potential for growth can be seen in data hungry virtual and augmented reality applications, for example. By 2022, this market will grow by 670 per cent to $209bn. Furthermore, the number of internet users is increasing by seven per cent per year, with 11 new social media users added every second.

We anticipate that extensive investments in blanket development will only pay off in the long-term. Planners and network operators should, therefore, opt for long-lasting, high quality products. It's also important not to take anything for granted and double-check specifications. Valuable fibre optic cables, which are being used far more frequently nowadays, should not have to be replaced after a few years just because they were inadequately measured to begin with.

At the moment many new technological concepts are coming into focus, bringing with them new opportunities and possibilities for the future. The long-term effects of the digital revolution cannot be determined in detail yet. However, one thing is clear – anyone making network decisions today is planning for decades ahead!

Andreas Rüsseler
R&M

Editor's comment

The statistics quoted by Andreas are mindblowing and its clear that the level of data generation will only continue to rise. This presents tremendous opportunities for the data centre sector and, in order to stay ahead of the curve, owners and operators must have one eye on the future.

15

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Hi Rob

In 2018 Britain's tech sector attracted more venture capital investment than any other European country. According to London & Partners and PitchBook, £2.49bn was raised by British tech firms, with 72 per cent of this figure – £1.8bn – received by London based companies. By 2030, the government estimates that 30 billion devices will be wirelessly connected, supporting a global digital services market worth as much as the entire UK economy.

The UK has strength in the data communications industry and world class engineers in networking, software development, computer science, data analysis and cyber security. It is therefore a shame that, despite these advantages, progress is being held back by a skills shortage and outdated infrastructure in many parts of the country, especially when the Internet of Things (IoT) is set to demand significantly more from our existing power and data networks, as well as the people with the skills to support our infrastructure.

While there are good training courses available and qualifications are in place, there are only 50,000 people working in the data communications industry in the UK (and a mere 700,000 worldwide). The data communications industry needs to move away from being a relatively small niche of specialists and look towards educating more technicians to meet growing UK and global demand.

A series of editorials by some of the network infrastructure sector's most influential leaders, published in Inside_Networks magazine in 2018, examined whether existing trade bodies operating in the data communications sector are fit for purpose. The consensus was that, while good work is being done, many pre-existing trade organisations appear to operate on 'blind optimism and the good will and effort of a few dedicated individuals'.

The need for a competent and coherent data communications trade association has arisen from the booming data driven economy. Yet the results of such fast, unchecked growth can be counterproductive, strengthening the case for a trade association that can help set the course for progress. From our own experience, many clients will ask that data network cabling be 'put in'

ers

their commercial building, without fully appreciating that data cabling is critical to many vital services and increasingly to the safety and security of society at large.

As a result, they often make cost their primary consideration when commissioning data cabling work – and don't always commission the right people. Many clients also seem to apply a warped version of 'value engineering' to their data cabling needs, and let price influence their decisions without realising that a data network cable is a long-term investment.

Clients themselves can't be completely to blame for this attitude. In theory, some people can call themselves a network data cabling installer without having the necessary specialist skills, and clients may not undertake installer due diligence.

In this scenario, it isn't just the clients who suffer – legitimately skilled and competent technicians can be unfairly branded as low quality workers, or as expensive troubleshooters. Both descriptions are a gross misrepresentation of the changes that have occurred to the structured data cabling sector and the vital role it plays within our economy.

As technologies like power over Ethernet (PoE), cloud and edge computing become ubiquitous, and more geographically diverse, data centres and networks in the UK and beyond will set the stage for many more issues relating to skills, pricing, and standards. The Electrical Contractors' Association (ECA) is on hand to meet these and push the industry's agenda forward.

Darren Smith
ECA

Editor's comment

The perception outlined by Darren regarding the status of the physical infrastructure and those tasked with specifying and installing it is, unfortunately, nothing new. He is also correct to suggest that more must be done to address these views and, as we have suggested my times in Inside_Networks, our industry trade associations are in a good position to make some positive steps in this direction. Let's hope that the ECA and other trade bodies step up to the plate.

Mist - AI is in the

Available from Mayflex, Mist is the modern wireless network powered by the cloud

▶ Traditional wireless WLAN platforms are over 15 years old and leverage monolithic code bases that are expensive to scale, prone to bugs, and difficult to manage. They are not equipped for the scale and complexity of today's mobile users, and do not provide the reliability needed for business critical operations.

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combine Wi-Fi, Bluetooth Low Energy (BLE) and the Internet of Things (IoT) for amazing wireless experiences in a cost effective manner.

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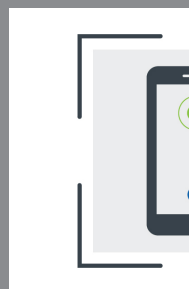
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19

Protect and survive

It's almost a year since the General Data Protection Regulation (GDPR) became European law. Inside_Networks has assembled a panel of industry experts to examine its impact and whether the data centre sector is doing enough to ensure data protection, privacy and security

▶ 25th May 2018 marked a significant moment in the way that citizens are able to take control of their personal data. It requires any organisation that operates in the European Union (EU), or handles the personal data of people that reside in the EU, to implement a strong data protection policy, encompassing access, secure storage and destruction.

It allows individuals to obtain and reuse

it was simply being used as a way to create a sense of uncertainty with regards to how personal information should be obtained, processed and stored.

The GDPR has meant big legislative changes for the data centre sector, with penalties becoming more severe and difficult to avoid. Previously, there was a clear distinction between the

> IN THE YEAR SINCE THE EU GENERAL DATA PROTECTION REGULATION (GDPR) CAME INTO EFFECT, WHAT IMPACT HAS IT HAD ON THOSE WHO OPERATE, MANAGE AND USE DATA CENTRES? HAS THE DATA CENTRE SECTOR 'UPPED ITS GAME' WITH REGARDS TO DATA PROTECTION, PRIVACY AND SECURITY, OR ARE THERE STILL THOSE WHO ARE FAILING TO TAKE IT SERIOUSLY AND COMPLY WITH GDPR?

their personal data for their own purposes across different services. It also includes the right to be forgotten, so that sensitive data that could prevent an individual getting a job, for example, must be removed. Put simply, if it meets the criteria of personally identifiable and relevant information then compliance is required and ignorance will not considered a valid excuse.

The run up to the GDPR's implementation witnessed a combination of fact, hyperbole, misinformation and good old scare tactics being aimed at businesses large and small. It wasn't always easy to figure out which was which, and sometimes seemed that the genuine intention of GDPR was being lost and that

responsibilities of the data controller and those of the data processor – something that has now changed.

One year on and the GDPR dust seems to have settled, so it is a good time to assess its impact on those who operate, manage and use data centres. Inside_Networks has assembled a panel of experts to give us their thoughts and opinions on whether the data centre sector is taking data protection, privacy and security seriously enough, and what more should be done.

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.

MARK ACTON
INDEPENDENT DATA CENTRE CONSULTANT AT ACTON CONSULTING

From a general business perspective the data centre sector has responded to GDPR in line with other business sectors. In this respect it is no different to any other business sector.

The effect on those businesses specifically focused on providing services to third parties from data centres is a little more complex. There is no real data centre 'industry'. At best we have a collective sector made up of different types of businesses, which fall into three categories – enterprise, colocation and hyperscale.

Enterprise data centres, owned and operated by large corporates, manage GDPR according to corporate policy and standards. They are corporate IT centres with security, privacy and data protection applied according to internal corporate policy, and are not data centre businesses.

Data centre colocation operators are very different, providing data centre space with power and cooling to third parties. These businesses need to comply with GDPR themselves, but will not have responsibility for the third parties located within their building(s). Colocation providers have no access or control over the IT infrastructure installed within their premises and no view of the data held within these systems. Their responsibilities stop at physical security.

Hyperscale businesses have clear requirements to comply with GDPR, as both the data owner and data processor. Providers of cloud services to third parties have a less clear picture and will inevitably be subject to some degree of interpretation.

Governments around Europe are taking privacy, use of data and data protection increasingly seriously, as shown by the recent UK government report on social media, so it is likely that GDPR will increasingly be used as a mechanism to maintain control over those operators providing social media services in particular.

GDPR reinforces the data protection requirements already in place in Europe. The added focus and penalties for non-compliance means these additional requirements are understood globally. GDPR is generally being taken seriously even by non-European operators and is a powerful weapon to keep operators accountable with regard to the use and dissemination of private data.

GDPR has also had the effect of highlighting data sovereignty issues, influencing the choice of location of some data centres and the creation of edge strategies based on data location and ownership.

'From a general business perspective the data centre sector has responded to GDPR in line with other business sectors. In this respect it is no different to any other business sector.'

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RICHARD TILBROOK
VP REAL ESTATE LAW AT COLT DATA CENTRE SERVICES

Security has always been a key consideration for data centre providers. GDPR has taken this up a notch, providing businesses with a strong reason to look into their data protection policies and act on their data management needs.

According to Article 32 of the legislation, providers are required to implement appropriate technical and organisational measures to ensure a level of security appropriate to the risk. This includes protection from both cybercriminals attempting to gain access to sensitive information, as well as from data loss due to power outages, natural disasters or other external events.

From a cybersecurity standpoint, the tightening of regulations on data access, retention and security has led to businesses being forced to take a closer look at what type of data is being kept on-premise, in the cloud and on employees' devices. Data centre providers have also had to make significant changes to operations, network monitoring and reporting so as to enable the disclosure of breaches and other security flaws inside the legislation's 72 hour time limit.

The latter is also a critical concern for providers, who must now ensure they are equipped to efficiently restore the availability and access to personal data in a timely manner in the event of a physical or technical incident so as to remain compliant.

Where you choose to store your data can be critical in determining this. Businesses are increasingly looking toward data centre facilities located in well connected cities globally, where natural disasters and power outages may not be as common. More and more data centre providers are looking to establish operations in these hubs in response to increasing demand.

GDPR is arguably the biggest shake-up to date in the EU region to impact a wide range of industries. The good news is that it has raised awareness around good data protection policies. Organisations that have clear policies and guidelines on data management will find it easier to comply with the regulations and operate in a much more cost effective and efficient manner.

25

'The tightening of regulations on data access, retention and security has led to businesses being forced to take a closer look at what type of data is being kept on-premise, in the cloud and on employees' devices.'

LAWRENCE JONES
CEO AT UKFAST

From our perspective as a data centre provider, GDPR has made businesses more aware of their data supply chains. People are taking greater steps to assess the amount of control and responsibility their supply chain has over their data.

Because of this rise in awareness, buyers are releasing more questionnaires and security audits to scrutinise existing and prospective providers within their supply chains. They want to know about physical security controls, logical security controls, CCTV coverage, perimeter fences and all manner of other factors.

These questionnaires have always been a feature of the industry, but we're seeing them more often and they're more in-depth. These audits are also moving from being the preserve of large enterprises to being a standard for most small to medium sized enterprises (SMEs) too. This is a positive step, as it is forcing the overall standard of security up, with providers competing to prove their measures are stringent enough.

All good data centres should have the necessary ISO standards to be able to complete questionnaires to a good level. At UKFast we've achieved additional standards, including ISO 27018, to prove we're taking our responsibility as a data processor incredibly seriously.

We're also finding our data centre tours incredibly popular with prospective customers. We allow people to come and look at the physical security we have and get a feel for how robust it all is. This offers a huge amount of reassurance and it's something that's not available with all providers.

> 'Buyers are releasing more questionnaires and security audits to scrutinise existing and prospective providers within their supply chains. They want to know about physical security controls, logical security controls, CCTV coverage, perimeter fences and all manner of other control factors.'

Connecting

to your core

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- Smaller, more compact catalogue with everything at your fingertips
- 92 pages of concise product information

MADE TO CONNECT

Category 6A
Page 12

Category 6
Page 20

Category 5e
Page 28

Fibre
Page 36

Zone Cabling
Page 71

Cable Management
Page 76

BARRY ELLIOTT
DIRECTOR AT CAPITOLINE

GDPR regulates the protection of natural persons with regard to the processing of personal data and on the free movement of such data within the EU and European Economic Area (EEA). Even a post Brexit Britain is going to have to follow the GDPR if we want anybody to talk to us.

In our experience we've seen GDPR, PCI-DSS, ISO 27001 and EN 50600 all invoked in terms of the physical security of data centres, and in my auditing work I would have to say this is rarely a problem.

One management area that we do look at, and often find shortcomings, is maintaining an audit trail for the secure destruction of data. Data can be held on paper, in which case it must be securely shredded and records kept of that destruction process. By far the biggest store of data is, of course, going to be electronic and in the form of hard disks. Most data centre users and managers now accept that you can't just press delete and then sell off the old servers and disk drives.

Drives can be mechanically shredded, electronically shredded by overwriting the disk many times, wiping the disk in a large magnetic field – degaussing – which isn't going to work for solid state memories, encrypting the data so securely that wiping isn't required, or simply storing the disks on-site forever with the same attitude as nuclear waste disposal.

An organisation can choose to destroy the data itself or use a third party contractor or even the original supplier to do the job. From a management auditing perspective, however, it is important to have a written process in place to describe what must happen and then an audit trail to record and prove the process.

The ideal would be to walk into a data centre and ask to see the asset register. Pick a storage medium recently marked as scrapped and then ask to see the destruction register that identifies the same part number, method of destruction, person responsible and date. In our experience this is still an area that need some attention.

29

'One management area that we do look at, and often find shortcomings, is maintaining an audit trail for the secure destruction of data. Data can be held on paper, in which case it must be securely shredded and records kept of that destruction process.'

JUSTIN JENKINS
CHIEF EXECUTIVE OFFICER AT NEXT GENERATION DATA

Almost a year on since GDPR took effect, the exact level of impact on data centres is hard to gauge. For some, who were operating to the strictures of the Data Protection Act 98, it has simply been a logical progression. However, even they have had to adapt to the inclusion of data processors in liability – data controllers and data processors potentially have joint and several liability – a broadening of definitions including the right of subjects to be forgotten, documented records of compliance, and, not least, exposure of up to €20m or four per cent of turnover in fines.

For those data centre operators that assumed their operations were at arm's length from any responsibilities associated with controlling and processing data, GDPR is having significant impact. What is apparent is that some operators and users have been unclear about how and to what extent GDPR applies to them. Operators must not forget that in almost all cases, they are also controllers of data, for example, human resources records and CCTV recordings, as well as being processors of third parties' data. This means they have an obligation to comply and an obligation to help controllers, in some cases their customers, to comply.

Speaking from direct experience of our own day-to-day operations, there has been impact on several levels. This has ranged from extra steps, checks and balances on sales and marketing campaign activities through to customers seeking to build extensive compliance into contracts – even though compliance is required at law anyhow – not to mention the need to adjust terms within contracts to encompass GDPR and clarify roles.

The good news is that it now feels that the industry and the various actors in the chain are coming to terms with changes to working practice and what standard practice should be. At NGD, we took the seemingly masochistic step of certifying to BS 10012:2017 (Personal Information Management), which has undoubtedly helped us build data protection into everything we do.

'For those data centre operators that assumed their operations were at arm's length from any responsibilities associated with controlling and processing data, GDPR is having significant impact.'

CERTAINTY
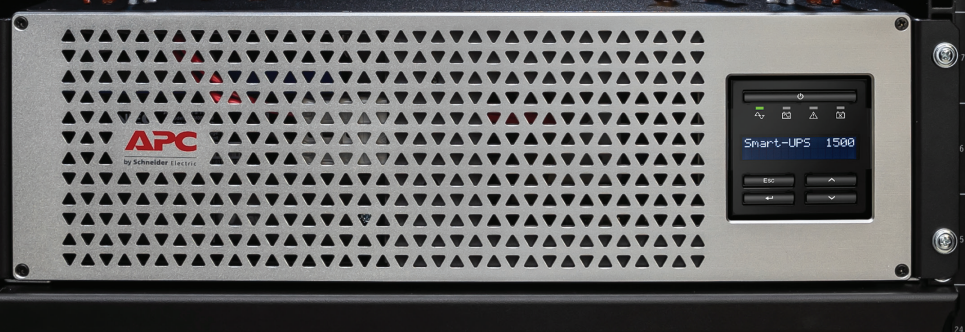
Protect your data and stay connected at the edge.

The rise of IoT has made data access and connectivity vitally important.

Cloud storage can be effective, but has major limitations — including latency, bandwidth, security, and lack of off-line access — that can affect performance. Because of this, edge computing and on-premises infrastructure has become a critical need.

With local edge solutions you can keep your IoT applications powered and running at the speed of digital business.

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ALEX RABBETTS
MANAGING DIRECTOR AT THE EUROPEAN DATA CENTRE ASSOCIATION

It is interesting that a year on from the introduction of the GDPR, the impact on data centres and their operation has been relatively minimal.

Most data centre operators have introduced GDPR policies as required under the legislation but apart from getting the 'tick in the box' there is little evidence of any change in operational policy. The first serious data breach that involves a data centre operator will be the test of whether data centres need to take their role more seriously.

As more and more data centre operators move from pure colocation to offering cloud services to try and move up the stack and attract the business from those looking to move to a cloud service, or even more confusingly, a hybrid cloud offering, the risk of being caught out by GDPR increases.

If, for example, a colocation operator moves to offering cloud services – any many have – will they consider the implication of GDPR on this fabulous new offering? When a data breach occurs it will be incredibly difficult to argue that the data centre operator is not now the data processor or, at the very least, a part of the data processing operation.

The 'tick in the box' will not really help. Being a data processor brings a whole new world of responsibility and many data centre operators have not given this much consideration. Some have sought to absolve themselves from responsibility by including a get out clause in their terms and conditions with a statement that 'xxx operator is not the data processor and the customer remains both the data controller and the data processor'.

That is unlikely to hold much weight in a court of law – particularly if the data breach is significant. Unfortunately, many operators, particularly those offering cloud services, are not yet taking GDPR seriously enough.

'Most data centre operators have introduced GDPR policies as required under the legislation but apart from getting the "tick in the box" there is little evidence of any change in operational policy.'

The rise of PON

Excel guides you through the passive optical network (PON)

▶ PON is an umbrella industry term for fibre based access networking architecture that is designed for both residential environments (FTTx) and

LAN installation. By using three key components – OLTs, splitters and ONTs – a PON provides numerous key benefits:

Discover the Excel PON Solution – delivering connectivity, performance and innovation at the speed of light

In addition to a comprehensive copper and fibre portfolio, Excel presents a wide range of products
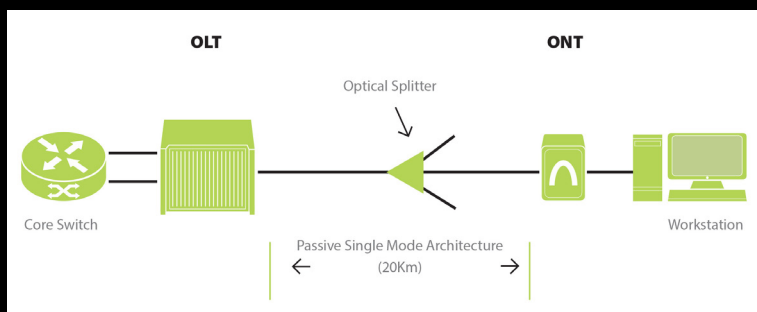
enterprise environments (POL). PON infrastructure is being used in a wide range of residential and commercial applications, with a rise in usage being seen in enterprise environments.

Using access networks or telecoms grade technology can flatten a traditional

and flexible deployment options across the full range of PON applications. The complete Excel PON offering is available in the A5 Excel PON brochure, while specification sheets for each product are available electronically at **www.excel-networking.com**

Space saving	Energy efficiency	Increased security	Increased bandwidth
Easy network management	Longe distances	True roadmap	CapEx/OpEx savings
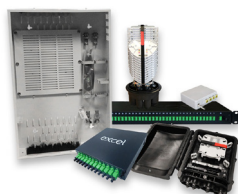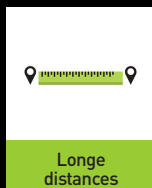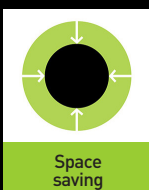
CLICK HERE for more details about Excel's PON product range.

Environ enclosures

Splitters, panels and modules

Exterior splice enclosures

Floor distribution boxes

Outlets

Power distribution units

excel
without compromise.

Delivering fibre to…

Across a typical city there are many different types of buildings and installation environments that require an infrastructure solution to provide their wired or wireless services.

High and low density residential areas, business districts and multi-tenant environments all have a need for high speed connectivity to the network for internet, telecoms, CCTV and other services – yet these requirements differ in each type of setting.

Delivering fibre to a single house presents a different set of challenges than delivering fibre to a large apartment block, which may require different

The Excel PON Solution brochure includes diagrams to depict a PON installation in various environments. CLICK HERE to see it.

infrastructure components than an installation in a large office environment or a shopping centre. With these considerations in mind a 'one solution fits all' approach isn't always possible.

Excel – here for you, without compromise

Excel has recently joined The Association for Passive Optical LAN's (APOLAN) high profile list of IT vendors, manufacturers, distributors, system integrators and consultants that are actively involved in driving the global adoption of PON solutions.

association for passiveopticalLAN

Paul Mills, director of sales north America at Excel, has been elected as the APOLAN's chairman and Paul Cave, Excel's technical pre-sales manager, has been welcomed to the technical committee.

For further information about Excel's PON Solution call **0121 3267557** or **CLICK HERE** to email the sales team.

35

Paul Cave

Paul Mills

"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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R&M acquires Optimum Fiberoptics

R&M has announced the acquisition of Optimum Fiberoptics. Founded in 1997, Optimum is a premium manufacturer and supplier of fibre management products for the commercial, industrial and governmental markets.

'Optimum is an excellent addition to our current activities and will enable us to accelerate our ambitious growth strategy,' said Markus Huber, executive vice president R&M North America. 'Optimum is ideally located to serve our existing customer base on the east coast, as well as to target new customer groups. Furthermore, it will give

Markus Huber

us excellent access to the fast growing data centre market area in Washington DC and Northern Virginia.'

With its new location on the east coast, R&M can offer the full range of its products and services nationwide. Further investments will follow over the next 24 months to further strengthen R&M's presence in the North American market.

This announcement follows news that R&M posted the best sales figures in the company's history in 2018. It increased sales by 14.2 per cent in comparison to 2017.

37

Mayflex celebrates the second birthday of the Mayflex Academy

Mayflex is celebrating the second anniversary of its Mayflex Academy, which was introduced at the beginning of April 2017 and gives customers access to a range of training courses – most of which are free of charge. These courses provide customers with the opportunity to broaden their knowledge levels and potential customer base.

To date the Mayflex Academy has seen over 100 different companies send delegates on to one of the many courses offered from vendors including Dahua, Avigilon, Paxton, Aruba, Excel and Mist.

Ross McLetchie, sales director at Mayflex, commented, 'We want to equip our customers with the knowledge and skills necessary to successfully specify and install the products available in our extensive portfolio. Providing access to free training is something that Mayflex ranks highly. Our instructors are professionally qualified individuals who have completed rigorous vendor certifications to ensure that they are delivering each course to the required standards. Delegates are consistently exceeding the pass rates put in place by each of our vendor partners.'

Dunasfern scoops Huber+Suhner Distributor of the Year award

Huber+Suhner recently presented its prestigious Distributor of the Year award to Dunasfern in recognition of its commitment and development as a true value added channel partner in support of customers' fixed networks and data centre requirements.

Dunasfern had an excellent 2018 with well above predicted sales growth and further demonstrated its commitment to Huber+Suhner by offering a value added approach to customer needs. The companies have partnered for the last two years and Dunasfern has shown a clear understanding of market requirements and supported customer demand for Huber+Suhner's fibre optic solutions.

Phil Stanway, sales channel director at Huber+Suhner, stated, 'Many congratulations to Dunasfern on this well deserved award, where it was against some very stiff competition from our northern Europe sales channel partners. It's an absolute pleasure to work alongside such a great team and we look forward to continuing our successful relationship into 2019 and beyond.'

CHANNEL UPDATE IN BRIEF

Nuvias has appointed Simon England as its new CEO, who is tasked to take the company into the next phase of its development.

Schneider Electric and Planon are working together to bring a unique platform to market that will converge real time building data and AI driven analytics with intelligent business responses.

Patton has appointed two new business leaders – Marjan Torkar and Michael Schwidder – to expand business operations and drive revenue growth throughout Europe.

Softcat has been named by Ivanti as its EMEA Security Partner of the Year.

Iskratel has announced its partnership with Telenco Distribution, as it continues to expand its activity in the French market.

Microsoft Azure and Inmarsat have announced a new collaboration agreement combining Inmarsat's global satellite connectivity with Microsoft's Azure cloud platform.

Excel Networking Solutions will be exhibiting at the NECA event that takes place in Las Vegas on 14th–17th September 2019.

Netscale Solutions
Delivering the highest fibre density

R&M's Netscale solutions combine unmatched fibre cable management with automated connectivity tracking and an innovative tray design to deliver the world's highest port density for 10/40/100G Ethernet.

R&M

One step at a time

Neil Staley of Mayflex identifies the seven key issues to think about when choosing a power distribution unit (PDU)

▶ A power distribution unit (PDU) might seem like a simple item to specify and purchase, but it's so easy to make the wrong choice, which could cost you a lot more in the long run.

GUIDING LIGHT

Getting it wrong can be a nightmare. A PDU really is one of those products that, once you have deployed it, you do not want to have to remove it. We all know that removing or swapping a PDU can mean downtime for part of, or in some cases the whole of, the network.

There are hundreds of PDUs on the market, but you can categorise the majority of them into three categories – dumb, ammeter and intelligent. Following the seven steps below and answering the questions within them, will act as a helpful guide when deciding which PDU is needed.

STEP 1 – SOCKET COUNT

Now the first step might seem simple but can quickly become a sticking point. How many sockets are actually needed on the PDU? This needs consultation with the network design team and the stakeholders of the deployment or facility. Thought needs to be given to what is being deployed in the racks, not just on day one of the network going live, but for the lifespan of the installation or at least until the dedicated refresh date.

Tip: Always allow for at least 25 per cent expansion.

STEP 2 – SOCKET STYLES

This step is driven, or should be, by the actual facts. What switches, servers, routers, monitors and other networking equipment is being installed? What power inlet feeds do these items have and do you want to change the style within the lead, from the computer equipment to the PDU? By taking stock of the items to be physically installed, you can quickly ascertain what style of socket is needed.

Tip: IEC Sockets are always denoted by odd numbers – C13, C19 etc.

STEP 3 – SOCKET (AND UNIT) ORIENTATION

How and where a PDU is going to be installed is a key consideration, for example, which side of a rack? Horizontally

or vertically? Many manufacturers offer sockets that are orientated to either the left or the right, allowing for a natural angle between the socket on the PDU and the power leads.

STEP 4 – RESILIENCE

Now this step might not be about the actual PDU itself but it's still important when budgeting and choosing PDUs. Time needs to be taken to understand whether a deployment needs dual PDUs within the racks.

STEP 5 – WHAT YOU NEED TO KNOW AND WHEN

Knowing what you need to know and how you want to get this information is the next big step towards selecting the correct unit.

What is the PDU being deployed to do? It sounds like a very obvious question, but the PDU might be being sourced to do a lot more than power up computer equipment. The needs and wants of the customer might be a lot further reaching than that, for example, the PDU might need to give readings as to how much power the PDU is drawing.

If we pick a PDU that has an ammeter, we might only get what amps are being drawn through the PDU, and this reading might only be shown on the PDU itself. This gives information, for sure, but it's local to the PDU and is only ever a snapshot in time and would leave the customer with the task of calculating, through Ohms law, what the wattage use is/was.

Intelligent PDUs can have thresholds set within their software to automatically

'Like with most things in life, forward planning can make things run easier. Thinking through not just the power requirements but also the business needs can lead to better procurement choices.'

send alerts, should the readings fall out of their normal state. With this feature you can see if there is an issue and where it is. No need to remember to go and check the reading – you'll get an email if and when parameters have been breached.

STEP 6 – FACILITY DEPLOYMENT
I really believe that the actual facility that the device is going to be deployed in should affect the decision of what type and style of PDU you choose. Is the PDU going to be installed in a remote location, a hard to reach application or a colocation facility? If the answer is yes to any of these, then surely it's worth considering implementing a device that doesn't need you or a network engineer anywhere near the PDU to do some basic tasks.

Intelligent PDUs can have remote monitoring and power on/off capabilities. No need to drive 100 miles, for example, to perform a power on/off cycle of a device that has gone offline. Through TCP/IP you can simply access the PDU over the internet and perform the task. In the case of a colocation facility, the ability to understand exactly what power is being drawn is vitally important. In fact, this might not be enough – you may need to know what power is being drawn on each and every port on each PDU.

Some PDUs will also give the power consumption reading in kWh and allow you to allocate a value per kWh within the software, thus calculating for the stakeholder exactly what is to be billed to each client.

STEP 7 – TRUE TCO
Selecting the right PDU can help to reduce the total cost of ownership (TCO) of not just the PDU but the whole network. Some intelligent PDUs offer a lot more than just the sockets and features

already mentioned within this guide. Some brands have built in, free of charge, software for managing the PDUs deployed on a site.

Other features include environmental functionalities, such as temperature and humidity ports, door contact ports and even ports that can be powered and accept Wiegand communication outputs. This means that IP remote access control at a rack level can be integrated into the PDU and deployed without the need for any other controllers or software, and even give reading as to when the door is open or closed on the rack.

CONCLUSION

The role of the humble PDU has changed within networking and they are delivering a lot more than just splitting the power supply for multiple units. PDUs can help with the day-to-day running and uptime of a network as they can, dependent on functionality, be integrated into the physical network infrastructure. With the addition of sensors, they are able to be sent commands over the network and give outputs and readings that help with business decisions and to help control communications room environments remotely.

Like with most things in life, forward planning can make things run easier. Thinking through not just the power requirements but also the business needs can lead to better procurement choices. Adding intelligence to the PDU may actually be cheaper, from a cost of ownership point of view, than you think. ■
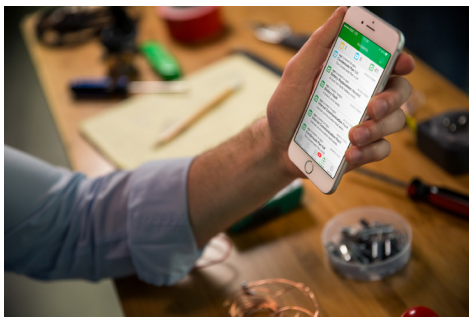
NEIL STALEY
Now the company's product marketing executive, Neil Staley joined Mayflex in 1991 working in the sales team. Over the years he has worked in different sales roles both internally and externally helped set up the highly successful projects department. Staley then ran the internal sales team for a number of years and since 2013 has worked within the marketing department, focusing on product marketing activities across the three core divisions of the business.

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 new, cloud enabled Smart-UPS with APC SmartConnect.

IT Expert addresses the data centre sector'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

EDP Europe

EDP Europe's custom built intelligent PDUs (iPDU) are designed, manufactured and supported in the UK, providing a comprehensive and cost effective solution for the monitoring and management of rack power, either locally or remotely.

Because they are custom built, EDP iPDUs can be configured to meet the requirement you desire with the features you need now, or want for the future. They can be either single or three phase and rated up to 63A, with the outlet configuration you need, be it C13, C19, UK plug or Schuko. Access can be via web browser, SNMP or RS485 Modbus, while monitoring of entire PDU, individual outlet or remote outlet switching are all available.

EDP iREM is the latest addition that provides all the electrical measuring capabilities of an iPDU, but for little more than the cost of a passive meter. iREM will support collation of all readings into the PDU Agent DCIM and most other management platforms.

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

Excel Networking Solutions

Excel Networking Solutions offers an iPDU solution that is well suited to the colocation market. It can monitor, manage and analyse the power that is being consumed by PDUs deployed throughout a data centre.

The Class II iPDU samples current 4,000 times a second to give billing accuracy, highlighting why it sits so well within a shared facility. The features that lend themselves to this deployment don't stop there – the ports in the INT3 products can be locked down in groups of four from user to user, allowing for virtual PDUs to be created with the physical unit to manage power across different clients. Kilowatt draw can be monitored and the units can be set up so different phases can be monitored individually.

The units also offer a risk free road map towards data centre installations and power management through free software that can manage 1600x48 port PDUs. This software will then report on port level power usage and gives information in a graphical format.

For more information **CLICK HERE.**
www.excel-networking.com

45
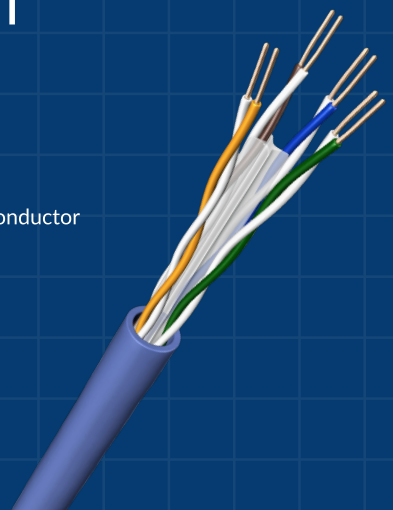
Austin Hughes

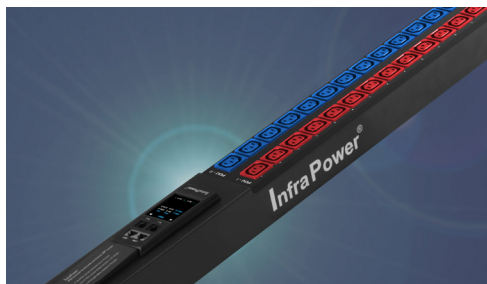Save valuable rack space with Austin Hughes' InfraPower Intelligent Dual Feed PDUs.

The primary and redundant, A&B, power feeds are within the same PDU with the feeds split vertically (W PDUs) or horizontally (WS/WSi PDUs). This helps save rack space by utilising one PDU rather than needing two separate PDUs per rack.

Cable routing for both primary and redundant power connection can be organised to one side of the rack. Austin Hughes' Dual Feed PDUs also minimise network IP requirements – only one IP for 32xPDU primary and redundant access – and have advanced features including field replaceable 2.8-inch colour LCD touchscreen displays, DC power modules, latching relays and ports for PDU daisy chain, as well as external sensor/peripherals.

Austin Hughes' InfraPower Intelligent Dual Feed PDUs are supplied with free management software or can be integrated to third Party DCIM via SNMP. Custom configurations including multiple socket types per PDU are available on short lead times.

To find out more **CLICK HERE.**
www.austin-hughes.com

Rittal

The Rittal Edge Data Center comprises two Rittal TS IT racks plus corresponding modules for power distribution, UPS, climate control, fire suppression, monitoring and secure access. These units are available in various output classes, and can be easily combined for rapid deployment.

Customers that would prefer not to operate the edge data centre themselves can opt for Rittal's data centre as a service (DCaaS) offering. Hand in-hand with its IT as a service (ITaaS) platform provider, iNNOVO Cloud, Rittal also offers private cloud data centres in shipping containers, plus ITaaS. The containers are fully equipped with all key active components, such as servers, network connectivity and storage for immediate use.

The Rittal Edge Data Center can be extended two racks at a time. Moreover, the modular approach provides customers with diverse options, allowing it to accommodate a variety of scenarios – for example, installation in an IT security room, or in a container, to be located wherever it is required.

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

EDP Europe

Sensorium DCIM, available from EDP Europe, is a flexible and modular data centre infrastructure management platform that uses 64bit .NET architecture to deliver unrivalled performance and expandability. Its powerful communications engine delivers real time, historical, and alarm event information from intelligent power, environmental, security and life safety systems to its fully customisable web based, script powered graphical user interface.

The resulting real time and historical data, when combined with Sensorium's asset and patching register database information, can be used for available space and power based capacity planning and, uniquely, for regression analysis based cooling capacity forecasting. This functionality and information is crucial for identifying opportunities for operating cost reductions for data centre operators, and additional revenue streams for their clients.

Bespoke dashboards and home screens are custom built to meet customer, department or operator requirements, so that critical information can be quickly displayed.

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

47

Power
play

Electricity is like air and water – something that we have all come to take for granted. But there is now clear evidence that we cannot assume our energy sources can be forever guaranteed, as Mark Guest of Rittal explains

Data centres rely on having a 24/7 stable electricity supply, but our future supply is far from assured. The UK's National Grid recently reported that there is just 1.2 per cent spare capacity. Any additional energy demands – something as simple as a cold winter – could see an increase in the mains disturbances such as brownouts and blackouts, which will have a significant impact on the uptime of our data centre infrastructure.

LOOK AGAIN

There has been a great deal written about reducing energy consumption using new IT cooling methods such as in-line cooling and aisle containment systems, which is where the majority of electrical energy is consumed. But electrical power distribution is also an area that can be optimised, and that requires a review of power distribution units (PDU).

PDUs distribute power, but to match your requirements to the right PDU you should consider what is the overall current consumption required. This is dependent on the aggregated power consumption of the IT devices that are connected to the PDU. PDUs are rated in amps – such a 3A, 16A and 32A, so match the PDU to the nearest rating.

Whether single or three phase power is needed is dependent on the total demand of the IT devices – as IT power demand increases it may be necessary for a three phase PDU to be used, typically where demand exceeds 8kW per rack. Furthermore, the number of sockets needed is dependent on the number of devices being used, so 10 servers would need 10 sockets.
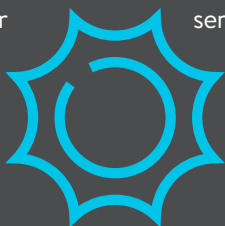
The device that is using that socket typically determines the socket type. Commonly used internationally are C13 outlets rated to 8A or C19 outlets rated to 16A or, more often than not, a mixture of both.

It's also worth looing at advance features such as remote monitoring and switching sockets off remotely. These can change your understanding and control of your power consumption and also improve resilience.

MONITOR AND MANAGE

To reduce power we must monitor it and then put in place strategies in response. Monitoring can be done either at the incomer of the PDU in terms of the total power being drawn from the whole PDU, or it can be focused on an individual device's

demands from the socket. The latter provides a greater granularity for analysis but not all meters have the same accuracy – it may range from 1-5 per cent, so it is worth investigating into the technical specifications.

PDU electronics also consume power at

levels that can be significant. If intelligent PDUs are installed in a 200 rack data centre with dual PDUs in the rack then their power consumption could be as little as 2.4kW or as much as 24kW.

The switching function allows users to remotely shutdown individual sockets and to hard boot any device that is connected to it. It is worth checking which type of switch device or relay is within the PDU construction – either monostable or bi-stable. Monostable needs a permanent supply of power to change state and stay there. Bringing it back means removing the power. Bi-stable needs to be pulsed with electricity to change state and pulsed again to come back. Bi-stable therefore uses less power than monostable, which

can again be significant in terms of the aggregate consumption from a lot of sockets.

RELAY RACE

Typically, bi-stable relays have a higher mean time between failure (MTBF) than the lower cost monostable option – in excess of 80,000 hours. This is significant given that most PDUs operate at the back of the rack where ambient temperatures can exceed 40ºC, which, unsurprisingly, can shorten the lifespan of the conventional relay.

Metering also has an impact on the overall resilience of the power system. It allows users to determine their power consumption and how close the system may be getting to the tripping points of the circuit breakers, particularly if warning alarms are also enabled.

Larger PDUs must fit

'The UK's National Grid recently reported that there is just 1.2 per cent spare capacity. Any additional energy demands – something as simple as a cold winter – could see an increase in the mains disturbances such as brownouts and blackouts.'

50
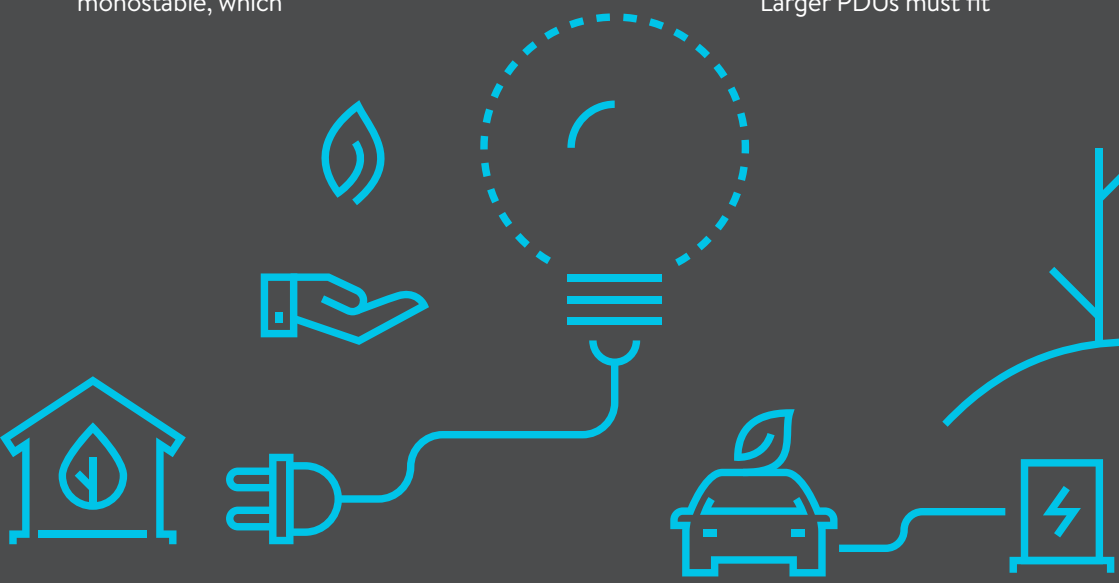
into the back of the rack, however, if possible they should not extend into the 19-inch space because of the potential this has for conflict with 19-inch mountable equipment. Mounting PDU positions that sit in parallel with the 19-inch angles can be beneficial and should be possible even in 600 wide racks if the PDU profile is slim enough.

Most intelligent PDUs use SNMP protocol to communicate so simple integration into a data centre infrastructure or network management system is easily achieved.

LOOK AHEAD

So will a PDU last the lifetime of a data centre? An almost impossible question to answer because it is very hard to predict the development of future data centre technologies! It would be sensible to allow for future capacity by providing additional sockets within the PDU and also to ensure that you have spare capacity from the PDU incoming feed.

If you work in a fast changing environment then it is worth considering modular PDUs that allow you to add additional sockets if required. They are slightly more expensive but they offer greater flexibility enabling you to change the socket configuration without taking the IT system down.

RESPONSE MECHANISM

The constraints of the electrical grid and the need to lower our power consumption are two issues that are not going away and we must all respond accordingly. PDUs allow you to profile your IT power demands, and if you can't measure it you cannot improve it. ∎

MARK GUEST
Mark Guest is Rittal's product manager for IT power distribution. He joined Rittal in 2011 and looks after all aspects of electrical distribution across industrial and IT applications, from Form 4 modular switchgear systems to PDUs for IT projects and, increasingly, battery storage.

A Half-Century of Medical Excellence Gets an Update

As the largest university medical centre and the second largest hospital in the Netherlands, Erasmus Medical Centre is home to more than 1,320 beds found in three locations, including a pediatric hospital, a cancer institute, and a Level I trauma centre. As one of eight university medical centres in the Netherlands, Erasmus MC's day-to-day functions include not only patient care, but research and education as well

At more than 50 years old, the medical facility embarked upon a €449 million expansion in 2009 that included a new site for the cancer centre, Erasmus MC Cancer Institute, and a comprehensive redevelopment of its IT infrastructure. To meet its goal of becoming one of the top 20 medical institutes in the world, Erasmus MC required a high-performance, future-proof, and energy efficient network infrastructure to support state-of-the-art medical technology and mission-critical applications.

It was essential that the medical centre remain open for business throughout the construction and IT infrastructure deployment. Erasmus MC administrators considered their cabling and connectivity options and, with input provided by consultancy firm Royal Haskoning, chose Leviton.

Leviton network cabling solutions are installed in hospitals and health care facilities around the world. With a wide range of options — including small diameter cables, high-density connectivity products, and modular based solutions — Leviton health care solutions offer best in class connectivity, ease of installation, and design flexibility, all of which were key priorities for Erasmus MC.

System reliability and longevity were also critical considerations for the medical centre. Leviton offered an extended warranty that guaranteed that the system would function at optimal levels for at least 25 years.

"Working with a company that has significant experience in the health care sector was very important to us. We chose to work with Leviton because the company has both the knowledge and capability to create an IT system that would meet the needs of Erasmus MC staff and patients," said Rik Binkhorst, Network Specialist for Erasmus MC.

Initially, Erasmus MC was interested in a Cat 6 UTP solution. However, Erasmus MC elected to install a Leviton Category 6A shielded system after considering the long-term investment the project represented. The new IT infrastructure needed to provide superior performance and accommodate technology upgrades for decades. In addition, S/FTP cable offered the best protection against external electrical interference in key locations of the redeveloped hospital, such as the hyperthermia treatment facility in the cancer centre.

This high-performance shielded solution, which included Cat 6A S/FTP horizontal cabling, exceeds industry standards and offers optimal protection from sources of interference — an important consideration for demanding and electronically "noisy" applications, such as radiography labs, that operate throughout the medical centre. A single-mode fibre optic solution was chosen to provide the backbone throughout the campus. This future-proof system, which was third-party approved by independent test institute 3P, will ensure easy migration from 10 GbE to 40 GbE and 100 GbE as the needs of the medical centre evolve.

TACKLING A MULTI-PART PROJECT

The network infrastructure, supplied by Leviton distribution partner Kannegieter and installed by BAM Infra Telecom, was constructed using over 1,200 kilometres of Leviton Cat 6A S/FTP cable terminated on Cat 6A shielded tool-free jacks. The jacks were installed in ceiling consolidation points, along with direct mountings in more than 37,000 wall outlets (with a minimum of two jacks per outlet). More than 30,000 Leviton Cat 6A patch cords were also deployed.

One of 28 SER locations
Photo courtesy of BAM

For the fibre backbone, 4,400 metres of Leviton MicroBlo® single-mode air-blown fibre optic cabling was deployed. This future-proof solution will allow Erasmus MC to install additional fibre as required, eliminating the need to pre-install dark fibre in anticipation of future network expansion.

The medical centre maintains two external data centres to serve the campus. Leviton's cassette based high-density, high-bandwidth pre-terminated fibre optic cabling system was deployed with OM4 and single-mode fibre in both data centres, along with Cat 6A U/FTP DC zone cable looms pre-terminated on 6-way modules installed in 1/2U panels.

Building security was an important concern for the medical centre. A robust infrastructure of OM3 fibre optic cable was installed as part of the closed-circuit television (CCTV) system. All 28 Satellite Equipment Room (SER) locations in the building were pre-patched, eliminating additional labour time and cost, IT staff needs, and the potential for patching errors.

"Since the beginning, Leviton demonstrated its highly reputable service and involvement as a supplier," said Binkhorst. " Key members of the Leviton team were regularly on site to share their expertise and advice, and to carry out interim quality inspections. This not only provided us with peace of mind but enhanced their reputation for guaranteeing quality."

The project was completed in December 2017. The high-performance IT infrastructure has allowed Erasmus MC to integrate state-of-the-art medical equipment and health care services within the new campus. Along with improved building security features, the site offers superior energy efficiency and is ready to accommodate future technology upgrades, including digital building applications and Internet of Things (IoT) innovations.

To read the full Erasmus MC case study, visit our case study web page.

"
Thanks to the new network system, Erasmus MC is

ready to meet the future

and provide cutting-edge care for our patients, both today and for years to come.
"

One of the 26 new state-of-the-art operating rooms
Photo courtesy of Erasmus Medical Centre

LEVITON®

Pinacl GDA wins cabling project for new Rhyl school

Pinacl GDA has been chosen to supply, install and commission the structured cabling for the new £23m Christ the Word Catholic School in Rhyl.

The school opens its doors in September and will accommodate 420 pupils aged 3-11 and 500 pupils aged 11-16 in the new build development. Denbighshire County Council and the Welsh government, as part of the 21st Century Schools Programme, are funding the project.

The Rhyl project will see Pinacl GDA working in partnership with Lorne Stewart to deliver the structured cabling design based on Excel Networking Solutions' structured cabling including copper cabling, fibre, voice cabling and server and network cabling cabinets.

1&1 IONOS launches first UK data centre to enhance customer offering

1&1 IONOS is to open its first UK based data centre and sales office to expand and enhance the availability of its infrastructure as a service (IaaS) solution, Enterprise Cloud.

The new data centre will be housed at Virtus Data Centres' Stockley Park facility near London Heathrow airport and provides an additional availability zone dedicated to cater to the needs of UK customers. The facility is to host specialist server hardware, custom designed in Germany, to handle the requirements of 1&1 IONOS Enterprise Cloud business customers.

With the UK expansion, 1&1 IONOS Enterprise Cloud is now operating in five availability zones, with data centres in the USA and Europe, that adhere to the highest European security and data protection guidelines.

CableFree 10Gb/s+ MMW links deployed in the UAE

CableFree millimeter wave (MMW) links are widely deployed for diverse applications worldwide. Offering high capacities of 10Gb/s and above, CableFree MMW is an alternative to cabled networks for locations where trenching and digging are infeasible or prohibitive in time and cost.

CableFree MMW links are fast to install, highly reliable, fast and secure, enabling users to build networks quickly without the disruption of digging up busy city streets. In many cases, the costs of MMW can be under 20 per cent of a cabled solution, with no ongoing equipment rental costs.

Shown is an installation for a safe city network in the UAE, where CableFree radios provide mission critical backbones for CCTV traffic from cameras around key cities. As MMW is flexible, customers can move and redeploy the units in a few hours for upgrades to the network.

PROJECTS & CONTRACTS IN BRIEF

Funky Pigeon has carried out a project with Claranet to overhaul its AWS cloud infrastructure. The project has drastically improved the speed, power and agility of its online platform, leading to an average reduction of 50 per cent in transaction times and a reduction in running costs of 20 per cent per month.

MigSolv has partnered Charterhouse Voice & Data to offer an innovative way to protect against current and future threats.

Dialogic has teamed up with Epsilon to launch a fully managed and hosted carrier class UCaaS platform based on the award winning Dialogic Buzz unified communication platform.

In December 2018 Green Meadows Park in Bamfurlong, Gloucestershire, was reported by uSwitch to have the slowest broadband speeds in the UK – 2,000 times slower than the street with the fastest speeds. As part of an 18 month build and more than 380km of ground dug, properties in Green Meadows Park have been successfully connected to the UK's fastest broadband, making it one of the best connected streets in the world.

Quickclicks

Your one click guide to the very best industry events, webinars, electronic literature, white papers, blogs and videos
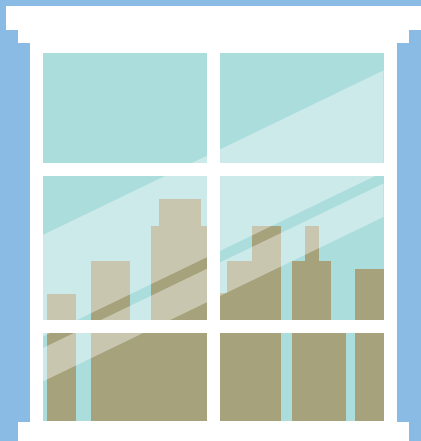
The Good, The Bad, and The Ugly is a blog from **Networks Centre** that explains why cable management should be embraced as an integral part of IT networks.
CLICK HERE to read it.

The True Value of Certifications and Qualifications is a white paper from **CNet Training** that defines and explains these two credentials. **CLICK HERE** to read it.

Data Loss and Downtime are Putting Hybrid and Edge Computing at Risk is a market research report from **Volta Data Centres. CLICK HERE** to obtain a copy.
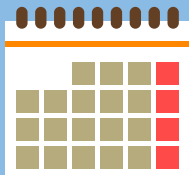
Untold Secrets of the Efficient Data Center is a report from **Mellanox.**
CLICK HERE to obtain a copy.

In its Why Edge? Why Now? white paper **Siemon** looks at how the rise of edge computing will reshape the data centre landscape.
CLICK HERE to obtain a copy.

To Bundle or Not Bundle? is the question posed in a blog from Michelle Mendoza of **Fluke Networks.**
CLICK HERE to find out the answer.

57

Leviton's Cat 6A Reference Guide provides a better understanding of how to plan, bid for and install a Category 6A system.
CLICK HERE to download a copy.

Clearing the air

Martin Lethbridge from WatchGuard Technologies explores the best known Wi-Fi threat categories and provides some tips for enabling a trusted wireless environment

▶ Our list of basic needs includes food, shelter, water and energy. But if you ask people what else they could not live without, chances are they would put Wi-Fi near the top of the list. In fact, according to Hotel Chatter, 94 per cent of people say Wi-Fi as the most important amenity when they are booking a room.

RISKY BUSINESS

More and more internet connected devices are leveraging Wi-Fi connectivity and this trend isn't expected to slow down anytime soon. The drive to ubiquitous Wi-Fi is also being driven by mobile operators that use 'hand-over' to Wi-Fi networks as a way of supplementing limited spectrum to meet the demand for capacity. According to iPass, the number of Wi-Fi hotspots is predicted to grow from 23 million in 2014 to almost 300 million in 2018. But this enthusiasm for Wi-Fi has created a perfect hunting ground for attackers. Here are some of main risks for Wi-Fi:

• PASSWORD CRACKING

Wireless access points (APs) that still use older security protocols such as WEP make for easy targets because these passwords are notoriously easy to crack. Hotspots that require no passwords are open, meaning that anyone with a simple packet sniffer can potentially pick up log-in credentials to sensitive websites and applications.

• ROGUE APS

Nothing physically prevents a cyber criminal from enabling a foreign AP near a genuine hotspot with a matching SSID that invites unsuspecting individuals to log in. Users that fall victim to the rogue AP are susceptible to a malicious code injection that often goes unnoticed.

• EVIL TWINS

It's possible to mimic a hotspot using

58

portable hardware such as The Pineapple, which is small enough to be stored in a backpack and costs as little as £150. This pretends to be the genuine Wi-Fi connection – so when an unsuspecting user connects, they are actually connecting to a hacking device.

• PLANTING MALWARE

Customers who join a wireless network are susceptible to unknowingly walking out with unwanted malware, delivered from maliciously intentioned neighbouring users. A common tactic used by hackers is to plant a backdoor on the network, which allows them to return at a later date to steal sensitive information. There are common hacking toolkits to scan a Wi-Fi network for known vulnerabilities and exploit them in various ways. In the hotel industry, security researchers reported vulnerabilities in many hotel Wi-Fi routers.

• DATA THEFT

Joining a wireless network puts users at risk of losing private documents to cyber thieves, who opportunistically intercept data being sent through the network. Hackers often focus their efforts on extracting payment transaction details such as credit card numbers, customer identities and mailing addresses.

• EAVESDROPPING

Wi-Fi users run the risk of having their private communications intercepted, or packets sniffed, by cyber snoops while on unprotected wireless networks.

59

• INAPPROPRIATE AND ILLEGAL USAGE

Businesses offering Wi-Fi risk playing host to a wide variety of illegal and potentially harmful communication. Adult or extremist content can be offensive to neighbouring users and illegal downloads of protected media leave the business susceptible to copyright infringement lawsuits.

• BAD NEIGHBOURS

As the number of wireless users grows, so does the risk of a pre-infected client entering the network. Mobile attacks, such as Android's Stagefright, can spread even if victim zero is oblivious to the outbreak.

• MISCONFIGURED AP

Like any other network or device, simple configuration errors or not changing default settings can open networks to attack.

CASE STUDIES

Chances are your existing Wi-Fi solution likely can't block any of the above threat categories, and it certainly can't protect your business from all of them happening at the same time. Here are some examples of companies that have suffered Wi-Fi attacks:

In October last year, the Dutch security services say Russia planned a cyber attack on the Organisation for the Prevention of Chemical Weapons (OPCW) in The Hague. They were accused of planning to carry out a 'drive-by' hack operation targeting the OPCW's Wi-Fi network from a vehicle parked in the car park of a nearby hotel.

TJ Maxx suffered a breach in July 2005 that was the result of an unsecure wireless network. The hacker set up shop outside one of its stores with a laptop and telescope shaped antenna, downloading at least 45.7 million credit and debit card numbers, but

'According to iPass, the number of Wi-Fi hotspots is predicted to grow from 23 million in 2014 to almost 300 million in 2018. But this enthusiasm for Wi-Fi has created a perfect hunting ground for attackers.'

potentially may have access to as many as 200 million card numbers in total.

AVOIDING THE THREATS

There are best practices, which will help secure your Wi-Fi network. The first is to implement the latest WPA2 Enterprise (802.1x) security protocol wherever possible – it's one of the hardest encryption methods to crack.

All Wi-Fi traffic should also, at a minimum, be inspected for viruses and malware, including zero day threats and advanced persistent threats. Application identification and control will monitor and optionally block certain risky traffic, while web content filtering will prevent unsuspecting users from accidentally clicking a hyperlink that invites exploitation, malware and backdoors to be loaded into your network.

Other measures include using strong passwords and changing them regularly, scanning for rogue APs and whitelisting MAC addresses when possible. Finally, narrowing the Wi-Fi range will also

60

reduce your risks. Miercom – which generates industry reports based on hands-on testing – recently performed a series of tests to determine how effectively an AP can support real time applications such as voice, video, and data, while simultaneously detecting and preventing the most common wireless security threats.

SPEED AND SECURITY

The speed of Wi-Fi adoption has led to a disconnect between access and security. Many early APs and corresponding management systems focused purely on getting clients to connect with limited attention to protecting users and their data. But the security industry is now driving secure Wi-Fi solutions by extending physical network safeguards to wireless networks and providing better network visibility to overcome a major security blindspot.

A trusted wireless environment will provide a framework that delivers on performance, scalable management and verified comprehensive security. There is no longer any excuse for providing unsecure Wi-Fi and we shouldn't have to feel we are living dangerously whenever we log on to a hotspot. ■

MARTIN LETHBRIDGE

Martin Lethbridge is senior engineer at WatchGuard Technologies. With over two decades of experience in the cyber security industry, he has in-depth understanding of the cyber landscape, industry challenges and complex networks. Lethbridge joined WatchGuard Technologies in 2010 and works with organisations to harness best practice network security tools to detect and respond to cyberthreats across diverse environments.

Mayflex

As Wi-Fi becomes the primary form of connectivity for many enterprises and organisations, a robust and reliable wireless local area network (WLAN) solution is of the utmost importance.

Available from Mayflex, Edgecore's EWS gateway controller guarantees reliable WAN connectivity, and can be attached to two WAN links from separate ISPs for redundancy and load balancing purposes. Furthermore, the entire system can be deployed in high availability, mitigating the potential lost productivity in the event of network downtime. Along with the ability to configure back-up access point (AP) management controllers for remotely managed APs, network administrators can guarantee seamless network operation and management.

Deployed in multi-tenant sites, Edgecore provides managed service providers (MSPs) with a platform to easily manage and monitor WLAN deployments for multiple customers with an efficient single pane of glass view. The unique virtualised design stemming from Edgecore's traditional hybrid controller gateway architecture allows each tenant to have completely independent computing resources, each with the same or more capability compared to traditional WLAN controllers.

CLICK HERE to find out more about Edgecore wireless solutions.
www.mayflex.com

Wi-SUN Alliance

Wi-SUN Alliance is a global member based association driving the proliferation of interoperable wireless solutions for use in smart cities, smart utilities and other Internet of Things (IoT) applications.

Working with organisations looking to design and connect interoperable wireless devices, Wi-SUN members include global and national companies and utilities. Currently there are more than 80m Wi-SUN capable devices awarded worldwide according to Navigant Research.

Independent research from Rethink Technology estimates that companies in the Wi-SUN ecosystem are set to enjoy continued growth at 20 per cent CAGR, as mesh network technology begins to reach into new sectors and different business models are developed/implemented.

Membership of the Wi-SUN Alliance is open to all industry stakeholders and includes silicon and product vendors, services providers, utilities, universities, enterprises and local government.

To find out more **CLICK HERE.**
www.wi-sun.org

CableFree

CableFree: Wireless Excellence designs and manufactures high performance wireless connectivity products. CableFree products include gigabit microwave, broadband radio, free space optics (FSO), millimeter wave (MMW), 4G/LTE and carrier Wi-Fi. Celebrating 23 years of excellence in 2019, CableFree pushes the boundaries of wireless – the longest microwave links over 200km and the fastest MMW links at 10-40Gb/s and more.

With customers in over 80 countries, CableFree connects the world faster and reliably with technically excellent and cost effective solutions. Based on the Oxford Science Park, internationally reputed for innovation, CableFree is at the forefront of fast moving wireless technology. Whether for safe cities, smart cities, mobility or any other requirement, CableFree technology is dependable, secure and fast.

CableFree's impressive customer list includes excellent case studies and references with major contracts for telecoms, corporates, government, safe city, CCTV, ISP, law enforcement, health, education and more.

CLICK HERE to find out more.
www.cablefree.net

Radio FSO Dependable Gigabit Capacity Reliable MMW MIMO WiFi
4G/LTE Metro Networks Microwave Safe Cities CCTV Resilience

10-40Gbps Wireless Networks

CableFree
Wireless Excellence

63

IgniteNet

SkyFire by IgniteNet is an outdoor dual radio – dual-band concurrent – AP/CPE/PTP featuring the latest wireless and cloud technologies.

SkyFire AC contains two ultra-high powered 2x2 MIMO radios with one 802.11ac (5GHz) radio and one 802.11n (2.4GHz) radio. It can operate either as a standalone access point or as a coordinated, cloud managed access point, easily meeting the requirements of any installation.

SkyFire AC features a hybrid metal/plastic design built to withstand the harshest environments including precipitation, hot/cold weather and high/low humidity, which makes it perfect for any outdoor coverage – caravan park, B&B, hotel, park, and playground or short distance building to building link. It is available with IgniteNet Cloud – an easy, powerful, and affordable cloud managed Wi-Fi.

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

Deliver secure guest access with Aruba ClearPass

Available from Mayflex, Aruba's ClearPass Access Management System provides a single RADIUS-based security and verification point for all wired and wireless networks

▶ IT departments must ensure that wired and wireless infrastructures provide a personalised mobility experience that everyone can rely on and trust. But this doesn't have to be a formidable task.

Four to the floor

It's possible to go well beyond authentication and give users secure access to apps, printers and other network services from both IT managed and personal devices if you focus on four key areas.

Match roles to resources: Access privileges based on contextual information that includes user role, types of devices in use and location.

Automate device onboarding: Tools that automate onboarding of new devices with security, network and app configuration.

Go beyond mobile device management (MDM): MDM can't stop jailbroken devices from connecting to the enterprise Wi-Fi network, nor does MDM prevent the use of blacklisted apps. You need stronger device security for that.

Deliver secure guest access without IT assistance: You need a Wi-Fi solution that maximises security for guest access while minimising IT involvement.

Easy does it

Aruba Networks delivers security features, with built-in policy and AAA services, and the Aruba ClearPass Access Management System makes it easy to create and enforce policies based on a user's role, device type and location. IT can now automatically differentiate which resources a personal device can access versus IT managed devices.

ClearPass leverages the role based policies already created to automate device onboarding, so employees can on-board their own devices without IT involvement. Its built-in certificate authority automatically issues unique device credentials to everyone, which simplifies authentication and makes it easier to revoke certificates for lost or stolen devices.

ClearPass also ensures that wireless policies integrate with MDM servers to secure the network when users connect personal devices. That means devices can't connect if they're jailbroken or missing the MDM agent. ClearPass can also trigger an MDM system to automatically generate a helpdesk ticket and device notification when users are prevented from connecting.

In addition, Aruba ClearPass makes it

possible to secure guest access without IT assistance. ClearPass Guest lets IT control who gets network access and issues unique guest credentials that separate guest traffic from enterprise traffic – with no IT involvement. Guest specific role enforcement automatically assigns where, when and how long a guest can stay on the network. Once guests have logged into a captive portal, a MAC caching feature remembers their credentials, so guests don't have to keep logging in throughout the day.

The Clearpass advantage
Open and seamless integration: Optimised to operate in any network
   One network, one view, one policy: Organisations design and implement one policy per user or device and ClearPass seamlessly enforces this policy
   Optimised networks: Policy based enforcement of port access and utilisation
   Ironclad access: No user or device can gain network access without positive authentication and the appropriate policy authorisation across the entire network topology
   Attack intercept: Set up pre-determined responses to cyberattack signals

Aruba HPE from Mayflex
The Aruba HPE product range is available from Mayflex. Mayflex is a distributor of converged IP solutions with headquarters in Birmingham, which uses its specialist knowledge and experience to bring together solutions covering infrastructure, networking and electronic security. These product solutions create a compatible, feature rich, value for money offering to meet the demanding needs of all types and sizes of businesses.
   When dealing with Mayflex installers can be assured of the following:

• Free next day delivery service on all products to the UK mainland as standard
• Large stock availability – 98 per cent of orders fulfilled from stock
• Online Track and Trace programmes, giving you a quick and easy way of checking on the progress of your delivery
• Knowledge and expertise with a dedicated team of sales and technical professionals
• Accredited training academy with fully qualified instructors

   CLICK HERE to check out the full range of Aruba HPE products and solutions.
   Speak to the Mayflex team on 0800 8815198 or **CLICK HERE** to send an email to discuss your Aruba HPE wireless networking and switching requirements.

www.mayflex.com

65
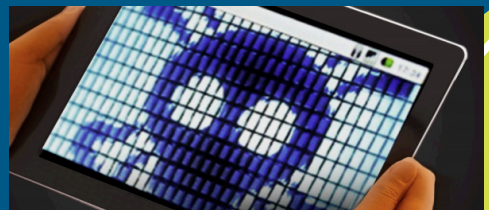
Your flexible friend

Donna Johnson of Cradlepoint explores the ways organisations can improve the agility of their wireless networks as the networking landscape evolves

▶ Enterprise networks need to be conditioned to keep pace with the speed at which cloud, mobile devices, and the Internet of Things (IoT) technologies are evolving – and the way businesses now operate. Today's organisations require networks – and connected devices – to be easily manageable, deployable and maintainable. From day one internet to cloud management, modern enterprises need an agile network they can manage at exceptional scale with unparalleled visibility.

BALANCING ACT

According to the 2018 Gartner Magic Quadrant for Data Centre Networking, 'As enterprises scale digital business initiatives, they must balance refreshing equipment and expanding capacity, while improving agility and maintaining uptime in their data centre networks'.

For many organisations looking to increase network agility, this starts by leveraging wireless, cellular based broadband for enterprise networking. The rise of wireless is all around us, but with IoT, cloud, and 5G constantly swirling, thousands of organisations are looking to 4G long term evolution (LTE), Gigabit LTE and soon 5G to increase agility and future proof their network architectures. As the landscape continues to evolve, here are some areas where IT teams can utilise wireless to improve the agility of their networks:

• Operational ease

Agile IT departments are finding ways to save time and resources while adding new applications and deployments. For example, day one internet is an on-demand style of connectivity with a painless deployment process and little to no cost to install the network. It also provides the option to relocate the network quickly and easily or open a new location with minimal advanced notice.

This makes wireless networking and software defined networking (SDN)

invaluable when networks need to be spun up and down quickly and easily, such as pop-up networks. Often, wired connectivity has a lengthy installation time and is difficult to relocate. Pop-up networks allow a business to deploy an internet connection before the network infrastructure has been developed within the business. Situations like this are a perfect opportunity for a wireless solution, offering day one deployment, a reliable connection, and bypassing installation delays.

Pop-up networks also allow businesses to utilise a wireless network while the wired network is being installed. One unique example is the opportunity for retail stores that are still in the process of opening to spin up instant networks for technologies like interactive kiosks outside the doors. People passing by can enter their email addresses into the kiosks to receive notification for when the store will open, and even shop from the store's online catalogue, resulting in an overall profit and relationship with customers before they even open the doors.

• Improving network security
A secure network also increases wireless network agility by giving organisations the confidence to deploy a pop-up network and continue business operations securely, for instance, with credit card transactions when sensitive data is involved.

This also extends to enhanced IoT device security. When combined with SDN, software defined perimeter (SDP) makes it easy to connect IoT devices to applications and resources quickly and securely. Multiple device types can be connected with SDPs, including Windows, Mac, Linux, iOS and Android. For unsupported devices, such as IoT sensors or security cameras, admin personnel can easily connect the device to the perimeter network behind a router acting as an SDP gateway.

This technique adds a layer of security to an IoT deployment, reducing the attack surface by integrating IoT devices into an enterprise network. This can also be combined with LTE air gapped connectivity, which prevents a compromised IoT device from infiltrating core business information systems. Data is protected, and the rest of the network is secure from breaches that could occur through IoT devices.

• Moving to the cloud
Cloud networking provides centralised

67

'Organisations will want to develop a clear picture of how 5G fits within their existing technology and business roadmaps and how it will impact the network design. An agile wireless network will help to seamlessly transfer networks to LTE and 5G and better embrace IoT.'

connections to 4G LTE to ensure continuous coverage. 5G won't replace LTE, it will continue to evolve along with LTE – and the two will work together to handle different types of traffic most efficiently. 5G will allow for higher bandwidth, lower latency, and more favourable data plans. Organisations that want to take advantage of these benefits will need to evolve from legacy networks to an agile wireless network.

management, device and application visibility, real time web based diagnostics, reporting and control. These benefits provide more agility by making a company savvier within their networking architecture. Organisations can scale IT infrastructure resources both up and down to meet unpredictable usage requirements, while also saving time with instant updates from one location.

Cloud management offers zero touch deployment to remotely deploy and manage all the devices on a business's network without the need for on-site IT staff. Cloud management also provides instant insights to WAN/LAN analytics and visibility to manage data usage, performance, and costs.

Organisations will want to develop a clear picture of how 5G fits within their existing technology and business roadmaps, and how it will impact the network design. An agile wireless network will help to seamlessly transfer networks to LTE and 5G and better embrace IoT.

This pathway to 5G will be pioneered with a variety of use cases across a variety of industries. In medicine, telehealth frameworks are already using 5G ready routers to enable remote practitioner access to patients using high resolution cameras, 4K video and remote medical equipment. Providing a

• Adapting to advancements
As 5G becomes available, and IoT more prevalent, there will be a reliance on

remote subject matter expert dramatically increases patient outcomes at a vastly reduced cost, essentially creating an 'Uber for doctors' – where patients no longer need to wait days or weeks for an appointment.

The same principle can be applied to other industries, for example the oil and gas industry, where specialist knowledge is needed in hazardous or hostile environments. In retail, smart stores are already leveraging 4G LTE connectivity and leading the way in testing and implementing customer engagement and operations strategies that someday will be adopted across virtually all industries.

TAKING OVER

With Gigabit LTE now available and 5G right around the corner, wireless is poised to overtake wired WAN as the link of choice – both for failover and primary connectivity – for enterprises of all shapes and sizes. Organisations across all industries will need to be adaptable and ensure their wireless network is agile, to allow for new developments in technology and keep up with the increasing pace of change. ∎

69

DONNA JOHNSON
Donna Johnson is the vice president of product and solution marketing at Cradlepoint. Previously she worked at Citrix, where she was the director of product marketing for its NetScaler SD-WAN solution. Prior to Citrix, Johnson held senior product marketing and management roles at Talari.

Leviton

Leviton has expanded its offering of environmentally friendly packaging to include GreenPack bulk packs.

GreenPack provides an efficient and cost effective option for large jack installations, with fewer individual parts to manage and less jobsite waste. In a typical 10,000 jack installation, using GreenPack creates a three per cent cost savings in materials and labour. The corrugated cardboard sleeve and PET plastic packaging is 100 per cent recyclable.

The 12 jack bulk packs are available for Atlas-X1 Category 6A and Category 6 unshielded and shielded jacks, and eXtreme Category 6A unshielded jacks. GreenPack comes available in three jack colours for better network planning.

CLICK HERE to visit the Leviton Copper Systems site.
www.leviton.com

Yokogawa

The Yokogawa AQ1210 optical time domain reflectometer (OTDR) only resembles the existing AQ1200 in appearance – internally it has been completely re-engineered to bring the features and user friendly operation of the AQ7280 flagship OTDR to the installers and testers of passive optical networks (PON) and fibre to the antenna (FTTA).

The AQ1210 uses an optimised operating system that, in conjunction with the 5.7-inch capacitive multi-touchscreen display and built-in smart mapper, enables the operator to rapidly characterise fibres in ranges from 200m to 256km and generate easy to read PDF reports with icons clearly highlighting events.

With six models offering two or three wavelengths, and the ability to test live fibre networks with high port count splitters (up to 1:128), every user can find an AQ1210 model with the combination of wavelengths required to meet the testing needs of their local country or region.

The AQ1210 can perform different measurement functions simultaneously, saving time during tests. These include OTDR, optical power meter (OPM), visible fault locator (VFL), and automatic pass/fail analysis of the surface of the optical fibre using a fibre inspection probe.

For further information **CLICK HERE.**
tmi.yokogawa.com

R&M

R&M has announced the availability of the Data Center Handbook 2019. Aimed primarily at planners and operators of data centres, is a rich source of information on how to successfully design, build, manage and support a data centre.

R&M's Data Center Handbook 2019 also contains detailed and user oriented answers to all questions pertaining to the infrastructure and operation of a data centre. Topics include networking technologies and next generation structured cabling, and it places an in-depth emphasis on automated infrastructure management (AIM).

Based on years of experience built up by experts who provide support for the construction and equipping of data centres throughout the world, the handbook also serves as a reference work on relevant standards, technical terms, trends, and applications. It helps customers achieve an optimum data centre layout and to plan cabling architecture, as well as reduce energy needs and select security solutions. The document also offers practical solutions for next generation 100Gb/s, 200Gb/s and 400Gb/s networks.

The Data Center Handbook 2019 is available for free by **CLICKING HERE. rdm.com**

Ideal Networks

Ideal Networks has launched NaviTEK IE, which is designed for the commissioning, preventative maintenance and troubleshooting of PROFINET Industrial Ethernet networks, plus standard Ethernet IP networks.

The tester offers all the same features as the NaviTEK NT Pro, but with a range of additional tools specific to the needs of Industrial Ethernet, where packet delivery time is critical for operation. For instance, the system health check feature on NaviTEK IE enables frontline technicians to pinpoint potential issues before they become network failures and cause downtime. With an easy to understand traffic light system, the health check provides a quick indication of how each device is performing.

Advanced wiremap tools on NaviTEK IE allow users to automatically discover cable, network or device configuration, or faults, at the touch of a button. The tester uses time domain reflectometry (TDR) to provide accurate distance to fault data, testing every wire in the data cable, not every pair, to help isolate issues that other testers cannot find and can be customised to support standard and non-standard cabling configurations.

For more information **CLICK HERE. www.idealnetworks.net**

HellermannTyton

HellermannTyton are pleased to announce the arrival of the new 2019 Connectivity Solutions catalogue.

We have restructured and streamlined our product range to make specifying and buying HellermannTyton connectivity products quicker and easier. You can now find the products you need by system category, where we have dedicated chapters for Category 6A, Category 6 and Category 5e. Catalogue navigation has been made simple by grouping these products into a logical order to help you find the one item you are looking for, or the entire end to end system.

We have produced the catalogue in a handy, smaller, more compact size without compromising on product information. This A5 sized document contains 92 pages of concise product detail, providing you with all the necessary information before selecting the products you need for the job.
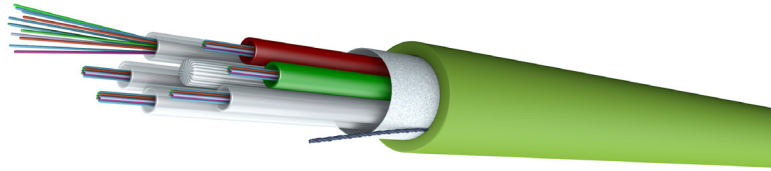
To request your copy of the new catalogue please **CLICK HERE** and complete the catalogue request form on the HellermannTyton Connectivity website. **www.htdata.co.uk**

Draka

Draka, part of Prysmian Group, offers a complete range of high fire safety Cca and B2ca fibre optic cables, with up to 144 fibres, which are fully compliant with EU Standard 50575 of the Construction Products Regulation (CPR).

With EN 50575, seven new classes – Aca, B1ca, B2ca, Cca, Dca, Eca and Fca – replaced the previous A1, A2, B1, B2 and B3 classes. Power cables, communication and control cables for permanent installation in buildings are tested for energy content, flame spread, smoke generation, acidity, heat release and drop formation, and classified accordingly.

The portfolio includes the non-metallic, gel filled central loose tube cables E22 (Cca) and E25 (B2ca), and the non-metallic stranded gel filled loose tube cables N10/N14 (Cca) and N09, N11 and N13 (B2ca) for indoor and outdoor use. These industry leading cables combine high water resistance, 144 fibres count and high mechanical strength with maximum fire protection. N14/N09/N13 options offer high rodent resistance and, due to their non-metallic nature, they are easy to install.

To find out more **CLICK HERE.**
uk.prysmiangroup.com

73

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The time is now

Mark Hardy of Citrix examines the key factors that are having a dramatic effect on enterprise networking

▶ Enterprise networking is seeing rapid and massive innovation – software defined networking (SDN), artificial intelligence (AI), the rise of the Internet of Things (IoT), and autonomous network actions are about to have dramatic effects on enterprise networking, from the data centre to the network edge. The move to software as a service (SaaS) and hybrid multi-cloud environments has major implications for networks, security infrastructure and policies, as there is a need to ensure secure, reliable access to apps and data no matter how or where people connect.

FOUR TO THE FLOOR
In light of this, these are the four network trends that every company should be aware of:

• AI assistance
More and more network equipment vendors enhance their offerings by employing AI, mostly in the form of assisted machine learning (ML), to improve network management and security.

ML algorithms continuously monitor network traffic, looking for suspicious deviations from established traffic patterns. This allows IT and networking teams to be warned about early indicators of, for example, network performance degradation. The same kind of ML or AI assisted monitoring is used to scan the network for possible breaches or attackers.

'Taken together, the next generation network will pave the way for automating tasks that previously required time consuming manual intervention. It will also enable new workflows that hadn't been possible at all.'

Threat actors often enter a network environment by getting hold of real end user credentials and then abusing them for their own purposes. This way, they create deviations from the user's previous network behaviour – which ML can detect. Currently, however, a common problem in this scenario is that the detection mechanisms can only be as good as the data patterns the ML/AI system is fed.

• Increasing autonomy

In the long-term, networking will evolve to include better and, most of all, unassisted AI technology. This will give a boost to networking in several ways. First, it will allow the network to truly learn by itself, without the need for pre-established patterns fed by human hand. Second, it will enable the network to learn the reactions usually following a certain deviation. The network will, for example, recognise that privilege escalation – the abuse and extension of a legitimate user's privileges by an attacker – will usually trigger certain reactions. The security team, once informed of the incident, will isolate the suspicious user and prepare that user's network traffic history for forensic inspection. Once the network knows that an activity is suspicious, it will learn when to employ these steps autonomously – if the IT team allows it to proceed this way.

• IoT enablement

The addition of IoT and industrial IoT (IIoT) technology to the network will create a whole array of new tasks, job profiles, and responsibilities.

IT experts will have to deal with a wide selection of new endpoints. These include IIoT enabled industrial machinery, as well as smart factory and smart office technologies. The network will also have to interact with autonomous cars, along with various other kinds of smart and/or autonomous vehicles, while all kinds of smart devices will be added to the corporate network in the future. Combined with the AI capabilities an AI enabled IoT network will, for example, allow farmers to send drones on to fields for applying pesticides in a highly targeted way, with multiple drones autonomously coordinating the work amongst themselves.

• Software defined everything

The increasingly dynamic, diverse and real time oriented networks of the future will be software defined – just like some data centre networks of forward thinking enterprises and cloud service providers already are today.

Software defined means that functionality is decoupled from the hardware, making the

76
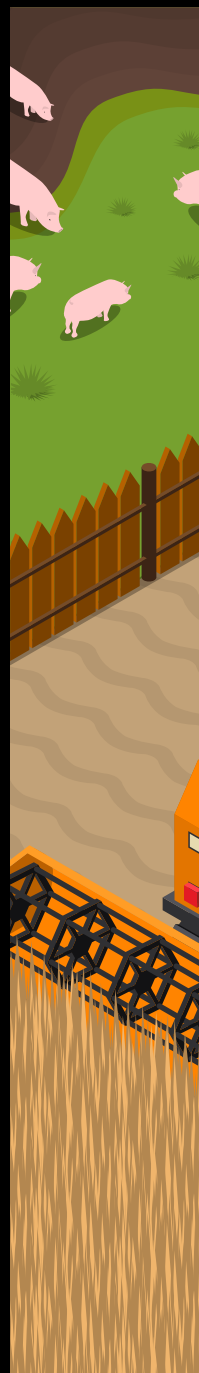
hardware ever more interchangeable. Just like in a virtual server environment, all important decisions are made in a software layer abstracted from hardware specific code. This approach will be applied all over the future enterprise. It will be the task of the IT organisation to define via settings, rules, and policies which kinds of software defined network behaviour they want to establish.

PAVING THE WAY

Taken together, the next generation network will pave the way for automating tasks that previously required time consuming manual intervention. It will also enable new workflows that hadn't been possible at all. This way, the network will speed up a huge number of existing workflows and enable whole new business processes – from the data centre to the network edge and on to the cloud.

For example, a software defined wide area network (SD-WAN) will allow a dynamic, policy defined distribution of resources across the on premises network and multiple cloud environments. It will support swift and easy relocation of resources across the multi-cloud environment, depending on current needs or shifts in the application workloads. SD-WAN functionality, by

the way, is already available today. For, as science fiction author William Gibson once famously said, 'The future is already here – it's just not evenly distributed'. ■

MARK HARDY

Mark Hardy is director northern Europe, cloud networking group at Citrix. He has over 25 years of leadership experience and a demonstrable record of establishing teams to acquire, develop and retain global Fortune 500 customers. He has held several leadership positions at both start-up and large global IT companies including seven successful years in the US.

08:25

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