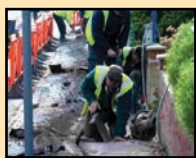


networking

FIXED & WIRELESS NETWORKS FOR ENTERPRISE USERS

Full fibre broadband

Government promises complete coverage of the UK by 2033
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When comms are critical

Reliable networks are life and death for the emergency services
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Can't stand the heat

How to keep your IT estate cool, plus top tips on ErP compliant chillers
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Faster photons could enable total data security solution

Researchers at the University of Sheffield claim to have solved a key puzzle in quantum physics that could help to make data transfer totally secure.

Each pulse of light used to transfer data along fibre optic cables contains millions of photons which, according to the researchers, means that a portion of these could, in theory, be intercepted without detection.

It's claimed the team has developed a way of generating very rapid single-photon light pulses. Each photon, or light particle, represents a bit of binary code, and cannot be intercepted without disturbing them in a way that would alert the sender that something was amiss. The researchers believe single photon pulses offer total security because any eavesdropping is immediately detected.

Up until now, scientists have struggled

to produce photons rapidly enough to carry data at sufficient speeds to transfer high volumes of data. In a study published in *Nature Nanotechnology*, the Sheffield team describe how they utilised a phenomenon called the 'Purcell Effect' to produce the photons very rapidly. They explain that a nanocrystal called a quantum dot is placed inside a cavity within a larger crystal – the semiconductor chip. The dot is then bombarded with light from a laser which makes it absorb energy, and this energy is then emitted in the form of a photon.

The scientists found that placing the nanocrystal inside a very small cavity made the laser light bounce around inside the walls. This speeds up the photon production by the Purcell Effect.

continued on page 2



Researchers at Sheffield University utilised a phenomenon called the 'Purcell Effect' to produce light pulses very rapidly and transmit data that's claimed to guarantee security.

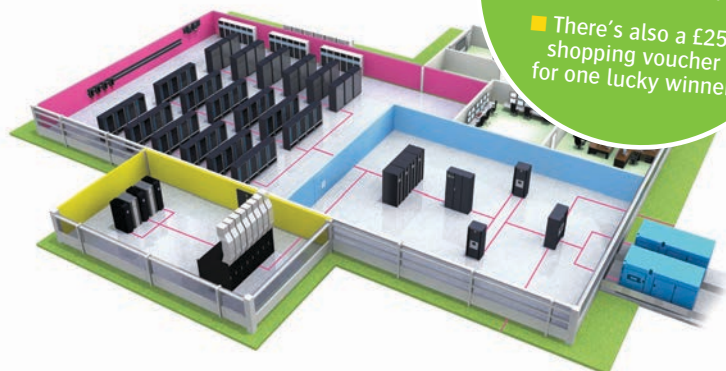
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Cisco to boost UK digital innovation with multimillion dollar investment

Cisco plans to spend \$100m to help accelerate digital innovation in the UK.

The firm says the commitment is aligned to the country's Industrial Strategy, and will support partnership with industry, government and academia across the nation.

As one of the first initiatives to be announced, Cisco is teaming-up with University College London to open one of the world's largest AI research centres later this year. It will house more than 200 researchers and academics with a focus on addressing industry challenges and in areas such as healthcare, drug discovery, transport and commerce.

In welcoming Cisco's announcement in mid-July, prime minister Theresa May said: "Research has shown that AI could add £232bn to the UK economy by 2030, and developments like this will help with our ambition to put the UK at the forefront of the AI and data revolution."

Cisco CEO and chairman Chuck Robbins said: "We believe that the UK's expertise in AI and its commitment to making sure future innovators have the right digital skills will help ensure the

nation's citizens are well-positioned to capture the opportunity ahead."

The government's Industrial Strategy outlines four 'grand challenges' that are said to be aligned to some of the greatest issues facing society.

As well as AI, these also include dealing with an ageing society. Earlier in July, Cisco announced that it will lead a private public partnership project to create a sustainable business model for investment in digital inclusion for the UK. The project aims to address issues of loneliness, social exclusion and pressures on public services.

The 'grand challenges' that have been identified include clean growth to address the potential for digital in the energy sector, and the future of mobility, such as projects to further the UK's position as a leader in connected and autonomous vehicles.

Cisco said that in the last decade, it has committed more than \$1.5bn in digital and innovation investment and projects in the UK, initially through a programme announced in 2011 to create an innovation legacy following the London Olympic games.

UK to have full fibre broadband coverage by 2033

The government is promising “a full fibre broadband and 5G future for all” as part of its recently outlined Future Telecoms Infrastructure Review (FTIR).

In July, the Department of Digital, Culture, Media and Sport (DCMS) announced that the cost of rolling out fibre broadband will be “slashed”, and that remote rural areas will be prioritised for funding. It said that at the FTIR’s heart is an emphasis on greater consumer choice and initiatives to promote quicker rollout and an eventual full switch over from copper to fibre.

According to the DCMS, its proposals will give the majority of the population access to 5G, connect 15 million premises to full fibre broadband by 2025, and provide full fibre broadband coverage across all of the UK by 2033. It added that full fibre infrastructure is vital to underpin 5G coverage.



Nationwide availability of full fibre is likely to require additional funding of around £4bn to support commercial investment in remote and rural areas.

The FTIR’s analysis indicates that, without change, full fibre broadband networks will at best only ever reach three quarters of the country, and it would take

more than twenty years to do so.

The government said proposed new legislation will guarantee full fibre connections to new build developments. Operators will be given a ‘right to entry’ to flats, business parks, office blocks and other tenanted properties to allow those who rent to receive fast, reliable connectivity, from the right supplier at the best price.

Among some of the other changes, the DCMS said there will be: regulatory reforms for full fibre broadband that will drive investment and competition; public investment in full fibre for rural areas to begin simultaneously with commercial investment in urban locations; an industry led switchover from copper to full fibre coordinated with Ofcom; a new nationwide framework which will reduce the costs, time and disruption caused by street-works

by standardising the approach across the country; and infrastructure owned by other utilities such as power, gas and water, becoming easier to access and available for both fixed and mobile use.

Nationwide availability of full fibre is likely to require additional funding of around £3bn to £5bn to support commercial investment in around the final 10 per cent of areas. The government said that these are often rural areas and “must not be forced to wait” until the rest of the country has connectivity before they can access gigabit-capable networks.

As a result, the DCMS said the government will pursue an “outside-in” strategy. That means while network competition serves the commercially viable areas, Westminster will support investment in the most difficult to reach areas at the same time. ■

Simoco opens dedicated NOC to keep Heathrow moving

Simoco Wireless Solutions has opened a network operations centre (NOC) at Heathrow Airport, which includes a round-the-clock monitoring, troubleshooting and maintenance service for radio networks.

The NOC has been created to look after a collection of mission-critical communications networks which keep operations within Heathrow running smoothly.

It covers networks at 26 separate locations around the UK, including: 11 bus depots; the radio communications network on the

new Elizabeth Line Crossrail link; two data centres and two separate telematics software platforms which are used for tracking vehicles involved in airport operations.

A mixture of Digital Mobile Radio (DMR) and analogue radio technologies are in place at Heathrow, with equipment provided by a range of different manufacturers. As a result, Simoco says the capabilities within the NOC are similarly broad. In total, it is supporting around 11,000 devices and 180 separate customers across the UK and Ireland.



The new centre looks after a collection of mission-critical communications networks that are used at the airport.

The centre is also being utilised to complete network administration tasks including system statistics reports. Simoco says this frees-up engineering resource to concentrate on mission-critical operations.

The firm adds that whenever a network incident is identified, its specialist operatives categorise the issue over

the phone. Simoco claims this “rapid” decision-making prevents smaller incidents from escalating into significant operational disruption. Should a critical incident occur, customers are updated throughout the lifespan of that incident, and provided with up to date progress reports until the issue is resolved. ■

New cyber crime court for London

A new flagship court specifically designed to tackle cyber, fraud and economic crimes has been given the go-ahead in the heart of London.

To be built on the site of Fleetbank House in Salisbury Square, plans for the 18 courtroom legal centre have now been approved following a feasibility study launched last October.

Developed in partnership with the City of London Corporation and the judiciary, the purpose-built court will also deal with business and property work as well as civil cases. It will replace the ageing civil court, Mayor’s and City of London County Court, and City of London Magistrates’ Court. A new City of London

police station will also be included.

Funding will be provided by the City of London Corporation and HM Courts and Tribunals Service

The City of London is said to be the world’s financial centre and currently hosts more than 17,000 solicitors. English law is also reportedly used in 40 per cent of all global corporate arbitrations, and more than 200 foreign law firms currently have offices in the UK.

Commenting on the plan approvals, Catherine McGuinness, policy chairman of the City of London Corporation, said: “This is a hugely significant step in this project that will give the Square Mile its second iconic courthouse after the Old Bailey.” ■

Faster photons for data security

continued from page 1

However, one problem this creates is that the photons carrying data information can easily become confused with the laser light. The researchers overcame this by funnelling the photons away from the cavity and inside the chip to separate the two different types of pulse. In this way, the team says it succeeded in making the photon emission rate about 50 times faster than would be possible without using the Purcell Effect.

They add that although this isn’t the fastest photon light pulse yet developed, it has a “crucial advantage” because the photons produced are all identical. This

is said to be an essential quality for many quantum computing applications.

“Using photons to transmit data enables us to use the fundamental laws of physics to guarantee security,” says Mark Fox, professor of optical physics at the University of Sheffield. “It’s impossible to measure or ‘read’ the particle in any way without changing its properties. Interfering with it would therefore spoil the data and sound an alarm.”

According to Fox, the technology could be used within secure fibre optic telecoms systems, particularly in environments where security is paramount such as governments and national security headquarters. ■

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Sector	Firms average investment on cyber security 2016-17	Firms average investment on cyber security 2017-18	% Increase or decrease from 2016-17 to 2017-18
Finance/Insurance	£9,650	£17,900	85% ▲
Transport/Storage	£6,040	£6,570	9% ▲
Administration/Real Estate	£5,930	£1,860	69% ▼
Professional/Scientific/Technical	£5,220	£4,270	18% ▼
Entertainment/Service/Membership	£4,380	£770	82% ▼
Retail/Wholesale	£2,430	£2,940	21% ▼
Construction	£2,120	£1,300	39% ▼
Hospitality/Food	£620	£900	45% ▲

Finance and insurance firms in the UK top the table when it comes to investing in cyber security in 2017-18. SOURCE: WWW.SAVOYSTEWART.CO.UK/DCMS

Who's taking cyber security seriously?

Finance and insurance firms invested the most on cyber security in the 2017-18 financial year, while those in the entertainment, service and membership sectors spent the least, according to Savoy Stewart's analysis of government research.

Comparing the Department of Digital, Culture, Media and Sport's 2017 *Cyber Security Breaches Survey* with the one for 2018, Savoy Stewart found that finance and insurance firms invested an average of £17,900 in cyber security, an 85 per cent increase from the previous financial year when they spent £9,650. Meanwhile, companies in the entertainment, service and membership sectors invested an average of £770 which represents an 82 per cent decrease compared to 2016-17

when they spent an average of £4,380.

Savoy Stewart is a commercial property estate agent. While the DCMS surveys include twelve industry sectors, the company specifically focused on eight sectors, including construction, to see how much money 811 firms had invested in cyber security from 2016 to 2018.

Firms in the transport and storage sector invested the second highest amount of money in cyber security at an average of £6,570, a small increase of 9% from the financial year before (£6,040).

Citing figures by the Business Continuity Institute, Savoy Stewart says 53 per cent of UK firms now consider a cyber attack as the main threat facing them in the near future. ■

Intelligence Network aims to create safer digital society by 2025

BAE Systems is spearheading an industry initiative to engage, unite and activate a global community of security professionals and industry influencers in their fight against cyber crime.

Founding members of *The Intelligence Network* include Andrzej Kawalec at Vodafone, Jonathan Luff at CyLon and James Sullivan at independent think tank RUSI (Royal United Services Institute).

BAE Systems and its partners have signed a manifesto promising to bring about critical changes in leadership, culture, behaviour and processes to tackle evolving cyber threats. Julian Cracknell, MD, BAE Systems Applied Intelligence, says the manifesto establishes a framework for creating a safer society by 2025, and hopes that *The Intelligence Network* will kickstart conversations about the future of cyber defence.

"It has been conceived as a result of the latest input from the community on what needs to change, both in terms of the emerging issues that represent the greatest threat to society in a digital age, but also

the way we work together to tackle these issues head on as one collective. Our call to the industry is this: be part of the change you want to see."

The manifesto focuses on three areas of transformation: collaboration, simplicity and certainty. It sets out a number of aims to be achieved over the next seven years, such as intelligence sharing to ensure coordinated action in response to new threats, technology to be secure by default – both on purchase and through its life, security to be managed through standard corporate risk management structures in the same way as health and safety, amongst others.

The Intelligence Network itself will be led by a steering committee comprising industry influencers and those most passionate about driving change in the security sector, but will be open to anyone to join. The community will meet both physically and in the virtual world to share ideas, intelligence and wisdom and support campaigns to drive positive change in understanding, attitudes and processes. ■

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THE WORLD ACCORDING TO...

Simon Hall, CEO, Coeus Software

Transforming intelligence sharing with the latest cloud advancements

It was great to hear the home secretary's calls earlier this year for better sharing of intelligence between MI5, the police, wider partner agencies, and private organisations to help disrupt potential terrorist plots at a much earlier stage. However, without the right technology they may struggle to achieve this.

Historically, the police and wider security forces' IT infrastructure has been a patchwork of legacy systems and technologies whose disconnection has contributed towards siloed data and poor functionality. This can be hugely detrimental to the collection, analyses and distribution of intelligence which relies on timely and accurate data.

Given that 3,000 terrorist suspects are currently being investigated and a further 20,000 are in the background with numbers expected to grow, mobile technology, with shared information at the fingertips of frontline officers, is critical to preventing future attacks.

With the growth of commodity technologies, SaaS solutions, and software vending portals such as the government's G-Cloud, a new generation of mobile cloud advancements is emerging which could transform inter agency intelligence sharing.

These solution developments make it easy to deploy a single app for any

operational business process, from anywhere, on any device, and in real-time. With a single portal to access, record and report everything they need, it's quick and easy for users to complete tasks, share information with others, and ensure accuracy of data.

Also, functionality is enhanced and comfort assured, with a simple user interface that also adopts the familiarity of popular social media platforms. Furthermore, open standards inherent within today's cloud architectures allow stronger integration of essential back-office databases and the individual disparate systems used by the security, emergency services and commercial sectors.

This all combines to provide the more flexible, responsive and efficient ICT infrastructure that's needed for securer, more accurate and timely intelligence sharing, to help obstruct developing plots.

With solutions becoming easier to procure through portals like G-Cloud, which negate the need for expensive lock-in contracts with a single supplier, there is no longer a need to persist with piecemeal approaches to technology procurement.

With the right solutions now within easier reach, the tools are available to improve intelligence sharing, which must be implemented now if we are to better protect our citizens.

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AT&T to acquire AlienVault

AT&T is aiming to expand its enterprise-grade security solutions following an agreement to acquire AlienVault. AT&T says it will continue to invest in and build on AlienVault's foundational *Unified Security Management* platform and *Open Threat Exchange* which is claimed to be the world's first and largest open threat intelligence community. "AlienVault's expertise in threat intelligence will improve our ability to help organisations detect and respond to cyber security attacks," says AT&T Business CEO Thaddeus Arroyo. The terms of the deal, which is expected to close in the third quarter of 2018 subject to the usual conditions, have not been disclosed. ■

TPG Capital completes Wind River buyout

TPG Capital has completed its acquisition of IoT software specialist, Wind River. Financial details of the transaction have been withheld. TPG first announced its acquisition of Wind River from Intel in April. The newly independent company will be led by Wind River president and now CEO Jim Douglas. Nehal Raj, partner and head of technology investing at TPG, will serve as chairman of the company's board of directors. TPG is the global private equity platform of alternative asset firm TPG. According to the firm, Wind River's software runs the computing systems of the most important modern infrastructure, and is accelerating the evolution from automated to autonomous systems. ■

Psyphr boosts security with The Bunker

Psyphr has partnered with data centre and managed service provider The Bunker to securely host and deploy its end-to-end application security solution. With support from The Bunker's secure cloud solution, it has recently deployed a test platform for customers ranging from financial service organisations to number plate recognition software providers and military drone manufacturers. Psyphr specialises in fully integrated security software for mobile, cloud, enterprise and IoT applications. The firm says hosting its platform on The Bunker's servers will enable it to adapt the bespoke software to different sectors in an "ultra-secure" environment. ■

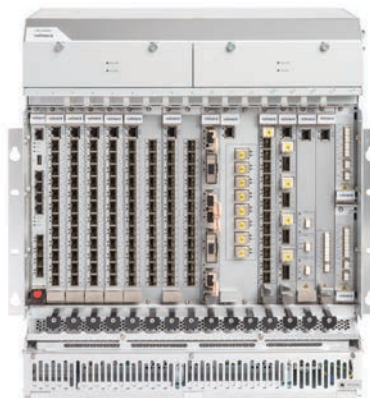
SSE and Infinera to deliver 'dark fibre-like network' across the UK

SSE Enterprise Telecoms will work with Infinera to offer what it claims will be a resilient, 'dark fibre-like' network on a scale never seen before in the UK.

Using Infinera's *XTM Series* optical platform, SSE Enterprise Telecoms says its network customers will benefit from connectivity to more than 80 commercial data centres, meaning it'll be able to meet them practically anywhere.

The company reckons this will give UK businesses and service providers the flexibility and option to scale, and that they will be supported by a high-capacity network without having to invest in or lay new fibre connectivity to each exchange.

SSE says it chose to partner with Infinera due to its "unique" combination of Layer 1 and 2 packet optical and Ethernet services. It says this offers a "credible alternative" to



By using Infinera's *XTM Series* packet optical platforms, SSE hopes to rapidly scale capacity.

customers laying costly dark fibre cabling. "Infinera's impressive synchronisation capabilities allow for flexibility on the

network, not currently available at such scale or at an accessible price point for customers, states the firm.

It adds that its "extensive" network promises access to multiple services with speeds of up to 100Gbps to each BT exchange. According to SSE, current networks are only able to offer a fraction of those speeds at a commercially viable cost.

"A network project on this scale makes us one of the few providers that can offer multiples of 100Gbps services between exchanges, commercial data centres and across our core, at an accessible price point," says Conrad Mallon, chief technical architect, SSE Enterprise Telecoms. "The network expansion deal is also paving the way for our ambitious roadmap which will see SSE Enterprise Telecoms investing more in network reach over the next five years." ■

Kao claims Europe's first DC to meet OCP principles

Kao Data has been working with the OCP (Open Compute Project) Foundation in a pilot programme to make its *Kao Data London One* facility OCP-Ready.

The firm's recently completed *London One* facility (see *News*, May issue) has completed the first two steps of the programme, joining the Data Centre Facility (DCF) project within the OCP and becoming the first data centre to self-audit against Open Compute's checklist for compliance with its engineering principles. The process will be complete when Kao Data presents its results during the OCP Regional Summit that takes place in Amsterdam in early October.

The DCF project was developed to maximize the mechanical performance and thermal and electrical efficiency of OCP servers. It comprises electrical and mechanical components, and focuses its efforts on five functional areas: power; cooling; IT space layout and design; facility management and control; and facility operations.

Kao Data CEO Jan Daan Luycks said: "As an OCP member, we strongly believe that the values of openness and collaboration espoused by the [foundation] provide an independent spur to innovation in the data centre sector."

As well as Kao in Europe, the OCP is

also working with an unnamed data centre operator in the US.

In a separate announcement made earlier, Openreach has now installed two fully diverse fibre spines at *London One*. According to Kao, *Openreach EAD (Ethernet Access Direct)* allows customers to link their external sites directly via point to point connections to the data centre, enabling them to build and extend their networks.

Kao adds that these services are provided to wholesale and colocation providers, offering dedicated fibre links and high bandwidth services up to 10Gbps, and with the capability to access 200 Ethernet communication providers. ■

CITIC Telecom CPC claims SD-WAN "breakthrough"

CITIC Telecom CPC claims to have launched a "unique" SD-WAN platform to boost European business network.

Hong Kong-based CITIC CPC provides ICT and managed services to markets in Asia, Europe and America. Its network is said to include more than 140 PoPs, more than 45 cloud service and data centres, as well as two security operations centres. The company established a European subsidiary after acquiring Dutch firm Linx Telecommunications earlier last year.

CITIC CPC reckons its new *TrueCONNECT* technology offers more flexible, open and

cloud-based WAN technologies. It says the platform virtualises the topology of enterprise network infrastructure, integrating multiple access technologies (including private WANs, mobile networks, and internet links) into a single active-active hybrid WAN. It says this can be easily orchestrated, while maintaining "excellent" QoS and network resilience.

The company claims that compared to traditionally routed enterprise WAN architecture, its system offers "breakthrough" flexibility, security, efficiency and management ease.

TrueCONNECT uses a 'single box'

with each customer site only requiring one network device that is fully managed by CITIC CPC's 24x7 teams. The company says users can easily monitor their WANs via a management portal, while its team handles daily maintenance, troubleshooting, and other administrative concerns.

CITIC CPC adds that *TrueCONNECT* can also be combined with its *TrueCONNECT Accelerator* managed WAN optimisation services to further increase WAN throughput effectively and economically, with "even greater" bandwidth utilisation and application performance. ■



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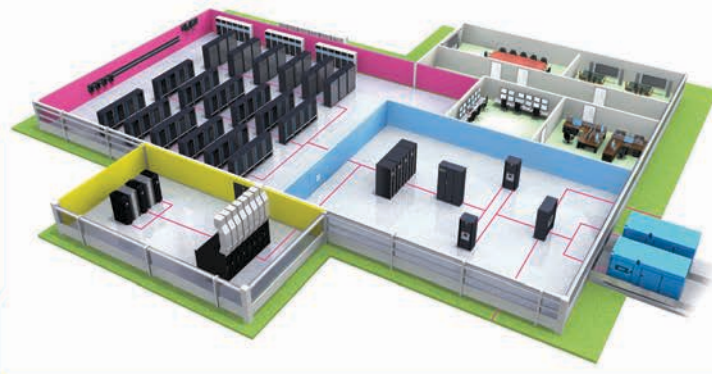
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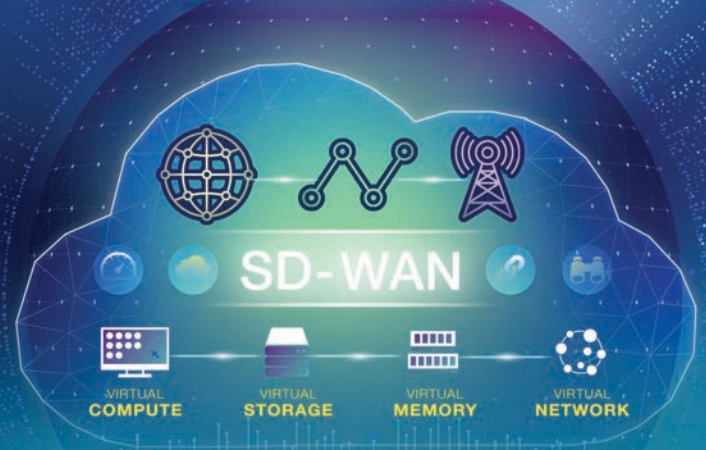
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AI will help government distinguish emotions in digital content

All UK government organisations now have access to a cloud service which is said to establish a new approach to privacy and security on the social web.

After being awarded all 10 G-Cloud frameworks, web science company FlyingBinary has released the *Artificial Emotional Intelligence* service to users of the government's digital marketplace. The firm will deploy EMRAY's *EMOTION_AI* engine to help 39,000 government organisations better understand the dynamics of emotions on the social web and in the mass media space.

Headquartered in the Netherlands, EMRAYS describes itself as a "software company that teaches machines to feel a wide range of sensory data". Michiel Maandag, the company's co-founder and CMO, says: "Our technology predicts the natural, unbiased emotional response to any digital content."

Running on the latest NVIDIA GPUs, EMRAYS says its engine detects more than 20 distinct emotions in any digital content. It claims this helps companies

and governmental organisations measure and understand how people feel about any topic, ranging from companies and brands to people and concepts.

FlyingBinary says its *Artificial Emotional Intelligence* G-Cloud service will equip European businesses and government bodies to understand client and citizen emotions as preparation for a post-Brexit world. By using the service, it reckons important topics such as immigration, the strategic direction of healthcare services, and wider societal issues will be better understood.

"Our G-Cloud service provides a new approach to trust for all organisations on the web in a GDPR regulated marketplace," says FlyingBinary co-founder and CEO Dr. Jacqui Taylor.

The company adds that its G-Cloud services leverage the new GDPR regulation to create new trust models on the web.

Based in the UK, FlyingBinary is one of the 100 GovTech companies recognised for the transformation of UK government services. ■

Seeing through multiple cloud environments with ThousandEyes

Organisations using multiple cloud environments now have the ability to measure and visualise app and network-layer performance metrics on a cloud-to-cloud, internet-to-cloud and inter-region basis.

With the release of its *Network Intelligence* service, ThousandEyes says organisations will be able to monitor cloud-based applications and services using any combination of *Amazon Web Services (AWS)*, *Microsoft Azure* and *Google Cloud Platform (GCP)*.

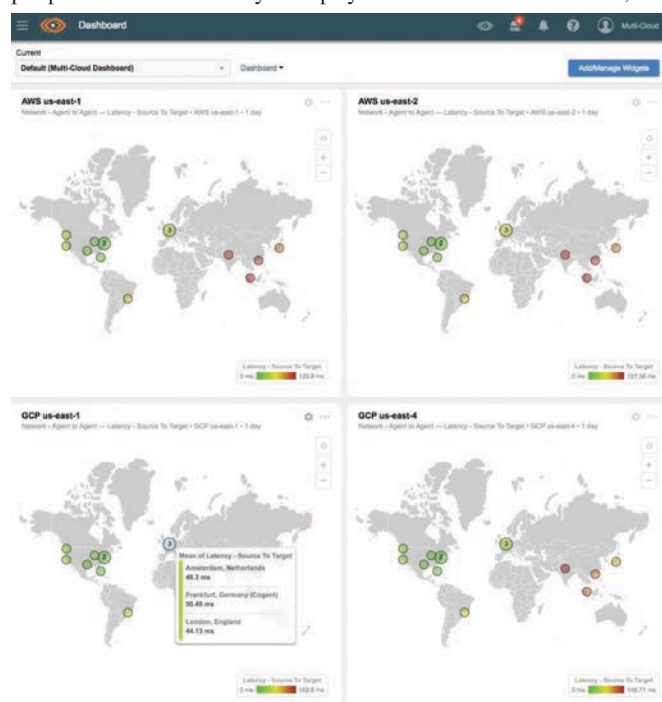
"Companies gain immediate and comprehensive visibility into every service delivery path in a multi-cloud environment, allowing them to overcome the complex operational challenges of multi-cloud deployments, accelerate cloud adoption and deliver superior digital experiences," claims the firm.

ThousandEyes says the platform includes pre-provisioned and easy-to-deploy IaaS

vantage points, including 15 AWS regions, 15 GCP regions and 30 Azure regions, as well as agent-to-agent tests between cloud agents. It says this provides the ability for IT teams to measure inter-region, hybrid and inter-cloud performance, map network paths and monitor connectivity between a combination of on-premises and cloud data centres.

Nick Kephart, senior director of product management at ThousandEyes, believes that without visibility into every path that applications and services travel across on the internet, enterprises are putting "blind faith" in the complex chain of service providers involved in delivering their services.

"They're actively risking their end user experience and its impact on revenue, brand reputation and employee productivity, and this issue is only compounded in a multi-cloud environment," says Kephart. ■



ThousandEyes says it provides the ability for IT teams to measure inter-region, hybrid and inter-cloud performance.

THE IoT CONNECTION

News & developments from the world of the Internet of Things. This month, we look at the manufacturing sector.



Research shows that manufacturers consider the role of software and IT in products as one of the top three factors affecting their businesses.

Smart products to add up to \$685bn to manufacturing

The global manufacturing industry could expect to see between \$519bn and \$685bn in value-added revenue by 2020 through the development and sale of smart, connected devices.

That's according to a new report by Capgemini's Digital Transformation Institute. Its researchers surveyed 1,000 senior executives from global manufacturing organisations across Italy, India, China, Sweden, Netherlands, Germany, France, UK and US.

Manufacturers estimate that close to 50 per cent of their products will be smart and connected by 2020, a 32 percentage point increase from 2014. Eighteen per cent plan to stop manufacturing products altogether and move to a service-based business model.

Capgemini points out that a move in this direction will make the shift to a service-based model a business imperative and will require enhanced capabilities. It says that while digital investment has increased substantially since 2014, few manufacturers have been able to scale their efforts.

Around 50 per cent aim to spend more than €100m in product lifecycle management platforms and digital solutions in the next two years, while the proportion of IT budget earmarked for maintaining legacy systems has dropped significantly, from 76 per cent in 2014 to 55 per cent in 2017.

But around 66 per cent of survey respondents acknowledged that they constantly face two competing priorities: accelerating time-to-market by maintaining continuous product innovation and development of legacy products versus investing in smart, connected products.

Capgemini says its research shows that manufacturers consider the role of software and IT in products as one of the top three factors affecting their businesses, along with maintaining digital continuity and shifting from product to service-based business models.

It also says that if manufacturers are to capitalise on the smart, connected product opportunities, they will also need to improve on their IT and software skills competencies.

According to the report, 86 per cent of 'novices' do not have the sufficient availability, within their current capabilities, for data management; 95 per cent have insufficient skills for app design and 94 per cent for AI.

The firm adds that manufacturers will also need to capitalise on the data generated by connected products in their transition to selling services. It says usage of data from connected products, as well as customer feedback from social channels, is increasingly replacing traditional market surveys to fuel product and service innovation. Despite this, the report reveals that only a quarter are using data to deliver actionable insights for product innovation.

Rittal implements 'Industry 4.0' production

IT infrastructure specialist Rittal says it is currently building a "state-of-the-art" centre for manufacturing large enclosures based on so-called 'Industry 4.0' principles.

While work at the company's Rittershausen plant in Germany is ongoing, the company is also installing new, high-tech production lines for its new VX25 large enclosure, at a total cost of €120m.

'Industry 4.0', also known as the fourth industrial revolution, is the result of accelerated advancements in digitisation technologies. AI, machine learning, automation, IoT, etc., are all part of the next phase of a transition that experts says will fundamentally change the way we live and work by weaving technology into every sphere of life.

Rittal says it is gearing up its production for Industry 4.0 through consistent digitisation of processes and fully automated profiling, welding and panel manufacturing units.

"Our goal is to establish the world's most modern centre for manufacturing large enclosures," says Carsten Röttchen, MD international production at Rittal. "With the increasing digitisation called for by Industry 4.0, we will be automating further sub-processes, increasing data consistency and integrating the production process into a completely digitised value chain through a manufacturing execution system."

The plant already featured a high degree of automation in its sub-processes. Rittal says the new improvements include knowledge-based systems that are constantly evolving through data networking and analysis. It says this will enable the detection of trends in real-time by means of continuous target-to-actual comparisons of the production machines and statistical processes.

As a result, the firm reckons interference factors can be avoided before they occur and tolerances can be safeguarded in order to achieve the high quality demands of the process. In addition, predictive maintenance data is used to improve the technical availability of the production facilities.

The first units for the new VX25 large enclosure system, such as the fully automated panel lines for mounting plates, as well as the profiling and welding systems, have already been installed. When completed in 2020, the new production facility will have three profiling systems, each 70 metres in length. Rittal says this means that the VX25's horizontal and vertical frame sections will be manufactured in one process.

The volume production lines also have fully automatic welding systems. Thirty-one robots will ensure that the transport and welding processes run reliably within the plant. Rittal says they will also guarantee quality standards for the VX25.

Rittal also plans to reorganise and expand its Chinese and US sites, focusing on digital transformation, and getting them ready for the future.



The firm says 31 robots will guarantee quality standards for its new VX25 enclosure system.



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When communications are critical

Reliable and robust networks are literally a matter of life and death for the emergency services.

Giving dispatchers 'eyes' on the emergency scene

Control room operators are under immense pressure to question 999 callers to ascertain what's happening, where and what resources are required – and to do this as quickly as possible.

To support the emergency services, Capita has helped develop a system that allows 999 callers with smart devices to securely send live-streamed footage of incidents to control rooms.

At the end of 2016, in collaboration with Capita, West Midlands Fire and Rescue Service (WMFRS) launched *999eye*, a smartphone solution that enables 999 callers, with compatible mobile devices, to securely send live footage or images of incidents to emergency service control rooms.

It works by sending, with the 999 caller's permission, a text message to their smartphone containing a URL. Once

clicked, a one-use-only live stream is established that allows footage or images to be sent directly to the control room. GPS coordinates are also delivered, helping to pinpoint the exact location of an incident.

According to Capita, the live images offer instant 'on-scene eyes' that help operators to better assess the scenario and select the appropriate resources to dispatch.

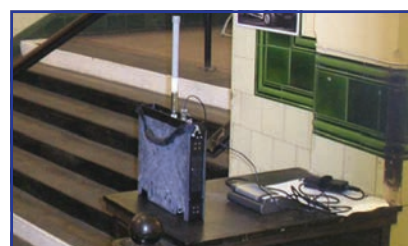
West Midlands Fire Service worked on the prototype but needed help to put its vision into action. Capita said its team provided the technological expertise to ensure the software was secure and wouldn't expose the department's emergency systems to risk. It was also able to provide the crucial reliability needed across networks.

Capita then helped WMFRS to embed *999eye* into its main mobilisation system, further streamlining operations and improving efficiency. People in need of help still call 999 as normal, and there is no change to how firefighters are then mobilised based on the information given.

After pilot studies in 2016, WMFRS went fully live with the app in May 2017. In the first month, Capita says 50 members of the public used the service to send images of ongoing emergencies.

999eye is now helping operators in Staffordshire and West Midlands Fire Control ensure the most appropriate resources are sent to incidents. The app has already allowed control room staff to re-

assess if the initial response is appropriate, deliver further information to responding crews or assess that no resource is needed to be sent. Capita says all of this is thanks to the ability to have remote eyes on scene.



Tube station critical comms system deployed in "minutes"

Almost a year after the devastating terrorist attacks that took place in London on 7 July 2005, Rajant Corporation took part in a critical communications technical demonstration. The goal was to stream video from a tube tunnel back to the surface, and Rajant says its system beat other competitors, streaming video back topside within 15 minutes of starting.

Partnering with Anvil Technologies, PrimeTech UK, and Trilogy Communications, Rajant deployed a broadband network that brought interoperable LMR (land mobile radio) communications, internet access and streaming video to the platform at Aldwych tube station, six storeys underground.

Rajant provided its *BreadCrumb* mesh networking units which built a self-forming, self-healing broadband network from the street to the platform and all points between. PrimeTech's satellite truck provided worldwide access to information and simulated command and control facilities. Trilogy's *Mercury* IP interoperable LMR systems provided the capability not only for UHF and VHF radios to interoperate, but also to work on the platform where no radio signal previously existed.

Rajant says the *BreadCrumb* network was deployed in minutes, thanks to a "highly advanced" meshing algorithm which needs no administration to self form and begins working in less than sixty seconds from installation. A *BreadCrumb* XL was used to build the link to a satellite truck parked a street away and was the start of the network inside Aldwych station. Two *Rajant SE* units with magnetic mount antennas for rapid deployment were then hung from light fixtures inside the station.

The network was also extended to the lowest level by two *ME* units which operated down a lift shaft forming redundant links to the bottom. Here, additional *SE* units were deployed to the platform, creating what Rajant described as a "seamless" broadband network from satellite link to platform.

As part of the demo, Anvil's flashlight camera streamed video of a simulated suspect package on the platform to observers in the lobby or anywhere in the world.

Rajant adds that one of the most exciting capabilities was the deployment of Trilogy's *Mercury* IP interoperable LMR system. By connecting a pair of man-portable units (one at the station's street-level ticket hall and one at the bottom) via the *BreadCrumb* network, the company says it was able to support interoperable UHF and VHF radio usage throughout the entire area, including the platform deep underground.

Firefighters put out network not-spots with SD-WAN

Essex County Fire and Rescue Service (ECFRS) is one of the UK's largest fire and rescue organisations, employing around 1,295 firefighters on constant standby to deal with fires, accidents, explosions, severe weather and other hazards. It also employs some 46 control personnel and 266 support staff across its central service headquarters at Kelvedon in Braintree, six other administrative sites, and 51 fire stations.

ECFRS is said to be very forward-thinking in its use of new technology, and last year it made the decision to install a state-of-the-art mobilising system for its new control room. At any one time, the service has around 350 concurrent users based across more than 50 sites, and its computer systems are heavily virtualised. Microsoft servers with an MPLS network connect all locations to the new purpose-built call centre at Kelvedon.

ECFRS has two Incident Command Units (ICU) based at Basildon and Clacton. In the event of a major incident, these can be sent to the location of the emergency to provide communications for the officers in charge to coordinate the rescue efforts. The vehicles are equipped with all the technology required to manage communications for a major incident and need to provide 100 per cent uptime.

A Vector Command Support System with a server is used in each ICU linking to a server back at headquarters. The two units each carry a 3G modem on board, plus a satellite modem and a Wi-Fi connection, as well as the relay switches between these different networks. However, 3G coverage can be patchy at best, and for many incidents there is no 3G connection at all.

ECFRS' IT team therefore started to look at SD-WAN as a possible way forward to overcome these problems. John White, the organisation's ICT communications manager, said: "Having heard about Talari through a conversation with the sales manager from our systems integrator Teneo, I became curious to learn how SD-WAN appliances would work in the mobile ICUs."

White says that after realising Talari's system might be able to find the fastest route across the network and increase the bandwidth available, he decided to test whether the connections to the ICUs would be better with the vendor's SD-WAN *Adaptive Private Networking* appliances on board.

Testing began with the installation of the vendor's SD-WAN platform in a vehicle together with four 3G modems, one on each of the Vodafone, O2, Three and EE networks. The ICU was then driven around the countryside, and White's team discovered a marked improvement.

After the Talari appliances were purchased and installed in both units, along with extra 3G modems, the links became far more reliable, and significantly faster.



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Stulz UK and Transtherm keep their cool on NGD expansion

When data centre superpower Next Generation Data (NGD) began the 100,000 square foot, ground floor expansion of its high security data centre in Newport, they relied on trusted supply chain partners Stulz UK and Transtherm Cooling Industries to deliver a substantial package of temperature management and plant cooling technology.

Renowned for its industry leading 16-week build-out programmes, NGD, and funding partner Infravia Capital Partners, demand not only quality systems in the construction of their sites, but product design and logistical flexibility from their supply chain partners, in order to maintain such strict project timescales.

With an ultimate capacity of over 22,000 racks and 750,000 square feet, NGD's Tier 3+ data centre is the biggest data centre in Europe and serves some of the world's leading companies, including global telecommunications provider BT and computer manufacturer IBM.

Known for providing large organisations with bespoke data halls constructed to the highest standards, NGD's South Wales campus is one of the most efficient data centres in Europe with impressively low Power Usage Effectiveness ratings (PUE) – a data centre specific measurement of total power consumption.

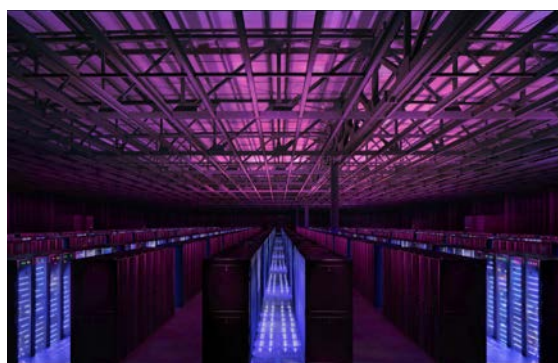
Having secured additional contracts with a number of Fortune 500 companies worth £125 million over the next five years, NGD has developed the capacity to respond at a rapid speed in delivering the private and shared campus space required to fulfil the exacting needs of their world-class customers.

For this particular expansion project, NGD specified 114 data centre specific GE Hybrid Cooling Systems from leading manufacturer Stulz UK, plus a combination of 26 high performance horizontal and VEE air blast coolers and pump sets from industrial cooling technology specialist, Transtherm, to manage the inside air temperature of the new campus expansion.

Phil Smith, NGD's Construction Director, comments on the company's industry-leading build-out timescales:

"Responding to global market opportunities is an important part of data centre best practice standards and our 16-week build-out programme allows us to lead from the helm when it comes to meeting demand, on time.

"Completing a build of such scale and complexity within just four months requires more than 500 construction workers to be permanently on site. To keep things moving at the right pace, suppliers are required to adjust the design and build of their products in accordance to the build schedule and deliver them just in time for installation to prevent costly delays to NGD and our local contracting firms. The solution provided by Stulz and Transtherm is a great example of how data centres can work with trusted, reliable and dedicated supply chain partners."



A three-part delivery solution

As long-term suppliers to NGD, both Stulz UK and Transtherm understood the importance of just-in-time deliveries so that the new air conditioning system did not impact the build speed on site. With a usual lead time of eight weeks for its GE Hybrid technology, Stulz UK set about devising suitable production alternations which would enable them to deliver their equipment within NGD's rapid build programme.

Mark Vojkovic, Sales Manager for Stulz UK, explains: "Specified for installation into the floor of the new campus expansion, we altered the manufacturing process of our GE hybrid units to enable us to deliver the technology in two halves. First to be delivered was the fan bases, which were installed onto their stands during the earlier stages of the build, just in time for the construction of the suspended floor. Later in the build programme, between weeks 10 and 12, Stulz UK delivered the upper coil sections of the air conditioning units and Transtherm delivered, installed and commissioned their equipment on the outside of the building."

Tim Bound, Director for Transtherm added: "Supplying a data centre superpower like NGD requires a reliable and creative supply chain solution which can not only work in tandem to deliver the most efficient product packages, but also communicate effectively to deliver products from multiple manufacturing sites 'just-in-time' in order to maintain their industry leading build-out times. It's vital on projects of this size that manufacturing partners can see the bigger picture and adjust their own project parameters to suit.

"In this instance, NGD had 500 construction workers on site each day, working to an industry leading deadline. It was imperative that Stulz UK and Transtherm were appreciative of the on-site complexities so that we could deliver and install our plant with minimal disruption.

"This project is a real testament to how Stulz UK and Transtherm can combine their technologies, engineering know-how and logistical capacity to deliver a substantial project, within potentially restrictive time and installation constraints."



The technology in focus

The Stulz GE system utilises outdoor air for free-cooling in cooler months when the outside ambient air temperature is below 20°C, with indirect transfer via glycol water solution maintaining the vapour seal integrity of the data centre.

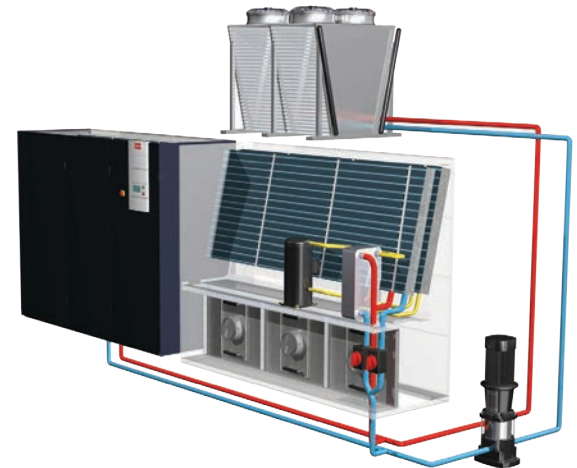
The indoor unit has two cooling components, a direct expansion (DX) cooling coil and a free cooling coil. In warmer months when the external ambient temperature is above 20°C, the system operates as a water-cooled DX system and the refrigeration compressor rejects heat into the water via a plate heat exchange (PHX) condenser. The water is pumped to the Transtherm air blast cooler where it is cooled, and the heat rejected to air.

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In cooler months below 20°C external ambient temperature, the system automatically switches to free-cooling mode, where dry cooler fans are allowed to run and cool the water to approximately 5°C above ambient temperature before it is pumped through the free cooling coil. In these cooler months dependant on water temperature and/or heatload demands, the water can be used in "Mixed Mode". In this mode the water is directed through both proportionally controlled valves and enables proportional free cooling and water-cooled DX cooling to work together.

Crucially, 25% Ethylene glycol is added to water purely as an antifreeze to prevent the dry cooler from freezing when the outdoor ambient temperature is below zero.



A partnership approach

Stulz UK has specified Transtherm's leading air blast cooling technology as part of its packaged air-conditioning solution for around 10 years.

Mark Vojkovic continues: "Transtherm's air blast coolers and pump sets complete our data centre offering by fulfilling our requirement for outside plant which is efficient, reliable and manufactured to the highest standard. Their engineering knowledge is unparalleled and the attention to detail and design flexibility they apply to every project matches the service we always aspire to give our customers."

Situated around the periphery of the building and on its gantries, Transtherm's 26 VEE air blast coolers are fitted with ERP Directive ready fans and deliver significant noise reduction when compared to other market leading alternatives, in accordance with BS EN 13487:2003.

Tim Bound concludes:

"Stulz UK and Transtherm are proud to be part of NGD's continued expansion plans as they move at speed to meet market opportunities within their sector. This most recent expansion showcases the many benefits of established supply chain relationships, especially on campus build-outs which need to deliver unrivalled quality on the tightest deadlines."

For more information visit www.stulz.co.uk



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Connecting with the law



A year after the EU's Construction Products Regulation came into force, how can you tell if you're on the right side of the law when it comes to data networking cables? RAHIEL NASIR finds out.

The EU's Construction Products Regulation (CPR) came into full effect on 1 July 2017. Regulation 305/2011 lays down harmonised conditions for the marketing of construction products. It states that construction works as a whole and in their separate parts must be fit for their intended use, taking into account in particular the health and safety of persons involved throughout the life cycle of the works.

Those "separate parts" include power, control and communication cables which, amongst other things, must follow stringent guidelines in terms of fire and smoke safety.

So what exactly is the CPR and how does it apply to IT cables?

Paul Cave, technical product manager with Excel Networking Solutions, says one year on from the regulation becoming a legal requirement, one thing that is clear is that there are two legal responsibilities involved.

"Firstly, the manufacturers must ensure that their products are compliant with the legislation by being clearly labelled. This denotes the cable's Euro classification and should be accompanied with a Declaration of Performance (DOP) following the requisite level of testing.

Secondly, the End User must instruct the contractor to install the relevant Euroclass to meet the country and project requirements. Regardless of Brexit, the UK has committed to maintain CPR within the UK.

Cave adds that the new regulation replaced the earlier Construction Products Directive which, together with subsequent regulation, has been around for more than 20 years and is related to 'life safety'. "It came about due to events such as the Summerland disaster in the Isle of Man in 1973 when 50 people died and over 80 were injured; and when 31 people died and over 100 were injured during the Kings Cross fire in 1987, to mention just two examples in the UK. Cables of all forms – both power and communications – are just the latest to be added to a long list of other products such as doors and wall coverings."

According to Tony Benn, senior pre-sales technical manager with Leviton, high volumes of cabling have been recognised as fire and smoke safety risks, as they are one of the main methods that fire can rapidly spread through a building. He says: "Correctly controlling and regulating installed cabling can potentially save lives and minimise building damage in the event of a fire."

Paul Hunter, technical director at iDaC Solutions (formerly Datwyler), agrees and says smoke represents the greatest risk in the event of a fire. "Most people killed

in a fire die from smoke poisoning. The less smoke generated, the higher are the chances of rescue and survival. This is why modern cables feature minimal to low smoke generation.

"By reducing corrosiveness (acidity) of the flue gases to a minimum – such as in halogen-free cables, for example – fire damage and down times after a fire are significantly reduced. Another important aspect is to produce as few flaming droplets as possible, which can reduce fire propagation in horizontally laid cable systems."

Kevan Sproston has spent more than 30 years in the data networking and telecoms market, and has held a variety of senior positions with big name firms such as METZ, Brand-Rex, Reichle & De-Massari, amongst others. He says the latest CPR was created to remove the ambiguity of the former fire performance declaration by manufacturers, such as low smoke, LSZH/LSOH (low smoke zero halogen), etc., which did not indicate the actual fire performance of the cable jacket and subsequent differences in quality and performance.

"CPR EN305/2011 applies to "All" cables that are fixed within the building structure, such as power, speaker and control, and therefore includes the IT cabling. The regulation is only focused on the fire performance of the jacketing material, and not the construction of the cable which could, for example, have fibre or copper cores (or indeed both) and other constituent elements."

Thus, and as Sproston and others point out, the regulation defines a cable jacket's reaction to fire and its associated performance in the production of smoke, acidic gases and the production of molten flaming droplet material over time, when installed in a "fixed" condition/form into a building or civil engineering works.

"This means that patch cords and power connection leads are outside the regulation as they are not considered to

be permanently fixed.

"Also, all cables manufactured before the 1 July 2017 are effectively already in the market and can still be installed in new projects. This is until all such products have been replaced in the supply chain by new ones. However, and knowing this information, installers do have the choice to use new products and ignore/refuse the use of such materials."

Benn adds to this by saying that while manufacturers cannot 'place on the market' cable unless it has been tested, certified, and marked in accordance with the CPR, non CE marked cable may still be sold if it is already on the market. "That means that there is still some non CPR cable in stock being sold and installed today. This would not be compliant to the UK BS6701 standard."

Existing cables within buildings as well as those used as part of system circuit integrity are not affected by the new regulation. But don't such cables pose as much of a potential fire and smoke hazard as IT cables?

Hunter says safety objectives in the event of fire are clearly defined in many European countries. These state that the spread of fire and smoke must be prevented and it must be possible to rescue humans and animals.

"As a matter of principle, therefore, the use of 'easily inflammable' building products is prohibited in all classes of building," says Hunter. "Existing standard cables installed within buildings should have at least passed a flammability test and be to LSOH/LSZH level. In the language of the new European construction product classification, they display 'acceptable fire behaviour', which would be consistent with 'class Eca'."

Here, Andrew Black, senior product manager at Fujikura Europe, explains that all power, control and communication cables which includes IT data cables, are classified according to their reaction to fire. This ranges from A (least reaction to fire) to F (highest reaction to fire). 'Ca' is added after

the classification letter to refer to cable.

"The class of performance from B1 to D have three additional classifications (s, d, a)," says Black. "These are for smoke (s1a, s1b, s1, s2 or s3), flaming droplets (d0, d1 or d2), and acid gas (a1, a2 or a3)."

The lower the letter and/or number, the greater the cable's tolerance (*also see table below*).

Sproston notes that all reputable cabling manufacturers before 1 July 2017 were, in most cases, producing products that would achieve at least an 'Eca' level of fire performance with their low smoke, LSOH, etc., designated cables.

Leviton's Benn is among many of the experts we spoke to who point out that what the CPR does not do is mandate where to use what type of cable to be permanently installed. This is left to each member state. "For telecommunications, the requirement is defined within BS6701 which was published in November 2017 and mandates that all 'Installation Cables' shall be Cca S1b D2 A2. BS6701 is also referenced from BS7671, the IET wiring regulations 18th edition."

Checking for compliancy

As a result of CPR EN305/201, manufacturers supplying cables into the European market must now:

- Define level of performance in terms of fire
- Obtain third-party testing by a notified body
- Draw up a Declaration of Performance (DoP)
- Place the new CE label on cable packing

Sproston says if a cable is compliant, it must have the CPR Regulated Identification label attached to the box, reel or drum. The label's content has been agreed as part of the legislation and must include the manufacturer's DoP unique number which enables clear CE marking. "This cannot be displayed unless the cable has been independently verified through testing by an approved notified testing house (such as BASEC, which in turn must have its registration number on the label) that has tested the cable to the regulation parameters and certifies its findings of actual fire performance of the cable versus the manufacturer's DoP (such as Eca, for example)."

Sproston says good practise dictates that manufacturers should make all CPR information available on request, or directly available as standard via their website with links to individual product data sheets and actual DoP certificates.

Meanwhile, Fujikura's Black says the EU has defined the test methods and third-party test laboratories for reaction to fire, but not

Simplified performance table					
Euroclass	Reaction to fire parameters	Additional classifications and parameters			
		Smoke Production	Acidity	Flaming Droplets	
Aca	Outside the scope of data cables (i.e. mineral insulated)				
B1ca	Heat Release (EN 50399) (30kW Flame Source) (Flame Spread 1.75m)	Flame Spread (EN 60332-1) (H≤ 425mm)	s1a, s1b, s2, s3 (EN 50399 & EN 61034-2)	a1, a2, a3 (EN 60754- 2)	d0, d1, d2 (EN 50399)
B2ca	Heat Release (EN 50399) (20.5kW Flame Source) (Flame Spread 1. 5m)				
Cca	Heat Release (EN 50399) (20.5kW Flame Source) (Flame Spread 2.0m)				
Dca	Heat Release(EN 50399) (20.5kW Flame Source)				
Eca	None specified				
Fca	None specified	None specified			
TABLE COURTESY OF LEVIT					

TABLE COURTESY OF LEVITON

the Euroclass required – this is optional for EU members to incorporate into their local regulation. For CPR, the building owner must provide the class of cable required for the particular application. As stated above, guidance for telecoms cables in the UK is provided by BS 6701 and BS 8492:2016 Code of Practice.

In terms of the CE label, this includes the manufacturer's name, unique product code, reference number of third-party test lab, DoP number and Euroclass of the cable. "The DoP is essential documentation to put into the project file," says Black. "It is the manufacturer's declaration of performance for reaction to fire for the cable."

While cable manufacturers are legally required to publish a DoP and clearly label their product packaging as mentioned above, there is no requirement for them to actually print anything on the cable. However, Cave

says that Excel Networking Solutions along with number of other manufacturers have made the decision to print information, such as the Euroclass and the DoP number, on the outer sheath of the cable for complete transparency for the customer.

"It is important to note that it is not possible to put the CE mark on the cable jacket, as there is a minimum size requirement. The Euroclass and DoP number [therefore] provide enough information to be able to affirm that a cable is compliant to CPR."

Robert Sporn, product manager FO cables at HUBER+SUHNER, says that when his company manufactures cables for installation in buildings, the products always fall under CPR in Europe, so its existing and new cables are all affected.

"Specifically, all indoor cables which are fix installed in a building for IT are

CPR compliant – for example, cables designed for data centres. The cables undergo a series of tests, depending on the classifications to be achieved. For example cables that have been tested under EN 50399 (Integrated Fire Test), EN 60332-1-2 (Flame Propagation), EN 61034-2 (Smoke Density) and EN 60754-2 (Acidity) may be compliant depending on type of location of the installation."

In addition to providing the required labelling for CPR, Benn says Leviton is colour coding its copper cabling. "The copper cable jackets are coloured to clearly identify the level of Euroclass cable. This colour code is already being embraced by major European countries. We also provide thorough documentation, including cable datasheets dedicated for each EuroClassification, and label QR codes that link to the cable's DoP."

Other requirements

So what other regulations govern IT cables as used in enterprise organisations? For example, do the issues of EMC, RoHS, REACH (Registration, Evaluation, Authorisation and restriction of Chemicals – European Regulation 1907/2006), etc., still need to be checked for?

Of course, none of the applicable EU regulations are less significant since the start of CPR, and RoHS and REACH are compulsorily to all products in contrast to CPR which is compulsorily to all products used in construction.

While the DoP certificate will display details about any dangerous substances contained within the cable, RoHS and REACH will still need to be taken into account, so asking for separate documentation and evidence of conformity on top of the DoP is recommended.

But Cave points out that these are not regulations that end users need to be too worried about. "These are requirements for the manufacturers to follow and have been part of the requirements on us for some time. Providing that the end user can gain the generic RoHS and Reach declarations from the manufacturer, they will be covered. Excel Networking Solutions publishes all its Declaration of Performance certificates on its website.

As well as looking for declarations, certificates and labels on packaging, are there any tests and tools that network managers could use themselves to check for cable compliances?

Sporn says: "It varies depending on the respective country. The UK could embrace tools used by other countries, such as in Switzerland where cantonal fire insurance defines which minimum classes must be used for which object. In Germany, the ZVEI [the country's Electrical and Electronic Manufacturers' Association] created proposals of classes which should be used for the respective building."

Sproston says the key points to note when specifying a cable to be installed is its primary function followed by the considered implication of associated risks to other potential applicable regulations. "For example, the need for chemical,

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"Consultants, designers and specifiers are free to select any class of product to be installed, ensuring their decision and professional opinion reflect that they are 'fit for purpose to the applicable regulations'."

*Kevan Sproston,
Consultant*

UV or water-resistant cable for a specific environment would suggest a cable jacket of polyurethane (PUR) which is designed to resist UV, chemical splash and water contact.

"However, regarding CPR regulation, this cable may be classified as 'Fca', the worst category of compliance as its primary function is chemical/UV resistance and not fire performance.

"This would imply that the specifier (which may be the end user, consultant or installer), as the qualified or experienced professional, would have the appropriate knowledge to ensure the correct product will be specified and used."

In the event of any question with regard to specification by any link in the supply/installation chain, Sproston says it would perhaps be best practise for all concerned parties to request a written statement from the appropriate specifier which says they have specifically requested the use of a particular cable, as it is fit for purpose in this installation, even though it may strictly be contradictory to current BSI recommendations. "At this point, any legal obligation would pass to the specifier and not the other parties involved."

Penalties for non-compliance

Excel Networking's Cave says penalties for non-compliance in the UK are the responsibility of Trading Standards.

"If they find that the product has not actually reached the claimed classification, they could impose fines or seize products. At present, it is tending to be almost self-policing as the notified bodies (accredited test laboratories) are paying very particular attention as to what is being claimed about products they are testing and providing reports on."

However, and as already stated, there are currently no legal requirements for any specific class of cable to be used in an installation, as this decision is left entirely to individual EU member states. According to Sproston, application of the regulation is therefore subject to interpretation.

"Consultants, designers and specifiers are free to select any class of product to be installed, ensuring their decision and professional opinion reflect that they are 'fit for purpose to the applicable regulations'."

Of course, and as Sproston goes on to point out, in the event of loss of life after a fire, and if the cabling infrastructure has been identified or deemed to have been a contributory factor, all concerned with the installation could face legal implications resulting in a jail sentence.

The government department responsible for the CPR in the UK is the Ministry of Housing, Communities and Local Government (MHCLG). So far, it has not made any changes to the Building Regulations of 2010 regarding the reaction to fire for cables from a legal perspective, but Sproston reckons this may change with the ongoing enquiries following the Grenfell Tower tragedy.

In the meantime, the British Standards Institution, Fibreoptic Industry Association, the British Cables Association (BCA), are among some of the industry bodies that have stated recommendations regarding CPR for UK cable installations.

For instance, in a statement issued on its website in March, the BCA highlighted the "well-respected" and long standing BS 7671 IET Wiring Regulations and said this may be used to demonstrate compliance with Part P (electrical safety – dwellings) of the Building Regulations.

"The current (17th edition) of BS 7671 pre-dates the introduction of CPR for cables but includes requirements for reaction to fire based on the long-established international test methods covering flame propagation and smoke release," said the association. "In practice, because some of the CPR test methods correspond to pre-existing ones, the use of cables with a minimum class of Eca is de-facto recognised."

The BCA also said that whilst BS 7671 covers the entire generality of installations up to an including 1kV AC, some specialised areas may need extra guidance. Here, it referred to another British standard that has recently been amended, BS 6701.

"This standard relates to telecommunication cable systems and can thus embrace situations, e.g. vertical pathways (risers), where very large bundles of cables may be tightly installed in places and where fire safety or evacuation is key. The new amendment gives class Cca for what are defined as 'installation cables', and class Eca for all other telecommunication cables."

But the BCA emphasised that both BS 7671 and BS 6701 are not legal requirements according to MHCLG. Sproston reinforces this point when he says: "These are simply recommendations and not legally binding, referencing key standards, documents and content that should be used as a means of understanding the implication of attaining compliance to the CPR."

He says organisations such as the BCA as well as the others he mentioned, are industry respected bodies whose recommendations should not be ignored in any decision, and can be used as design criteria for new cabling installations and as foundation information from which compliant specification can be made.

Cave's says it is important to be standards



"If they find that the product has not actually reached the claimed classification, they could impose fines or seize products."

*Paul Cave,
Technical product manager, Excel
Networking Solutions*

compliant, and says Excel advocates following BS6701 which stipulates cables should meet Euroclass Cca, slb, d2, a2 at a minimum. As a final point, he adds: "This may be hearsay, but I have heard from one consultant that the insurance underwriters on a project he was working on insisted that if the proposal wasn't standards compliant, they would look to 'adjust' the insurance premiums accordingly." You have been warned. ■

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Can't stand the heat?

How to keep your IT estate cool. Plus a five-point checklist from ADAM YARRINGTON to ensure your chosen chiller is ErP compliant.



The Ecodesign of Energy related Products Directive (ErP) is a European wide framework put in place to help the EU achieve its 2020 target to lower carbon emissions, increase energy efficiency, and increase the share of renewable energies, each by a margin of 20 per cent.

While manufacturers have to ensure that their products comply with the directive, the end user who is purchasing the equipment is also affected. They will need to ensure that they are carrying out due diligence to ensure compliance with the regulatory requirements to keep running costs as low as possible.

Use the five checks below to help you make sure that you're purchasing an ErP compliant chiller:

1. Don't just rely on CE marking

CE marking is a certification mark that indicates conformity with health, safety and environmental protection standards for products sold within the European Economic Area. Although it does encompass ErP compliance, further documentation should be legally made available to you to show this – see next point.

2. Request the mandatory technical data

It is a legal requirement for chiller manufacturers to provide you with supporting technical information to show their compliance. This includes availability of published energy performance data in their instruction manuals and free access websites.

3. Ensure the new metrics are quoted

The Ecodesign directive has brought in two new standardised performance metrics; Seasonal Space Cooling Energy Efficiency (SSCEE) for comfort cooling applications; and Seasonal Energy Performance Ratio (SEPR) for process cooling. Through the use of these standardised metrics, users are able to make better and more informed decisions when comparing products from different manufacturers.

4. Check the correct compliance metrics are applicable

As discussed above, different compliance metrics have to be met depending on the chiller's particular application. You can determine the metric details that must be attained in order to be Ecodesign compliant using the flowchart available at <https://tinyurl.com/ycw6dyor>. This will help to guide you to the applicable process and shows, for example, that when an application has dual purpose the comfort metric, SSCEE, takes priority.

5. Incorporate ERP metrics into your specs For clarity, it is always wise to consider incorporating Ecodesign metrics into your specifications. By clarifying the purpose and operating temperature of your units and corresponding metrics you can be confident that the relevant checks will be carried out and quality will be ensured.

Adam Yarrington is product development director at Airedale. The above article was first published at www.airedale.com in July 2018. Reproduced with kind permission.

Daikin's *DZ Series* oil-free water-cooled inverter chillers are fitted with centrifugal compressors which utilise frictionless magnetic bearings for oil-free operation. There's therefore no need for an oil management system which is said to result in increased reliability and reduced maintenance.

The firm says the absence of oil in the refrigerant circuit delivers higher heat exchanger performance compared to traditional oiled centrifugal chillers.

It claims the models in its new line-up combine high efficiency compressors and heat exchangers to achieve an "impressive" performance. The designs also incorporate integrated variable-frequency drives and high-speed direct drive technology.

The models in the *DZ Series* are compact

and have a footprint that is 32 per cent smaller compared to their predecessors. Daikin says they provide a low noise solution with dedicated compressor soundproof cabinets to ensure "outstanding flexibility" to match any application.



EkkoSense has launched what it says is the world's first IoT-enabled wireless temperature and humidity sensor for data centres.

The wireless *EkkoSensor* features a local display of the measured temperature and relative humidity values, with additional screens that can be cycled through to show temperature profiles over the last hour, 24 hours and seven days for quick thermal assessment on site.

All temperature and humidity data is encrypted with 128-bit AES encryption before transmission to an *EkkoHub* wireless data receiver for forwarding to EkkoSense's cloud-based *EkkoSoft* 3D visualisation and analysis software.

The company says the battery-powered sensors are entirely self-contained, provide a direct sensor-to-hub link to keep the radio network simple, and deliver predictable levels of battery life and performance.

EkkoSense says its *EkkoSensor* technology enables the creation of a

much more granular mesh of networked sensors that accurately capture not just temperatures, but also energy usage, heat outputs and airflows.

According to the firm, the introduction of its ultra-low cost wireless IoT sensors removes the barriers to high spatial resolution, enabling rack-level sensing and making "true data centre thermal optimisation a reality for operations of all sizes".



Munters says the *SyCool Indirect*

ThermoSyphon Cooling (ITC) system provides an efficient cooling solution for any data centre where access to a suitable water supply may be limited, expensive or unreliable.

The patent-pending system uses waste heat from the data centre and a combination of a gravity and syphon effect. Munters says this drives a refrigeration cycle capable of operating without pumps or compressors to provide "remarkable" levels of energy efficiency.

With zero water required, the firm adds *SyCool ITC* also eliminates the potential risk of contamination from air pollutants, as there is no outside air gaining access to the data hall.

The system is initially launched as the *P250*, a packaged air handling unit which has been designed in such a way that multiple units can be installed side-by-side with no space between, and all service access from the ends.



STULZ has added chillers with a stepless capacity control (EC compressor) and an output from 20 to 100kW to its portfolio.

The company says its *CyberCool Indoor* series has been specially engineered to precisely adapt to low or fluctuating heat loads. With a maximised temperature range from 4° to 18°C at the chilled water outlet, the models in the new line-up are said to be suitable for a broad range of applications including data centres where, according to STULZ, they allow planners maximum freedom for individual project specifications and customer requirements.

A choice of three systems are available in the *CyberCool Indoor* range: air-cooled with external condenser, water-cooled, or the *TCO-Leader*. The latter features indirect free cooling and intelligent mode switching (compressor cooling, free cooling or mixed mode).

All three systems can be equipped with on/off compressors or with new energy-saving EC compressors as standard. STULZ

says the EC versions contain two complete, redundant refrigerant circuits and ensure high efficiency in partial load. It adds that the system reacts quickly to dynamic load fluctuations avoiding on/off cycling to guarantee an extended equipment life.



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Alliance aims to advance cyber security profession

A wide ranging group of industry organisations have formed an alliance to advance the development of the UK's cyber security profession.

The alliance brings together a number of established councils, chartered professional and certification bodies, academics and industry representative groups. Founding members include several organisations operating under a Royal Charter who are able to grant chartered status within their discipline.

Their overall aim is to provide clarity around the skills, competences and career pathways within the cyber security profession. The initial objective is to support the National Cyber Security Strategy and provide a focal point for advising policy, including the intent to recognise professionals through chartered status.

Alliance members offer a range of established expertise and disciplines, and each is said to have a leadership role in underpinning UK resilience in the digital environment. They currently include: BCS, The Chartered Institute for IT; Chartered Institute of Personnel and Development; the Chartered Society of Forensic Sciences; CREST; the Engineering Council; IAAC; The Institution of Analysts and Programmers; IET; Institute of Information Security Professionals; Institute of Measurement and Control; ISACA; (ISC)2; techUK; the Security Institute; and The Worshipful Company of Information Technologists.

Among some of the common objectives, members have agreed to provide a forum for benchmarking and shared standards for cyber security professional excellence; enable the development of the specialist skills and capabilities that will allow the UK to keep pace with rapidly evolving cyber risks; and enable a self-sustaining pipeline of talent providing the skills to meet our national needs.

Academy aims to make IT security less technical

What's claimed to be the world's first dedicated cyber security academy for business communities has been launched.

The London-based Global Cyber Academy (GCA) offers diploma qualifications and UK-accredited education programmes that include *Global Security Management*, *Crisis Management* and *Identifying and Mitigating the Effects of Terrorism*. Courses on blockchain and AI will be available from January 2019.

Monthly and bi-monthly live training events for executives have been launched in four GCA hubs: London, Prague, Kuala Lumpur and Singapore. The programmes are said to be totally focused on the business environment, and include case studies, videos and assessments. They are delivered online, in class or mixed with flying faculty. Training has already taken place in Malaysia, Oman and Bahrain which, says the GCA, are all key UK export markets.

GCA founder and CEO Richard Bingley believes cyber security training should be about the "mass digital upskilling" of employees, so that staff have a structured approach and a baseline competency.

He adds: "Existing IT security training programmes are far too technical, too belaboured with rote-learning, and lack the emphasis on human behaviour and realistic physical security management approaches; whilst existing physical security training programmes are far too rushed and non-technical. We feel that our approach closes the blind-spots on both sides of the subject vehicle – 'cyber' and 'security'."

IN BRIEF...

■ HellermannTyton has set up the ACADEMY to share and pass on knowledge. As well as offering training about its product range, it will also run seminars, training and hands-on workshops where products are not just studied but also sampled, installed and tested. The ACADEMY is

primarily aimed at electrical engineers, technicians, wholesale distribution partners and quality assurance managers. HellermannTyton adds that it has colleagues at 25 locations around the world ready to receive customer requests for specific use cases, and deliver tailored knowledge about cable management. www.hellermanntyton.com/company/academy

■ Mimecast has acquired Ataata, a cyber security training and awareness platform designed to reduce human error in the workplace. The company, which specialises in email and data security, says the acquisition will allow customers to measure cyber risk training effectiveness by converting behaviour observations into actionable risk metrics for security professionals. Mimecast claims the addition

of security awareness training and risk scoring and analysis strengthens its cyber resilience for email capabilities.

■ DCPRO's foundation level Data Centre Design Awareness course encompasses the basic principles of design, and features modules on all the major sub-systems of a mission critical facility and their interdependencies including power, cooling, compute and network. Delegates will learn to apply best practice recommendations to site selection and building layout requirements, including resiliency level and space requirement. DCPRO says they will gain a "good understanding" of relevant standards, regulations, definitions and metrics that apply to the industry. The next dates for the three-day, classroom-based course in London are in September, November and December. www.dcprouk.co.uk/training



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