

networking

FIXED & WIRELESS NETWORKS FOR ENTERPRISE USERS

Expanded space for data

SAC looks to "limitless" scalability to solve ever-growing data needs
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Transforming teaching

Some of the latest deployments in the education sector.

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The right storage solution

Don't be in the dark about the best choice for your storage needs.

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No strings attached

APs and routers designed to help make set up and use easier.

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Networks set to expand in UK as Ofcom paves way for 5G

O2 emerged as the big winner in Ofcom's spectrum sale for 4G and future 5G services.

Five companies were approved to take part in the auction to bid for two frequency bands: 2.3GHz and 3.4GHz.

2.3GHz can be used by current mobiles and will help improve 4G capacity. The reserve price for each 2.3GHz lot was £10m, and there were four lots of spectrum (each of 10MHz). 3.4GHz is one of the bands earmarked for 5G and will become usable in around a year or so. The reserve for each 3.4GHz lot was £1m and there were thirty lots, each of 5MHz.

The principal stage of the auction ended in early April and raised more than £1.35bn for the government, and increases the airwaves available for mobile devices by almost one third.

Telefónica, the Spanish operator which owns O2, gained all 40MHz of 2.3GHz spectrum available at a cost of £205,896,000, and 40MHz of 3.4GHz spectrum at a cost of £317,720,000.

Other operators who also won a share of 3.4GHz frequencies include EE which paid £302,592,000 for 40MHz; Hutchison 3G UK which paid £151,296,000 for 20MHz; and Vodafone Limited which won 50MHz for £378,240,000.

Airspan Spectrum Holdings – which is backed by Japanese mobile and tech firm SoftBank (which bought Arm in 2016) as well as other investors including US wireless infrastructure specialist Airspan – did not gain spectrum in either band.

Ofcom placed two caps on the spectrum any one operator can hold to protect



A week after winning the largest amount of 5G spectrum, Vodafone claimed a milestone in UK telecoms with the first test of 3.4GHz frequencies. Jade Knight, head of network deployment for the South, and Peter Rodriguez, head of 5G Delivery, are seen here using a drone to check on the status of the 5G mobile site in Newbury without having to turn the service off.

competition in the market. The first meant that EE, which already holds the most spectrum, was not able to bid for any frequencies in the 2.3GHz band. The second is an overall cap on how much a single operator can hold after the auction.

According to Kester Mann, principle analyst, operators at CCS Insight, the overall spend was higher than expected and reflects a hugely competitive sale. While noting the positive wins for O2

and EE, he said the auction results will do little to improve Three's "precarious" market position.

"Having campaigned tirelessly for more favourable conditions, it was surprising not to see it spend more. Three remains sub-scale and without fixed-line assets in a market gradually moving towards multiplay services, and [the] outcome will do little to dampen doubts over its long-term future."

(continued on page 2)

MONITOR HEALTHCARE I.T. THE EASY WAY



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**PRTG
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Industry partners sign joint charter on cyber security

Nine major companies have signed what they say is the first joint charter for greater cyber security. Dubbed the "Charter of Trust", the agreement calls for binding rules and standards to build trust in cyber security and further advance digitalisation.

Initiated by Siemens, the charter was signed at the Munich Security Conference held earlier this year. Other signatories include Airbus, Allianz, Daimler Group, IBM, NXP, SGS and Deutsche Telekom.

The charter outlines 10 cyber security action areas where the public and private sectors must both become active. It calls for responsibility to be assumed at the highest levels of government and business, with the introduction of a dedicated ministry in governments and a CISO at companies.

It also calls for businesses to establish mandatory, independent third-party certification for critical infrastructure and solutions. The partners said this is particularly crucial where "dangerous" situations can arise, such as with autonomous vehicles or robots, which will interact directly with humans during production processes.

The charter also states that in the future, data protection functions should be preconfigured as a part of technologies, and cyber security regulations should be incorporated into free trade agreements.

Furthermore, the signatories said greater efforts should be made to foster an understanding of cyber security through training and continuing education as well as international initiatives.

Vodafone UK prepares for 5G

(continued from page 1)

Vodafone secured the largest slice of 5G spectrum and spent the most for these frequencies. "This re-enforces its renewed long-term commitment to the UK following several years in the doldrums," said Mann. "It still has plenty to do to turn its fortunes around, but today's news will boost long-term efforts to regain lost momentum."

Within a week of securing its spectrum, Vodafone announced that it had become the UK's first operator to test 5G frequencies across a live network. The firm used a site at its Manchester contact centre, which houses around 1,000 customer service employees, and its offices in Newbury in Berkshire.

During the test, Vodafone deployed Massive MIMO (also known as Active Antennae) technology combined with 3.4GHz spectrum running over its core 4G network. This technology is a key building block for 5G as a system with multiple antennae able to send and receive data more efficiently, boosting capacity where lots of people are simultaneously connecting to the network.

Vodafone UK chief executive Nick Jeffery said the test was just the beginning: "We are now preparing our network for 5G while continuing to increase the capacity and extend the reach of our existing 4G network."

Meanwhile, Mann said attention now moves to Ofcom's sale of 700MHz spectrum that could be auctioned as soon as next year. These frequencies could also be used for 5G and mobile broadband as they offer wide-area coverage. ■

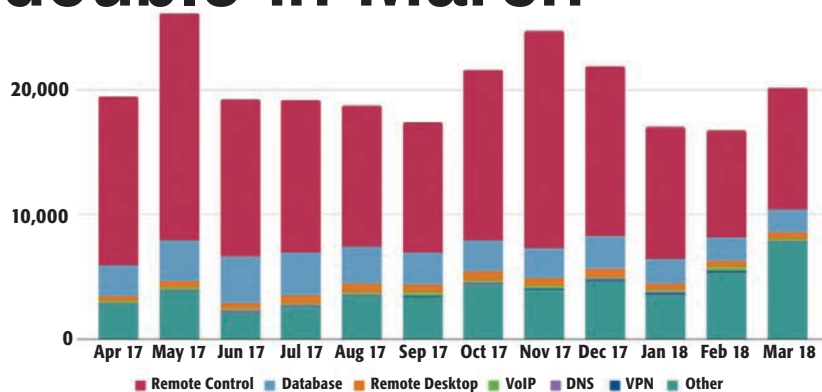
European cyber attacks on UK businesses double in March

The volume of internet-borne cyber attacks on UK businesses originating from European locations doubled in March. Hastings-based ISP Beaming identified 8,983 attacks for the month which it says is much more than the 4,469 seen in February and 3,365 in January.

According to the company, the attacks represented 44 per cent of all cyber assaults on UK businesses, and made Europe the prime source of attacks for the first time. More than a third (35 per cent) of the attacks in March originated from locations in the Czech Republic while a further 12 per cent were said to be from Russian sources.

Beaming says the first quarter of 2018 was the busiest start to a year for cyber attacks on UK businesses since it began analysing threats in 2016. It says companies were subjected to 53,981 individual cyber attacks during the first three months of the year, approximately 600 a day, compared to 474 attempts a day each in IQ17.

Eleven per cent of attacks sought to compromise databases, while 54 per cent targeted IoT connected devices such as



Average volume of cyber attacks per business.

SOURCE: BEAMING

building control systems and networked security cameras. Beaming believes hackers target these devices to help launch DDoS attacks at a later stage.

Over the last two years, Beaming says it has analysed cyber attacks in real-time targeting thousands of UK-based businesses to better understand their nature and origin. The ISP then uses the results of its analysis to help organisations improve their security.

"We've witnessed an unusually high level of cyber attack activity originating from Europe since the start of March, and this continued into the beginning of April," says Sonia Blizzard, MD, Beaming. "Company firewalls and IT security systems are under constant pressure from malicious computer scripts and we've had to constantly update our network-level protections to keep up with new and evolving threats." ■

SD-WAN turbocharges Office 365 for City & Guilds

SD-WAN technology has enabled the City & Guilds Group (C&GG) to achieve faster Office 365 application response times leading to an increase in productivity and better collaboration between users in Europe and Asia-Pacific.

London-headquartered C&GG works with education providers, governments and major corporations to help shape and support skills development for employers in more than 100 countries.

Its global team members primarily collaborate using Office 365 applications but many remote users were struggling to access the group's Microsoft platform which is hosted in Dublin. The company's CIO Alan Crawford says: "Our users in Wellington, New Zealand, saw delays between 10-15 seconds opening a standard Word document, which obviously was impacting productivity. We knew this would be a barrier to further collaboration and helping us reach our revenue goals."

He says the group tried connecting to

local Microsoft clouds but that did not solve the latency and application performance problems for users in the APAC.

After the deployment of Aryaka's global SD-WAN, it's claimed C&GG's users saw dramatic improvements in application performance and could suddenly collaborate using Office 365 in real-time. "Our colleagues around the world were able to load their files to SharePoint three times faster," says Crawford. "We experienced a 200x reduction in the time to open 10MB SharePoint files, and saw three times improvement in the time taken to upload 10MB files to OneDrive."

Aryaka adds that because it delivers SD-WAN as a service, C&GG was able to deploy the solution in an hour. ■

E-band hits Lincoln streets for smart city surveillance network

City of Lincoln Council has deployed Siklu's mmWave (millimetre wave) radios as part of its Vision 2020 smart city project.

Announced last year, Vision 2020 is a three-year plan to improve the city's infrastructure, roadways and parks, and includes investing in a new transportation hub.

Previously, Lincoln's CCTV system was transmitted on traditional analogue fibre circuits which, according to Siklu, were both costly and bandwidth limiting. The new radios will be used to provide 14 high capacity wireless data links in support of a modern IP networked CCTV system, primarily to provide surveillance for the city and public spaces.


The council worked with Essex-based integrator Videcom Security to install the wireless network. The project involved deploying Siklu's mmWave EtherHaul E-band radios to deliver 1Gbps full duplex capacity for the main backhaul resilient ring. Utilising Siklu's Layer 2 switch functionality to deliver resiliency and diversity routing, it's claimed the network provides mission critical uptime with automatic failover.




Lincoln Council upgraded 300 CCTV cameras to a new wireless high definition 4K UHD system after a £400,000 investment.

E-band frequencies include 70-80GHz and are said to offer wide spectrum and channels that enable very high capacities. Videcom also installed Siklu's 60GHz V-band frequency radios to connect 300 cameras at street level, including city wide traffic cameras.


The company adds that spare transmission bandwidth is allowing Lincoln to plan for smart services as well as Wi-Fi connectivity and car park data sharing. ■






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THE WORLD ACCORDING TO...

John Jainschigg, content strategy lead, Opsview

IT hardware forecasts for 2018: hopeful hype or realistic reasoning?

Confidence in the growth of IT hardware in 2018 may be justified – to a certain extent at least. Talk of the perfect conditions for big-brand IT hardware have materialised recently, but what are these ideal conditions and how accurate are these claims?

It's hard to dispute that more cash is now available for private cloud investment: it has become freed up by, for example, lower US corporate taxes, new incentives to repatriate cash sheltered from taxation overseas, and a weaker US dollar against a background of overall economic growth.

This positive outlook is not just restricted to the US. In China, for example, global IT hardware spending is also predicted to grow at six per cent, with similar growth projected for India and Japan.

Meanwhile, reduced enterprise spending for on-premise hardware has been said to reflect not so much a desire to abandon private data centres, but to pause further capital investment while figuring out where public cloud fits into enterprise IT strategy.

At this point, say pundits, CIOs understand what public clouds are good for, and know they can be expensive if applied to solve all the cloud-computing needs of a

very large enterprise. They also know that private cloud solutions have evolved to offer more of a public cloud experience: that they're useful for more than just hosting predictable, commoditised applications more cheaply than Amazon.

Major cloud infrastructure and solution providers have stepped up with products that turn on-premises and public clouds into a continuous IaaS substrate, managed through single, familiar panes of glass. Though typically costly, these solutions provide full lifecycle management of the cloud framework, and can deliver the full spectrum of hybrid cloud benefits, including seamless workload portability and bursting.

Similarly conceived, more open solutions handle lifecycle management, while deploying compute/worker nodes in private data centres and on popular public cloud platforms. These too enable single-pane-of-glass management and portability of workloads between private and public-cloud regions.

With all these trends, recent predictions of a boom for enterprise data centre hardware seem credible. Whether this will happen in 2018 or somewhat later remains an open question.

Protecting critical IT infrastructure with out-of-band technology

Fire detection and security manufacturer Protec Fire Detection is using Opengear solutions to deliver a robust IT continuity strategy and streamline remote access across multiple sites.

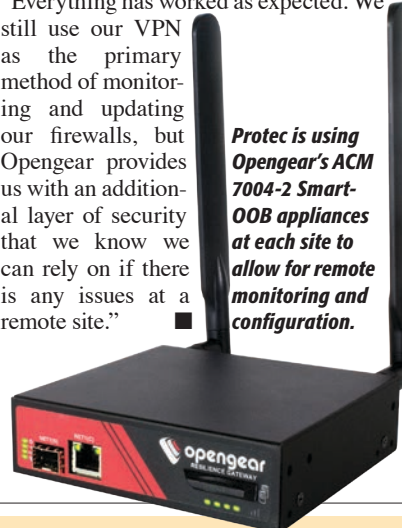
Since being founded in 1968, Protec now has six sites nationwide and more than a thousand staff. Its IT infrastructure features around 50 servers delivering critical service management, CRM, ERP and CAD applications in support of its product and services portfolio that includes planning and design, optional installation and project management, through to commissioning and maintenance.

To further strengthen its ability to guard against loss of critical IT systems, Protec wanted to enhance its remote access and remediation capabilities. The firm's IT manager Vinod Varkey says: "We already use a combination of leased lines and VPN to connect all our sites, but we wanted to improve our business continuity position through the implementation of an out-of-band [OOB] remote access solution that would automatically failover if we had any issues with WAN connections."

Based on advice from its IT solutions partner Flow Communications, Protec selected Opengear's ACM 7004-2 Smart-

OOB appliances with four serial Cisco Straight pinout, external power, 2GbE and LTE cellular capability. The appliances are connected to firewalls at each site to allow for remote monitoring and configuration using the *Opengear Lighthouse 5* centralised management platform.

Varkey says the installation process was relatively straightforward and that his team conducted a number of failover tests to the out-of-band 4G connection. "Everything has worked as expected. We still use our VPN as the primary method of monitoring and updating our firewalls, but Opengear provides us with an additional layer of security that we know we can rely on if there is any issues at a remote site."



Protec is using Opengear's ACM 7004-2 Smart-OOB appliances at each site to allow for remote monitoring and configuration.

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Traditional sourcing in EMEA slumps as GDPR deadline approaches

The EMEA sourcing market slumped in the first quarter of 2018, according to the latest data from the Information Services Group (ISG). This is despite the region's market seeing a rebound at the end of last year (see *News, Jan 2018 issue*).

ISG blames the decline on European enterprises focusing attention and discretionary spending on preparations for the GDPR which comes into force on 25 May.

The firm measures commercial outsourcing contracts with annual contract value (ACV) of €4m. In its latest index, ISG reveals that EMEA's first-quarter combined market ACV of €3bn was down 20 per cent compared with the same period last year. It says poor showings in Europe's largest markets, the UK and DACH, were a "drag" on regional performance.

Although traditional sourcing ACV in the UK rose three per cent sequentially in the first quarter, ISG says it was down more than 60 per cent compared with the same period in 2017. It adds that the number of contracts for the period held steady, although contract values were much smaller. 2018 yielded the lowest first-quarter ACV since 2010.

DACH had its third consecutive quarter of poor performance and its ACV of €438 million was its lowest quarterly total since the beginning of 2014. The reduced appetite

for traditional sourcing in DACH has been evident in each of the last three quarters, impacted by a shift in focus to GDPR and the implementation of new technologies.

"There is a degree of uncertainty in the European market that continues to depress demand for outsourcing," says Steve Hall, partner and president, ISG EMEA. "The focus on preparations for the sweeping GDPR data-privacy regulation and the impact this will have on business relationships is front of mind for many organisations and has led to a shift in priorities."

Hall adds that the recent demise of UK construction firm Carillion and the financial uncertainty of some high-profile outsourcing companies has been extensively reported and has added a new degree of caution in the market.

While traditional sourcing stumbled, as-a-service soared, rising 40 per cent over last year. As-a-service ACV of €1.4bn was the highest recorded in the region and represented 46 per cent of the combined regional market.

Looking at the remainder of the year, Hall says that while traditional sourcing may have a "bumpy" ride in coming quarters, the trend toward as-a-service will continue to accelerate across Europe through 2018. ■

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NCSC advises telecoms sector against using ZTE

GCHQ's National Cyber Security Centre (NCSC) has warned about the potential use of ZTE equipment and services in the UK's telecoms infrastructure environment. In mid-April, the NCSC said its technical director, Dr. Ian Levy, is writing to telecoms organisations with advice about using the Chinese state-owned company's products. "It is entirely appropriate and part of NCSC's duty to highlight potential risks to the UK's national security and provide advice based on our technical expertise," said Levy. "NCSC assess that the national security risks arising from the use of ZTE equipment or services within the context of the existing UK telecommunications infrastructure cannot be mitigated." ■

Voneus acquires Sky-Way

Rural community broadband specialist Voneus says it has acquired Sky-Way, the Herefordshire-headquartered wireless infrastructure installation specialist. Voneus says the deal will enable it to increase the rate at which it can roll out wireless broadband networks in rural communities across the UK, as well as boost its ability to deliver round-the-clock customer support. Sky-Way is approved by both BDUK and the Welsh Government to install broadband infrastructure. Since securing £5.3m of funding in June 2017 to enable its expansion, Voneus has also acquired wireless internet service providers Cotswold Wireless and SugarNet, as well as Lde Smart Alarms. ■

£250,000 upgrade for Voip Unlimited

Voip Unlimited (VU) is claiming a major success after investing £250,000 in its UK network. The company, which has developed the *Voip Exchange* cloud telephony platform, says its engineers worked extensively during nights to increase the network's backplane switching speed to 20Tbps. It adds that it is now offering 10Gbps standard copper ports scaling up to 100Gbps fibre with "increased resilience", and that "smarter" inter-data centre rings have also been enabled. According to VU, the investment and improved inter-data centre network topology separates it from legacy network providers who can often postpone network improvements for "fear of downtime". ■

SAC expands data storage space

Satellite Applications Catapult (SAC) has replaced its legacy NAS with Clouidian's *HyperStore* object storage system and *HyperFile* NAS controller.

Harwell-based SAC helps organisations make use of and benefit from satellite technologies. It was established in 2013 by Innovate UK (formerly the Technology Strategy Board) as part of a network of emerging technology centres to help drive economic growth.

With future predicated data acquisition rates expecting to double from 5PB of unstructured data to an estimated 10PB per year, SAC needed a new solution to deal with its sprawling and costly NAS device estate. It initially installed four Clouidian appliances which, it's claimed, saved almost 75 per cent on data centre footprint by reducing the rack space needed for this capacity from 60U to just 16U.

The vendor says the move also gave SAC "limitless" scalability to cope with future storage growth. It says *HyperStore* allows the company to expand its storage as needed



by adding nodes that are automatically incorporated into its storage pool. According to Clouidian, the *HyperFile* NAS controller deployed with *HyperStore* provides the functionality of traditional enterprise NAS, including seamless connectivity with *Windows*- and *Linux*-based applications.

Furthermore, SAC's support costs are said to have come down by 40 per cent,

while savings on power and cooling alone have nearly offset the cost of the new storage hardware.

This latest deployment for Clouidian follows on from its recent acquisition of Infinity Storage announced earlier this year (see *News*, Mar 2018). ■

Choosing the right storage solution – feature pp10-13.

Armstrong Bell to supply schools with hosted PBX

Midlands-based Armstrong Bell has been awarded several contracts to supply local schools with hosted voice and PBX fixed phone systems.

Depending on their technology requirements, the schools will receive a mix of either a traditional or a hosted voice PBX. Armstrong Bell says this gives schools the use of telecoms systems without the need to invest in equipment. The call platform is hosted and customers connect via IP to the service provider for their voice service.

Schools that will use the company's telecoms services include The Blue Coat School in Edgbaston, South Bromsgrove High School, and Severndale Academy in Shrewsbury. Armstrong Bell adds that by using the hosted VoIP systems, the schools will benefit from a network that is able to continue working through extreme weather conditions.

The company's CEO Will Copley says: "Most businesses are going over to hosted voice for easier support – it's cheaper

overall and when we meet customers we can demonstrate that to them. They immediately see the cost benefits of hosted – hosted voice never goes out of date."

But he goes on to point out that what is good for business doesn't necessarily suit all sectors. "Some schools are just not suited for hosted voice. For example, one of our schools wants to have PBX – they wanted less cover over seven years – and we also have an expertise in PBX going back many years." ■

Distiller no longer over a barrel due to unreliable Wi-Fi

Glenmorangie is said to have "substantially" enhanced and extended its corporate Wi-Fi network following a connectivity project undertaken with enterprise IT specialist Systal Technology Solutions.

Owned by Louis Vuitton Moët Hennessy, Glenmorangie is the world-famous whisky distillery. It has its global headquarters in Edinburgh, with further offices and a bottling facility in nearby Livingston, West Lothian. Around 200 people work across the company's various locations.

When the business was experiencing a range of connectivity and reliability issues with its wireless network, it consulted Systal, which has its head office just outside Glasgow. Its engineers carried out



Systal says it improved wireless network stability, latency, resilience and coverage across the Glenmorangie's entire estate.

wireless measurements which mapped out a comprehensive picture of existing Wi-Fi performance and a framework for improvement. They conducted a signal

propagation review, created a new RF template, made changes to roaming and configuration settings, and installed new APs from Cisco's *Aironet 2700 Series* to enable all users to connect to the network at similar speeds. All this is said to have resulted in up to three times greater availability of 1.3Gbps rates across Glenmorangie's Wi-Fi entire infrastructure, as well as a reduction in instances of latency.

It's claimed the company's warehouse team's efficiency has now increased, and that members of staff in the head office are also experiencing improved Wi-Fi connectivity, enabling them to focus on both immediate tasks and longer-term business strategy without network disruption. ■

MONITOR HEALTHCARE I.T. THE EASY WAY



What if downtime could impact lives?

Can you remember the last time you saw a physical copy of an X-Ray, or a hard copy of your medical records?

Digital transformation in hospitals started a few years ago with digital screens replacing print-outs, and ultrasound images projected on the wall, or sent directly to the doctor's tablet.

Whether it's a machine that takes CT scans or X-Rays, a heartbeat sensor, weight scales or a blood pressure machine, these Internet of Things (IoT) devices are constantly communicating with the hospital's network, transmitting important data.

Ensuring that each and every device is running 24/7 is crucial to preventing delays in patient treatment.

Network monitoring has been around for a while, it's nothing new, yet many of the solutions today can't integrate medical devices into their monitoring.

Paessler's PRTG Network Monitor uses DICOM, a standard process for storing and transmitting medical data, to collect data from X-Ray devices, MRTs, ultrasonic and video endoscopies and display it in a unified monitoring view.

HL7 is the most common protocol used to transfer patient data, and with PRTG's native HL7 feature, systems like HIS, RIS and LIMS can also be pulled into the central monitoring view.

Downtime is hard to avoid. Paessler's PRTG Network Monitor is the all-in-one solution that brings together healthcare technology and IT into a unified view to ensure that when downtime does occur, patients are not affected for long.

Read more about Paessler on page 6

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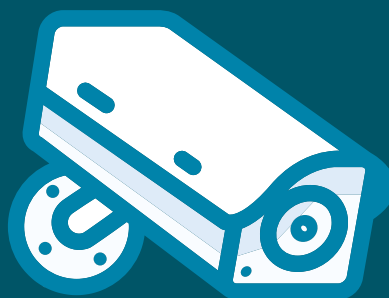
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Germany	84	1	3*
Japan	82.1	2	1
United States	82	3	2
United Kingdom	81.8	4	9
Australia	80.6	5	6
Singapore	80.2	6	7*
Canada	80	7	4*
France	79.6	8	5*
Italy	79	9	8*
Spain	78.4	10	11
Poland	77	11	10
Korea	72.2	12	12

SOURCE: 2018 BSA GLOBAL CLOUD COMPUTING SCORECARD

The UK's ranking improved substantially from ninth to fourth place in the 2018 Scorecard. (*These countries have largely changed rank due to BSA rebalancing its scorecard methodology.)

UK now ranks among top five cloud countries

The UK now ranks fourth out of 24 leading IT economies, according to the 2018 *Global Cloud Computing Scorecard* from BSA – The Software Alliance.

BSA compiles its index after tracking the evolution of the legal and regulatory environment for cloud computing in 24 countries, and asking 72 questions that are relevant to determining readiness for cloud computing.

For this year's scorecard, Germany moved up from its previous third position to take the number one spot away from Japan (see chart above). A small group of nations that have failed to embrace the international approach bring up the rear: Russia, China, Indonesia and Vietnam.

The UK's promotion from ninth to fourth has been driven by a number of factors. BSA says the country's data protection laws are particularly strong, with regular enforcement. However, it adds that businesses are required to register their data sets with the regulator, which seems to be an "unnecessary burden" on business and

may act as a barrier to some cloud services.

The alliance also says the UK is updating its laws to reflect the provisions of the GDPR which comes into force in May despite Brexit. Furthermore, the country is free from internet censorship and filtering, up-to-date laws are in place for e-commerce and electronic signatures, and it is a signatory to the Convention on Cybercrime.

According to BSA, there is significant debate in the UK on the regulation of law enforcement access to data, and some proposals could have a potential negative effect on cloud computing. It also points out that while advanced intellectual property laws are in place and are regularly enforced, there is still a gap in relation to trade secrets protection and enforcement.

BSA is a not-for-profit trade group made up of members of the software industry such as Adobe, IBM, Microsoft, Oracle, SAS, amongst others. The alliance releases its new *Global Cloud Computing Scorecard* every two years. ■

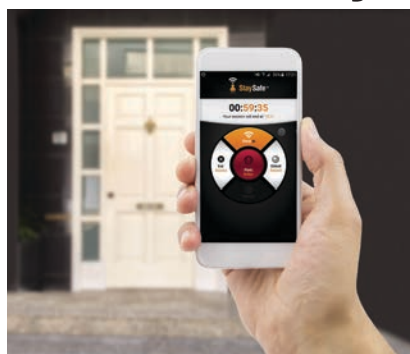
Smartphone app helps housing association monitor staff safety

Aspire Housing is using a smartphone app to monitor the safety of its lone workers when visiting potentially dangerous neighbourhoods.

The Staffordshire-based housing association has 8,500 properties across Newcastle-under-Lyme, Stoke-on-Trent, Stafford and Cheshire. The firm has replaced dedicated safety devices with the *StaySafe* app as it wanted a more up-to-date solution that employees could access via their smartphones, which they already carry every day.

StaySafe also features a cloud-based monitoring service that tracks a lone workers' locations on a real-time map, and alerts their manager if they do not check in within a specified time.

The app works on *iOS* and *Android*, and offers a range of functions including a panic button, working session expiry and low battery warnings, GPS tracking, inactivity and duress alerts. If an employee activates the app's panic button or fails to check in, alerts are automatically triggered on screen and via text and email, enabling Aspire to take immediate action.



The app offers a range of functions including a panic button. If an employee fails to check in, alerts are automatically triggered.

StaySafe CEO Don Cameron says: "Employees in the housing and property sectors can be extremely vulnerable as they are required to visit building sites and empty properties, carry out maintenance work and meet with buyers and tenants, often by themselves. Lone workers can be seen as an easy target – in fact research has shown that in the UK an assault occurs every 35 working minutes." ■

THE IOT CONNECTION

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

IoT to play lead role in protecting agricultural workers – but more skills urgently needed



According to the International Labour Organisation, agriculture is the world's most dangerous industry.

The farm of the future will leverage IoT technologies to create safer working environments and drive down risks to the workforce, according to Inmarsat.

For its *The Future of IoT in Enterprise* study, the UK-based global satellite company interviewed 100 agritech companies from across the world and found that 49 per cent consider improving health and safety as one of their primary motivations for developing IoT solutions. That's ahead of monitoring environmental changes (48 per cent) and identifying efficiency gains and cost saving opportunities (45 per cent).

Citing research from the International Labour Organisation (ILO), Inmarsat says agriculture continues to be the world's most dangerous industry where the rate of fatal accidents remains high. According to ILO estimates, 170,000 agricultural workers are killed each year, and millions more suffer injuries from accidents with machinery or negative long-term health effects from exposure to agrochemicals and pesticides.

Chris Harry-Thomas, director of agritech strategy at Inmarsat Enterprise, says: "Automated systems, enabled by IoT, can reduce risk by removing workers from the most dangerous procedures, such as lifting heavy materials or operating dangerous machinery. Automated machinery can also typically respond

quicker to emergencies, monitoring and stopping equipment before there is a threat to worker safety."

He adds that the industry is also leveraging the IoT through wearable technologies. "These devices, integrated into watches, helmets and clothing, can detect falls and monitor staff health through heart rate and temperature, enabling agricultural businesses to react more quickly to emergencies and bring rapid-response medical attention to injured staff."

Planting seeds for the future

Inmarsat's study also warns that IoT's potential to drive innovation and increased productivity in the agricultural sector is under threat from a lack of skills. It says agritech businesses must "urgently" upskill current employees and embark on recruitment drives to ensure they have the capabilities to deliver the technology.

The survey found that while more than 46 per cent of agritech businesses reported full deployment of IoT solutions and a further 16 per cent have initiated a partial deployment, many currently lack the skills needed to do so effectively. Sixty-five per cent identified a shortfall of the strategic skills needed for the management and delivery of IoT deployments, and more than 50 per cent said they lacked staff with the specific skillsets required. For instance, 55 per cent identified a shortage in cyber security personnel, with analytical and data science skills coming in second in demand at 53 per cent.

"Competing with the likes of Silicon Valley tech companies for skilled staff will be a challenge for the agritech industry," says Harry-Thomas. "But as these businesses look to take on the burden of data security to build market share in the agriculture sector, it is critical that they recruit staff with the capability to do so. [They] must upskill their existing staff and attract new talent if they are to develop successful IoT solutions. However, longer term, the focus needs to be on establishing strategic partnerships with IoT specialists." ■

Keeping health networks healthy

Paessler has launched what it claims is the industry's first comprehensive network monitoring system for the healthcare industry. The company says its *PRTG Network Monitor* is the first such solution to feature sensors designed for the Digital Imaging and Communications in Medicine (DICOM) and Health Level Seven International (HL7) standards used in the sector.

According to the firm, *PRTG* makes it possible to continuously monitor the performance of networks, applications and all connected hardware, in the cloud or in hybrid environments.

With feeds from the more than 200 pre-configured sensors, Paessler says its system's "highly" customisable dashboards reveal real-time intelligence on network performance and health down to granular details such as the temperature and capacity levels of individual servers and devices.

It says the sensors in its platform enable healthcare IT teams to monitor a variety of critical systems and functions. These

include being able to see what is happening across the entire integrated Hospital Information Systems, not only as it relates to the exchange of data, but also the computing resources and devices involved.

Users can also oversee all of the systems and devices integrated with Laboratory Information Management Systems, as well as the data transported between them, including information related to specimen management, testing, analysis, disposal and compliance.

Furthermore, Paessler says all of the systems, hardware and software within radiological and imaging departments and associated workflows can be monitored, as can the Picture Archiving and Communication System (PACS).

With the latter, the firm says *PRTG* monitors the entire PACS, making it possible to ensure that all of the systems required for the secure movement, storage and archiving of images function as they should. This includes workstations used to view and interpret scans. ■

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Bringing education up to speed

Schools and colleges are transforming teaching with the latest technology. Here's how some are tackling the challenges

We're gonna need back-up for the back-up

The University of Winchester caters for around 6,500 students, and over the last decade it has invested heavily in its facilities and infrastructure that included a virtualised IT environment.

In recent years, its existing UPS systems failed without warning, the first sign being fumes coming off the batteries that were used in the devices to protect the Edge IT infrastructure which is there to ensure round-the-clock availability of IT services to students.

The IT team needed to find a new UPS provider as part of a network upgrade. Crucially, the new UPSs needed to offer the ability to monitor the condition of the batteries and provide proactive diagnostics. The key challenge facing the upgrade was that a new UPS in the data

centre would have to integrate with legacy equipment, while other new network solutions needed to be compatible with the university's virtualised environment, managed by VMware's vCenter, and enable better predictability around when maintenance should take place.

Winchester opted to deploy Eaton's *Intelligent Power Management (IPM)* software to support business continuity across its entire estate. This allows the IT team to manage mission critical applications across the network from a virtualisation dashboard. VMs in the network can be shutdown through IPM, with the restarting controlled by vCenter.

From a hardware perspective, Eaton installed 50 of its 5PX single phase 3kVA UPS units across the campus, each providing a runtime of up to 20 minutes in the event of a power failure. The firm also installed two 9SX 5000VA UPSs to support higher power applications at the network edge, and a 50kW 93PM in the university's data centre.

Considering the previous issues, Eaton says its UPS units feature AMB battery management technology that enables proactive diagnostics of battery life, giving the IT team up to 60 days' warning ahead of a battery's end of useful life. It says this is enough time to hot swap the battery

without switching off any IT equipment.

According to Eaton, since implementing IPM, the university has been able to get greater insights into what's happening with its IT suite and at a power level. In fact, the company claims that the UPS units have kept Winchester's IT running on a vast number of occasions, despite tracking more than 1,500 power "events". The proactive diagnostics of the ABM technology also enable the university to plan IT maintenance outside of term time, further increasing uptime.



Phone system saves college thousands a year

When Wiltshire College merged with Salisbury College it grew to four campuses in Chippenham, Lackham, Salisbury, and Trowbridge. Now it has around 10,000 students and 1,000 staff.

Each of the four sites had its own telephone system which the college wanted to replace with a single, 1,000-extension platform that would be robust, simple to install, and easy to administer from a central location. Its requirements included core telephony features, such as call pickup, forwarding, hunt groups, etc., as well as presence, a softphone option, and call logging and reporting.

Furthermore, college ICT support staff would manage the system, so its interface had to enable day-to-day telephony tasks such as adding new extensions, staff relocations, routing rules and voicemail without calling in engineers. Plus, the college wanted the ability to add features later, including on-screen call control, conference calls, call recording, hot-desking, CRM integration and mobile integration.

The tender for the project was won by Reading-based Tri-Lan IT which proposed a Windows-based system from 3CX. Tri-Lan was responsible for all software installation – running on a Microsoft Hyper-V server – and configuration, together with new Patton ISDN-SIP gateways. Meanwhile, the college ICT team carried out the physical rollout of 650 SIP handsets which support features such as PoE, system directory, conference calls, etc. It also accommodates college offices where part-time staff members share a single phone.

Staff can now additionally make calls via Wi-Fi and 3G, and those on the go can now login at multiple locations, including from home. The ICT team uses the 3CX Call Centre Module to view and manage features such as real-time queue strategies, agent statistics, call-back and SLA alerts. They can also manage workflow and track how many staff members are logged into the system at any one time.

Since installation, the college has added 75 more extensions, to make a total of 1,075, and more than 15,000 calls are handled each week. 3CX adds that the

system has helped the college to reduce its phone related IT cost by 70 per cent, saving £70,000 per year.

Students and staff see connection speeds soar

Kimbolton School near Huntingdon in Cambridgeshire is an HMC co-educational day and boarding school with 980 pupils aged 4-18. It is centred on Kimbolton Castle which is set in 120 acres and was bought by the school in 1951.

The school wanted to improve its internet connectivity. Lessons need to be available for download, there is heavy usage of mobile devices, as well as high demand for mixed media streaming. Kimbolton also needed to ensure that boarders have round-the-clock access to online facilities.

Peterborough firm Evolving Networks was set a budget for the initial project and for each successive upgrade.

The company first worked for the school in 2010 when it installed a 4x bonded ADSL connection which delivered around 24Mbps download speed. The school then upgraded to ADSL 2+ when the technology became available in May 2012, and increased download bandwidth to 70Mbps. A third upgrade in January 2014 saw the deployment of an 8x bonded ADSL connection which boosted download speeds to around 125Mbps to support increasing iPad usage by both students and staff.

According to Evolving Networks, this was one of the first ever multi-line connections based only on ADSL technology to breach the 100Mbps threshold, requiring upgrades to the specification of Kimbolton's firewalls to match.

As part of the upgrade to eight ADSL lines, and to increase the resilience in case of hardware failure, the firm implemented VNF on Kimbolton's virtual server infrastructure. This is clustered over two distinct buildings on the campus for high availability – if the first virtual appliance were to fail, the second would take over.

Yet another upgrade saw the school moving to an 8x bonded FTTC connection which delivers more than 400Mbps downloads and around 100Mbps uploads. Evolving Networks said that because of the large site, it could add resilience by using two separate BT cabinets in different locations.

Further upgrades are now being considered, particularly when FTTP is available. Evolving Networks says that its experience shows that schools eventually "max out" whatever bandwidth they are given, and it was the company's policy to take advantage of newly available technology. It also pointed out that a traditional Ethernet leased line was never an option for Kimbolton School because of the cost.



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In the dark about data storage?

Expert vendors such as Micron say there is an ongoing challenge in optimising solution architectures due to the fact that more options are now available for compute, storage and networking. PHOTO: MICRON

Flash. On-premise. Cloud. Hybrid. With a variety of different storage options now available, JAMES HAYES helps enterprise and data centre managers see the light when it comes to making the right choice.

Data centre veterans will recall the days when the specification of data storage provision was a relatively straightforward task. This was the era when storage repositories simply had to soak-up (or back-up) enterprise data on a relatively limited range of device formats. Back then, RAID promised to meet all their data storage needs for the foreseeable future, and ‘silo’ had yet to become a dirty word in the IT lexicon.

Today, beyond that foreseeable future and with a huge range of products/formats available and strategic imperatives for storage strategies to be built around, the optimisation of enterprise data storage proves as much of a challenge as the build and management of any other aspect of critical data centre infrastructure.

“The enterprise storage solutions market is more complex than ever,” says Paul Timms, MD at Buckinghamshire-based IT services specialist MCSA Group. “With ever-increasing options and choices available it’s become a minefield – and hence organisations sometimes delay making hard decisions about their data storage. The upside is that with hypervisors now being widely used, plus the maturity

around software-defined storage (SDS), the hardware vendor becomes less fixed. It’s easier to match-and-mix storage, server and network vendors.”

But with flexibility comes an inevitable degree of complexity as data centres endeavour to achieve performance parity between servers, networks and storage devices, says Doug Rollins, senior technical marketing engineer at US headquartered memory firm Micron. He reckons there is an ongoing challenge

“We have seen vendors launch strategies where we can put pay-per-use models on the customer site, with options to buy and therefore ‘sweat the asset’ at the end of the arrangement.”

Paul Timms,
MD,
MCSA Group

in optimising solution architectures due to the fact that more options are now available for compute, storage and networking. “We see increased interest in reliance on public cloud options, and pre-validated private/hybrid cloud solutions using reference architectures – those from Micron, local partners, for example, or the likes of VMware *Ready Nodes* and Microsoft *Azure Stack*. When faced with

many options, these approved designs can provide a starting point to optimise processing performance across node and network.”

Given the complexities of determining an optimal enterprise storage mix, data centre managers are well-advised to beware of the common pitfalls that the storage decision-making process can fall into. Increasingly, storage strategy is defined by specific needs of critical applications: alignment of storage solution options with those needs constitutes serious study for data centre techies – especially if their facilities are considering a transition to HPC platforms or hyper-converged infrastructures (HCIs) which would result in the adoption of SDS.

“‘Price-per-gigabyte’ used to be how storage was bought,” says Rollins. “Now we must think differently and not use old metrics for new challenges. Start by looking at what basic storage architectures are recommended by the most important applications. Oracle RAC, for example, is most proven on traditional arrays, while open source databases increasingly focus on hyper-converged or scale-out x86 architectures.”



From there, he says IT decision-makers can fine-tune the types of storage they need such as, for example, NVMe (non-volatile memory express) or SATA based on reference architectures and other tools available.

According to MCSA, another common pitfall for organisations is that they misjudge the amount of storage they will actually need, largely because it is hard to plan what the business will require over the next four-to-seven years – a typical storage investment cycle span.

Timms says: “We have seen vendors launch strategies where we can put pay-per-use models on the customer site, with options to buy and therefore ‘sweat the asset’ at the end of the arrangement. We’ve also seen an increase in lease models where customers are more comfortable in spreading the cost of storage solutions over the period of their active life, but [while] ensuring data sovereignty as well as having a choice of hardware and management software.”

He adds that the advent of cloud storage has brought about another change in the way customers can choose to pay for next-generation storage needs.

However, here Mark Scaife, head of cloud practice at Daisy Group, warns managers not to directly compare enterprise IT storage platforms to public cloud storage: “Tried-and-tested SAN or NAS devices still have a place in an on-premise or data centre infrastructure solution. Although their perceived cost-per-GB is higher than most cloud alternatives, there’s still a requirement for blistering IOPS and storage efficiencies that only local devices bring, along with storage protocol choice.”

Meanwhile, Dell EMC believes that the decision to use a public, private or hybrid cloud storage option depends on what an

organisation needs from cloud. Rob Lamb, the company’s CTO and cloud business director, reckons it generally comes down to application/workload requirements, as well as a degree of risk appetite. “If an application is latency-sensitive, then tiering some of its storage into a cloud service may cause operational and user-experience challenges. One benefit of cloud storage is that it’s easily consumed on an as-needed basis. That same ease of expansion can, however, lead to data sprawl and costs can mount quickly.”

Flash the cash?

Despite multiple arguments in flash’s favour, an ongoing thorny area for many data centre leaders is demonstrating quantifiable return on investment on hybrid- or all-flash storage adoption. C-suite executives want proof that this stuff delivers value for money, and that their IT function is not being lured into buying kit that, once installed, cannot be shown to have effected improvements.

US-based Excero, which has created what it describes as a “Software-Defined Block Storage” solution, says IT decision-makers must factor in the impact such technologies will have on the data centre infrastructure as a whole and not just evaluate data storage in isolation. According to Kirill Shoikhet, the firm’s chief architect, widespread adoption of flash in the data centre was seen as a revolution, while the transition in the way flash is accessed – from NVMe to SATA/SAS – is seen as an evolution.

“For example, while an improvement in storage media should, in theory, have a higher impact than an improvement in access protocol, the transition to NVMe is in fact significant: it shifts

system bottleneck locations, and provides separation between architectures created for flash and older architectures adapted for flash usage [usually as a cache extension].”

Shoikhet predicts that this separation will grow when persistent memory becomes mainstream due to changes in the way the storage performance is consumed, i.e., a significant skew toward higher write bandwidth.

For older deployments, Daisy Group’s Scaife points out that it’s a challenge to convince the C-suite on ROI because the ongoing maintenance of traditional SAN/NAS devices gets more expensive year-on-year. Plus, with the power and cooling costs associated with HDD versus more power-efficient and more performant SSD-based/hyper-converged solutions, he reckons it’s a losing battle. “Typically, in an average solution, we are almost at parity in the overall cost of an SSD solution to HDD although the latter does still have the edge in overall capacity density. But this comes with a footprint overhead and enterprises look to cloud to also offset [physical] placement of ‘cold’ storage.”

Shoikhet explains that all-flash arrays (AFAs) provide TCO improvements due to their ability to deliver a much higher read performance, especially random reads, which allows for the consolidation of workloads with a much lower footprint. But he goes on to point out that AFAs’ write-performance is still determined, mostly, by a write cache layer and this allows older storage architectures to compete. “The introduction of persistent memory as a major layer in storage hierarchies will require the flash layer to provide much improved write bandwidth which will change, at the same time, the storage service mix required from this layer.”



“Converged infrastructures bring an inherent rigidity in storage-to-compute and storage-to-network ratios which may – in some cases – impede the maximisation of flash utilisation.”

*Kirill Shoikhet,
Chief architect,
Excero*

Shoikhet is not altogether convinced that convergence is key for maximising the utilisation of flash/SSD storage in all cases: “I agree that the traditional siloed storage arrays cannot provide the agility and flexibility in storage allocation and access which are required

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to provide maximum utilisation of flash media, and that SDS infrastructure is the [prime] component in modernisation of data centre IT infrastructures. However, converged infrastructures bring an inherent rigidity in storage-to-compute and storage-to-network ratios which may – in some cases – impede the maximisation of flash utilisation.”

ROI equations around whether to transition to flash for enterprise storage arrays therefore continue to exercise decision-making processes. In this context, Timms emphasises the importance of not grasping at projections, and basing storage returns on line-of-business benefits. “Individual businesses have their own measurement around ROI on data storage. That said, we see flash become a must-have where competitive advantage is imperative, and speed of data transactions are critical to success.

“It’s difficult to say that spending £x will generate £y; however, it’s easier to say, ‘if we don’t do this then our competitors will gain significant advantage – therefore we can’t afford not to do it’. This is particularly the case in finance and Big Data-heavy sectors like retail and research/academia. Plus, flash is much more affordable now than it was just a few years ago.”

Micron’s Rollins is likely to agree here: “The value of flash goes up as costs go down and applications become focused on SSD performance optimisation. As applications include more measurement tools, there are more options for IT to model and validate the right architecture, and prove ROI for projects.”

But Thomas LaRock, head geek at SolarWinds, suspects this might not quite be the case. He believes it has become difficult for the IT function to measure and quantify storage ROIs, and adds that more data centres are adopting SSD/flash storage sometimes as part of an expensive shift towards a HCI model. “Often, monitoring tools have not evolved at the same pace – making it difficult to demonstrate ROI and to do so quickly. Add to this the fact that Microsoft and Amazon have made storage an affordable option for businesses [that arguably make it] easier to evaluate the costs, benefits and risks.”



IT decision-makers are advised to factor-in the impact that technologies such as hybrid- or all-flash arrays will have on the data centre infrastructure as a whole and not just evaluate storage in isolation. PHOTO COURTESY OF EXCELERO

The ‘third way’

While the pro-flash arguments might be gaining ground in terms of capex justifications, the advocacy of transition to software-defined storage models could prove more exacting.

SDS is sometimes cited as a ‘third way’ for data centre storage strategies even though, according to some industry opinion, confusion exists in the minds of many data centre managers about what it actually is and does.

“The key confusion is the definition,” says Timms. “Where some refer to SDS as a completely new type of storage, others say that it is the software which is key as it manages that underlying storage – and therefore the hardware functionality doesn’t matter.

“In our opinion, SDS is a new type of agile storage infrastructure; an enterprise platform layer that allows the use of multiple types of underlying storage

hardware, providing a storage platform which can easily be upgraded. The storage is provisioned using policies allowing users to become more agile in how they take advantage of virtualisation without requiring the purchase of new hardware.”

Scaife says that while some IT managers get SDS and are using it, others have no idea at all. He reckons this could be because SDS and cloud storage caused a market divergence. “If cloud had not happened, SDS/HCI would have had a much bigger impact in the data centre. Trouble is that cloud got in the way between the virtual- and converged eras, and now [some] IT managers are confused as to the best path to take.”

He continues by saying that some vendors are making a push for SDS/SDN, with niche players that are then gobbled-up by big fish. “However, the divergence is that most hardware/software vendors are spending more time developing cloud-based overlay solutions or hybrid software/migration

tools and have taken their eye off of the SDS/converged market. They are therefore being squeezed-out on price and a range of innovative, easily on-boarded alternatives.”

Comparing the deployment of traditional storage arrays connected via a separate SAN to that of a SDS infrastructure, which uses the same network infrastructure as business applications, again shows how much more challenging it has become to quantify and justify ROI. Shoiqhet says: “A converged infrastructure might, at first glance, look like an easy case to measure, until you realise that you also need to take into account the effect of storage access requirements to the network infrastructure – how is the network configured to allow low-latency storage access to flash drives, for instance? And how is it over-provisioned to support bursts?”

He goes on to say that the expected performance of flash drives-per-storage nodes needs to be balanced with the number of PCIe lanes on one side, and the



“If an application is latency-sensitive, then tiering some of its storage into a cloud service may cause operational and user-experience challenges.”

Rob Lamb,
CTO,
Dell EMC

network interface bandwidth on the other. In addition, the choice between converged and disaggregated SDS, or a mix of both, becomes part of the analysis: “The storage-to-compute ratio implied by a choice of a converged building block may cause an imbalance in predominately storage- or compute-oriented environments. So, instead of being a separate item to analyse and quantify, storage infrastructure has become intertwined into other parts of the data centre infrastructure.”

While SDS is not necessarily synonymous with transition to HCI, hyper-convergence itself is increasingly associated with compute-intense HPC-driven applications like in-memory data analytics (think SAP HANA), high-frequency trading, and emergent AI-enabled applications. As a result, any capex entailed probably shouldn’t be considered

in isolation from the overall investment in infrastructural upgrade geared toward attainment of competitive goals.

It’s not just about raw compute-intense applications shaping the direction of storage provision: IoT is another change force phenomenon that will impact data storage deployment, predicts Dell EMC’s Lamb. “Gartner reckons that by 2020 there will be more than 20bn internet-connected ‘things’: most of these will generate data. We need to manage that generated data, and analyse it to make meaningful business decisions.”

The problem here is that pulling all these datasets back to a core enterprise data centre can be expensive in terms of bandwidth, storage and management costs. Lamb therefore proposes an approach that has edge gateways aggregating and analysing the data at, or close to, the point of origin. These gateways should only send on meaningful data to cloud or control centre. In these central locations, data lakes and HPC-optimised applications will then receive the data from the edge.

If Lamb is correct then the data that is not relayed back to base will still have to be stored, which suggests a need for decentralised ‘non-critical’ storage resources – possibly based on older platforms that perform well enough to be repurposed for the task.

Thus an SDS adoption in line with HCI transition need not necessarily signal a migration from *in situ* storage assets. As MCSA’s Timms points out SDS allows mixing of hardware and media – i.e., mixing flash and spinning disks – to provide a heterogeneous pool of storage resource. “Overall, this provides benefits in efficiency and cost, and the possibility of utilising existing hardware within data centres before considering full replacements.”

Guy England, director at Lenovo Data Centre Group, is likely to support this view and says HCI can co-exist with standard storage. But he also warns that HCI does not always address today’s underlying data expansion challenges. “Look at the progression of IT: every innovation produces vast volumes of data. Classic three-tier architectures have been doing their best to handle this scale and need for performance through AFAs and improved

Time to get flash?

Some of the latest flash-based storage units to look out for.



AccelStor’s *NeoSapphire H710* is an all-flash array in a 4U rack mount appliance. It’s claimed to deliver more than 1.2 million IOPS for 4KB random access, and comes with 10GbE or 16Gb Fibre channel connectivity, AccelStor’s *FlexiRemap* technology, and is claimed to offer “true high availability with no single point of failure” or downtime.

The *K2.N* from **Kaminario** comprises controller nodes (c.nodes) and media nodes (m.nodes) that are connected via a shared NVMe over fabric (NVMeF). When customers purchase two or more c.nodes and any number of m.nodes, Kaminario says they can create a truly active-active, scale-out storage cluster with a shared data reduction space.

Toshiba Memory Corporation claims its *PM5* 12Gbps SAS series and *CM5* NVMe series are the first enterprise-class SSDs with 64-layer 3D flash memory.

Offering up to 30.72TB in a 2.5-inch form factor, the *PM5s* are also said to be the industry’s first MultiLink SAS architecture. Toshiba says they are able to deliver up to 3,350MBps of sequential read and 2,720MBps of sequential write in MultiLink mode, and up to 400,000 random read IOPS in narrow or MultiLink mode. Available in capacities from 400GB to 30.72TB

Meanwhile, the dual-port PCIe Gen3 x4 *CM5* series is NVMeF-ready with

controller techniques, for example, but it hasn’t been enough. Instead, the most effective solution to manage this increased data demand is through the hybrid of SDS for its performance and cloud for its cost efficiencies.”

“To get back to pitfall-avoidance, my first maxim is this: know your data,” counsels LaRock at SolarWinds. “Not all data is created equal. Some storage

scatter-gather list and controller memory buffer features. The SSDs offer up to 800,000 random read and 240,000 random write IOPS for the five drive writes per day (DWPD) model, and up to 220,000 random write IOPS for the three DWPD model, both with a maximum power draw of 18W. Capacities range from 800GB to 15.36TB.

Tegile Systems’ dual-controller *IntelliFlash N Series* features 24 NVMe NAND flash SSDs in a 2U footprint, and is said to be capable of delivering up to three million IOPS with consistent 200 microsecond latency. The line up includes the *N5200* which is available in drive capacities from 960GB to 7.68TB, and the *N5800* which offers 800GB to 6.4TB.



FlexDrive enables users of **Tintri** arrays to expand capacity by adding as little as one drive at a time. The firm says because its products operate at the VM-level, they eliminate the need for traditional storage constructs such as RAID groups and shelves. As a result, customers can purchase a partially populated Tintri *EC6000* all-flash array, and add capacity by inserting drive(s) into any available disk slot.



solutions are built around the idea that data is just made of 0s and 1s – that’s not true. Some data needs fast access, some slow. Some data needs quick recovery, other data is less urgent. The common mistake here is applying a one-size-fits-all strategy which could see the IT function overstretch already shrinking resources and, ultimately, lead to department losses.” ■

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Making the connection

Designed to be easy to set up and use, these new products aim to keep enterprise users connected with no strings attached.

Targeted at businesses with a high density of mobile users, this new range of wireless connectivity devices from **Alcatel-Lucent Enterprise** (ALE) promises high-speed Wi-Fi along with a better service.

They include the *OmniAccess Stellar* WLAN access points which feature 802.11ac Wave 2 and controller-less architecture; and a new release of the *OmniVista 2500* network management system.

The *Stellar* AP is offered in two modes: *WiFi Express* which scales up to 64 APs and, says the company, operates in a simplified cluster architecture, providing plug-and-play deployments mostly for

SMBs; and *WiFi Enterprise* for networks with high scalability which operates in a controller-less architecture and requires the *OmniVista 2500* NMS.

ALE says its system not only manages *Stellar*-based infrastructure but also offers a unified configuration and policy management for both LAN and WLAN, avoiding duplication of tasks, keeping policies consistent on the entire network, and simplifying IT operations. It adds that *OmniVista 2500* provides multiple advanced network services such as comprehensive guest management, BYOD, IoT containment, support for Apple/DLNA, as well as smart analytics to help monitor and manage application utilisation.



Moxa says the *OnCell G3150A-LTE* provides reliable serial connections and Ethernet networks for industrial cellular applications.

The gateway comes with a 3-in-1 serial port to collect and exchange data with

serial devices over a mobile network, and has two omnidirectional 2G/3G/4G antennas with SMA male connectors. It can be setup using the *Moxa OnCell Central Manager* tool to facilitate

fast deployment through mass configuration of cellular devices and remote device maintenance.

The *OnCell G3150A-LTE* features isolated power inputs which, together with what the manufacturer claims is high-level EMS and the ability to operate in a wide temperature range (-30 to 70°C), offer the highest level of device stability.

Moxa adds that the rugged hardware is designed for hazardous locations (ATEX Zone 2/IECEx). It says the *OnCell G3150A-LTE* also features dual-SIM *GuaranLink* and dual power inputs to support network redundancy and ensure uninterrupted connectivity.



The gateway is distributed in the UK by Amplicon. It says the device's built-in security mechanisms help reduce data transmission risks such as unauthorised access and cyber attacks for critical data travelling across cellular networks. To achieve this, Amplicon says secure VPN communication exists in both master and client modes and support for site-to-site security protocols, such as OpenVPN, GRE, and IPSec. It says the *OnCell G3150A-LTE* also complies with the technical requirements of the IEC 62443-4-2 cyber security standard.

The *XD2-230 Wave 2* is the first expansion of the Xirrus product range since the company was acquired by **Riverbed** in April 2017.

It reckons that the new 802.11ac AP takes just minutes to set up, and can be managed from the cloud or on premise using the *Xirrus Management System (XMS)*. An onboard controller enables application-based policy control, integrated location services, and software-defined radios directly at the network edge. Riverbed claims this eliminates the cost and complexity of additional controllers and service appliances, and reduces total cost of ownership by 30 per cent or more.

The *XD2-230* is said to deliver an "unprecedented" level of price-performance at 3.9Gbps total Wi-Fi bandwidth. Riverbed adds that with three

radios, including Bluetooth Low Energy (BLE), the device provides secure access for Wi-Fi users and IoT applications with the EasyPass SaaS solution. It says this simplifies secure Wi-Fi connectivity with integration to the *Microsoft Azure* and Google application ecosystems, enabling single sign-on to both user applications and Wi-Fi. Furthermore, Riverbed says that for BYOD and IoT devices, unique per-user security credentials lock down access at device level.

According to the firm, the acquisition of Xirrus means customers benefit from the integration of wireless products with

SteelConnect, Riverbed's SD-WAN platform.

It's claimed that this is the first and only solution with unified connectivity and policy-based management for the entire network.



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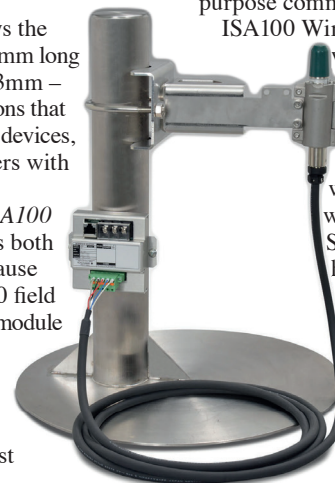
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Combining an access point and gateway, **Yokogawa Electric Corporation** says its new *ISA100 Wireless* module is ideal for linking multiple wireless devices with a host controller.

The manufacturer says the compact device – it is 90mm long and has a diameter of 23mm – can be installed in locations that are inaccessible to wired devices, and can be set up by users with no previous experience.

Yokogawa says the *ISA100 Wireless* can function as both an AP and gateway because it incorporates an FN110 field wireless communication module with a built-in gateway.

It adds that when used with an LN90 that incorporates a power supply adaptor and a host



system communications interface, the new module can link up to 20 field wireless devices with a host controller or other device via the RS-485 Modbus general-purpose communications protocol.

ISA100 Wireless is the protocol for wireless systems for industrial automation including process control and related applications. Yokogawa claims it introduced the world's first device to comply with the protocol in July 2010. Since then, the firm says it has added products to its range that can measure flow rates, temperature, pressure and vibration, as well as gateways and adaptors that enable conventional field devices to communicate wirelessly.

According to **Zyxel**, although Wave 2 offers faster speeds and better performance for more users, its MU-MIMO capabilities have been "difficult to achieve without compromising data rates". As a result, the company believes early Wave 2 products "fell short" of the performance advances seen with the jump from 802.11n to the 802.11ac Wave 1 standard.

But thanks to what it describes as next-generation beamforming technology, Zyxel reckons its latest APs deliver Wave 2's full potential. It adds that they enable increased data rates not only for MU-MIMO-compatible clients, but for all existing ones as well. They also feature built-in filters to minimise

interference from 3G/4G cellular networks.

There are three new devices to choose from. The standalone *NWA1123-AC HD* (pictured) supports a combined data rate of up to 1.6Gbps, as well as *NebulaFlex*, Zyxel's licence-free cloud management system. The *NWA5123-AC HD* is a dual-radio 3x3 MU-MIMO unified AP and also offers a combined data rate of up to 1.6Gbps.

The *WAC6303D-S* is said to be an affordable and triple-performance 3x3:3 MU-MIMO AP. It features a smart antenna to mitigate co-channel interference in high-density environments, as well as an embedded BLE beacon to help provide insights into how customers are using the Wi-Fi network.



Employees lack the training for digital challenges

The skills shortage is having a detrimental impact on UK businesses and could pose serious risks in the years ahead, warns Sungard Availability Services.

In an independent survey carried out last October, the company polled 150 IT decision makers, 150 line of business decision makers and 300 employees (middle management and below). Interviewees were from companies of 500+ employees across multiple sectors in the UK.

According to the study, decision makers regard the skills shortage as their biggest issue impacting digital initiatives, while 70 per cent of employees claim they're not getting the training or tools they need to add value back to the business.

Despite what Sungard describes as "extensive media hype and scare-mongering" about technologies such as AI impacting or replacing human jobs (*also see front page news, Nov 2017 issue*), the research found that just 49 per cent of businesses have this listed as a technology that will help them prepare for the challenges they face. The company says in reality, cloud (75 per cent), IoT (69 per cent) and Big Data analytics (64 per cent) are the "big three" when ranking these technologies – AI doesn't even make the top four.

As a result, Sungard believes businesses need to invest in their staff, not just in strategic technologies. But its survey also says more than a quarter of UK workers believe they are unable to adopt digital working practices because of a lack of training – only 30 per cent stated their employer had provided them with the tools to overcome the challenges they are facing.

"In addition to Brexit and GDPR, the lack of digital skills is yet another challenge facing UK organisations over the next couple of years," says Sungard AS CMO Kathy Schneider. "To remain competitive, businesses will need to prioritise digital skills development and training to help navigate the new technology trends. This means investing not only in technologies and systems, but also in training around the required skills. Communication of the challenges and the digital journey ahead will be vital to ensuring business resiliency. Failure to do so could open businesses up to unnecessary – and avoidable – risks."

CIF creates digital skills special interest group

The Cloud Industry Forum (CIF) has set up a special interest group (SIG) that aims to bring the human element of cloud computing and digital transformation to the forefront of any cloud adoption programme.

Hosted by CIF, the SIG will be chaired by Simon Ratcliffe, principal consultant with hybrid cloud and managed services specialist Ensono. He says: "Too many cloud adoption programmes fail because the human element is not considered. The changing roles within IT departments or the simple re-training for new skills that are required needs thought and proper engagement of the people management elements of an organisation."

The Digital Skills SIG will work with forum members including HR specialists, training organisations and people management specialists to promote a strong message around the human factors of cloud adoption. It will also act to

engage specialist providers with end user organisations to assist where necessary.

The CIF says its research has repeatedly shown that customers struggle to keep pace with the vendor skills expectations for successful cloud adoption programs. The forum's CEO, Alex Hilton, adds: "Fifty-five per cent of UK businesses state a lack of IT skills negatively impacts their digital transformation projects, whilst 30 per cent of SMEs are directly constrained by lack of IT skills."

IN BRIEF...

■ The Institute of Information Security Professionals (IISP) has accredited the OCP's Cyber Academy GDPR Data Protection one-day *Awareness* and four-day *Practitioner* courses against its skills framework. The courses, previously

accredited under the GCT scheme in December 2017, aim to provide delegates with the appropriate level of knowledge of the GDPR and skills to apply effective governance and risk management in order to deliver compliance. They also include references about the new British Data Protection Bill which will be incorporated into the training once this is passed into law. <https://ospcyberacademy.com>

■ CNet Training says its *Certified Network Infrastructure Design Professional (CNIDP)* course has been such a success that more dates have been scheduled through until April 2019. According to the firm, the level five programme is a "full and comprehensive" course that equips network infrastructure professionals with the knowledge, skills and confidence to deliver complex

infrastructure design projects from inception through to customer hand-over. Complete schedule available at <https://tinyurl.com/y8ul7h79>.

■ Network monitoring company Paessler AG is on the hunt for channel partners to tap into Ireland's growing technology market. The Germany-based firm says those that join its network will benefit in several ways including gaining access to the *PRTG* network monitoring platform as well as dedicated sales, pre-sales and marketing activity support. "Network monitoring is a young but growing market with a limited number of qualified experts, and Paessler believes that by working closely with suitable partners we can quickly develop a team to service Ireland's growing economy," says Martin Hodgson, UK&I head of sales, Paessler AG.



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