

# networking

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## Watching the skies

IBM UK to lead update of MoD's Air Command and Control System.  
**News, p4**



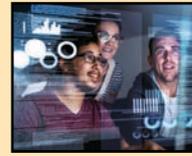
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## Looking for the promised WAN

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# Government decides internet is 'ok' as it begins shift from PSN

The Government Digital Service (GDS) is planning to move away from the PSN (public services network), and will look at ways of using the internet instead.

Early last year, the GDS' Technology Leaders Network had decided government was now on a journey away from the PSN.

In a blog posted in mid-May 2018, John Strudwick, the GDS' deputy director of technology, architecture and standards, wrote: "As we continue to move away from the PSN, we need to think about the new standards we use to share services and exchange data so there is trust in the interaction and integrity in the data. These new standards could include adopting technical controls like using standards-based approaches to email security and encrypting web transactions using Transport Layer Security. They

could also include leveraging commodity edge devices and/or using VPNs."

Strudwick continued by saying some of these approaches are already being adopted, giving secure email as an example of a popular PSN alternative with almost 200 public sector bodies.

The GDS now plans to carry out research into the types of standards and guidance it will need as it shifts away from the PSN to the internet. Amongst other things, this "discovery project" will include identifying user needs and how to create a secure structure for different parts of central and local government to communicate. Strudwick said the discovery will comply with the GDS' 'Cloud First' policy, Network Principles and previous acknowledgement that the internet is 'ok'.

Part of the project will also look into how suppliers can be encouraged to work with the GDS to develop common standards for the new network so that they can all participate equally and fairly in the new marketplace.

"We're really keen to create a healthy supplier market around the technology we use to establish high-quality connections, just as we did with PSN," said Strudwick. "We'll be setting the standards but will look to suppliers for guidance. For example, if it's commodity edge devices that we're using, we'd ask suppliers in this space for advice on implementation and configuration."

Innopsis, the industry association for companies supplying network services to the public sector, said it has been asking the GDS to review PSN for some time. It pointed out that the PSN operating manual was written seven years ago and both technology and the environment in the public sector has now changed. Des Ward, the association's information governance director, said: "PSN was built for a different age and that gated community is no longer viable. It makes complete sense to leave a closed community behind in favour of a more open one, but information governance should be at its heart."



**Innopsis said the PSN was "built for a different age and that gated community is no longer viable".**

According to Ward, the key issue is data protection: "It's not about security but requirements for protection, accuracy and access in relation to information. There are multiple assurance frameworks for cyber but no common framework for governance. In order to achieve more autonomy and accountability, the public sector needs to address this deficit between compliance and governance." ■

## BT and Europol cyber security deal

BT and Europol, the EU agency for law enforcement co-operation, have signed an agreement to share knowledge about major cyber threats and attacks.

The agreement provides a framework for the two organisations to exchange threat intelligence data as well as information relating to cyber security trends, technical expertise and industry best practice.

BT says it is committed to sharing its threat intelligence data with industry partners and law enforcement agencies such as Europol in a secure and trusted way, as a means of better protecting UK and global customers from the rapidly expanding cyber-crime industry.

The company claims that earlier this year it became the first telecoms provider to start sharing information about malicious software and websites on a large scale with

other ISPs via a free online portal. Since the platform was launched, BT says its worldwide team of more than 2,500 cyber security experts have helped to identify and shared the details of more than 200,000 malicious domains.

In 2013, Europol created the European Cybercrime Centre (EC3) to strengthen the law enforcement response to cyber crime in the EU and better protect citizens, businesses and governments from online crime.

It also operates the Joint Cybercrime Action Taskforce (J-CAT). This aims to drive intelligence led, co-ordinated action against key cybercrime threats and targets by facilitating the joint identification, prioritisation, preparation and initiation of cross-border investigations and operations by its partners. ■



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# Sky and SSE partner for nationwide Ethernet

SSE Enterprise Telecoms and Sky Business have partnered to deliver new high-capacity Ethernet connectivity solutions to businesses across the UK.

Sky Business is Sky's B2B division and, in addition to its entertainment portfolio, it provides services to its customers including Wi-Fi and a national Layer 2 Ethernet platform that offers dedicated connectivity to communications providers across the country.

Under the partnership, SSE and Sky will work together to deliver high-capacity, cost-effective Ethernet to businesses nationwide. The two companies will combine their networks to reach what they claim is more than 3,000 exchanges. They say their highly resilient network includes automatic re-routing of traffic to avoid disruption.

Sky provides SSE with backhaul and last-mile services. SSE says this enables its 200+ service provider customers to benefit from more choice and a wider reach. The firm adds that the agreement will also enable it to access 96 per cent of the UK's business postcodes.

The partnership comes after a strong period of investment and growth for SSE Enterprise Telecoms – with Ethernet orders up 186 per cent since 2015 – and will result in SSE Enterprise Telecoms and Sky working together to deliver high-capacity, cost-effective Ethernet to businesses up and down the country. The move by SSE Enterprise Telecoms to partner with Sky comes in response to market shifts which have encouraged the connectivity provider to seek more creative ways of providing reach and reliability to its customer base.

Colin Sempill, MD, SSE Enterprise Telecoms, says: "Over the next few years UK businesses will demand better core network bandwidth, and our partnership with Sky directly addresses that need. For us it's all about giving the wholesale market clarity of choice, where it can sometimes be confusing and the quality is not always there. With this deal we're providing one place for businesses to source a truly market-competitive price for high-capacity bandwidth services to support their growth needs."

Meanwhile in a separate deal announced at the start of May, SSE will also work with Three UK to support its network's growth and expansion goals.

In the first phase of the partnership, which started in April 2018, SSE has begun facilitating fibre optic connections for Three UK's 20 core data centres.

The deal is expected to support Three UK's network transformation, preparing it for an eventual 5G rollout and helping to deliver an enhanced 4G network experience for consumers.

"We are putting our network on the best footing possible to meet the current and future demands of consumers," says Bryn Jones, CTO, Three UK. "Our customers use up to 3.5 times more data than the rest of the UK, a demand which is only going to increase as we move towards a 5G world."

The data centre connection contract is part of a multi-million pound phased agreement that will also see SSE and Three UK unbundle BT exchanges in the coming years.

SSE Enterprise Telecoms' Sempill expects UK businesses to demand better core network bandwidth over the next few years. ■

## City firms to receive affordable high-speed fibre for the first time

London's 'Square Mile' will be one of the first places in the UK to benefit from a city-wide roll-out of ultrafast broadband services.

In mid-May, 21 Whitefriars Street became the first office building in the area to be connected up to the high-speed technology as part of Openreach's *Fibre First* programme. Throughout 2018, 12,000 more premises across the rest of the City will be given access to the service.

The City of London Corporation has been working closely with Openreach to identify local demand and has been encouraging the delivery of FTTP infrastructure at no extra

cost to landlords. By allowing out-of-hours and weekend installation of fibre cables using existing ducts, it's claimed many disruptive street works were avoided.

To get connected, all businesses and landlords have to do is complete an expression of interest form to request FTTP for their building. Following a survey and with the necessary wayleaves in place, Openreach will schedule a date to start work on installation.

Catherine McGuinness, chair of the City of London Corporation's policy and resources committee, says: "As a

world-leading business district, 99 per cent of City firms are SMEs, and future-proofing our digital services is a priority, particularly in the wake of the UK's vote to leave the EU."

Openreach plans to make full fibre connections available to three million UK premises by the end of 2020, and adds that it could reach ten million homes and businesses across the country by the middle of the next decade. ■



A map showing when each area of the City of London is due to have FTTP installed.

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## Intercity Technology continues to support GÉANT network

GÉANT is boosting the performance and availability of its pan-European data network for the research and education community with the help of Intercity Technology.

The two companies have been working together since 2014 and have recently renewed their contract. This will see the enterprise communications and IT specialist offering a round-the-clock service desk from its Intercity Secure Operations Centre (ISOC) in Bolton for a further four years.

Intercity Technology will continue to run GÉANT's round-the-clock first-line network support services by handling customer problems, troubleshooting problems, generating tickets and escalating issues where needed. It says this will ensure the smooth running of GÉANT's 12,000km of network cabling across Europe, as well as freeing up resources for its team to focus on other complex customer queries.

There is now potential for GÉANT to extend its current contract with Intercity to cover its first-line support for the



Intercity says it could also take on the first-line support for eduroam, the global Wi-Fi roaming service for the academic community.

eduroam service, a global Wi-Fi roaming service for the research and academic community. Intercity says its ISOC has the potential to take on the first-line tier for the eduroam core infrastructure.

Tony Barber, head of GÉANT's operations centre, says, "We can be quite demanding when it comes to our SLAs, but Intercity has proven its ability to meet this demand and has adapted to the needs of our customers." ■

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# WIG enables 4G mobile services at Anfield

Wireless Infrastructure Group (WIG) has designed and deployed a 4G mobile network across Anfield Stadium, the home of Liverpool Football Club (LFC).

WIG worked with O2 and Vodafone on the first phase of the implementation, and while the service is available to their subscribers initially, there are plans to roll it out to other networks at a later date.

Andrew Robinson, LFC's head of technology and transformation, says: "Providing consistent mobile coverage at scale to 54,000 fans is very challenging

and slow mobile data speeds can be frustrating for fans. Using expertise from WIG we're tackling this challenge with high-quality 4G services throughout the stadium to provide a much better match day experience."

WIG says stadium installations are typically challenging and Anfield was no exception. Its engineering team adopted a flexible approach to working schedules, often installing in the evenings and weekends to ensure the deployment was completed with no impact on the club's fixtures list.



The installation of the network follows the expansion of Anfield Stadium which is part of a wider regeneration initiative to improve the local area.

The company installed a new, standalone 5G-ready distributed antenna (DAS) network with support from its equipment partner, Commscope. It says the total build cycle was five months and completed ahead of schedule thanks to the supportive and collaborative relationship developed with LFC.

The new DAS network provides dedicated mobile coverage and capacity

to device users across the stadium, and is separate from LFC's IT network which continues to operate independently.

WIG adds that it provides full lifecycle management for all of the DAS network infrastructure it deploys across the UK. This includes round-the-clock performance monitoring and a full suite of reactive and proactive maintenance and repair provisions. ■

## THE WORLD ACCORDING TO...



Michael Papadopoulos, chief architect, digital problem solving, Arthur D. Little

### Uniting business and staff with shadow IT

Keeping pace with today's evolving business landscape requires organisations to recognise that technology innovation can no longer be the preserve of a single department.

It can get controversial when internal users find their own systems to use for business purposes, outside of IT's knowledge or control – a practice known as 'shadow IT'. IT departments complain that using shadow IT creates inconsistencies, inefficiencies and security risks, as well as adding extra costs to the business. However, end users often credit shadow IT as central to driving innovation, business transformation and increased productivity.

Training and talking to users is the most important step in managing shadow IT effectively. This involves helping users understand the risks, working with them to mitigate these, and inculcating a culture of trust and personal responsibility. The IT department's focus should shift to supporting integration between different applications, removing barriers to choice. One benefit of this approach is to ensure that all documents are still on the company's platform, which negates the risk of employees leaving with sensitive information.

Vendors such as Microsoft and Cisco now offer solutions such as the *Cloud Access Security Broker (CASB)* and *Elastica Audit*, which collect data from all network devices, such as firewalls, in order to analyse traffic and provide a detailed picture of the cloud apps employees are using. This allows the business to effectively manage and monitor app usage and data flows.

By offering an internal amnesty, bringing shadow IT into the light, IT will be able to start a dialogue, inviting end users to talk about why they require particular shadow IT solutions and how existing enterprise systems are not up to the task.

Embracing shadow IT and listening to employees' needs can unlock large-scale savings. While not all tools work for all users, it is still likely that some that emerge from shadow IT will become the solutions of choice for the whole business.



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## BT forms new business unit

BT is combining its 'Business and Public Sector' and 'Wholesale and Ventures' divisions to form a new Enterprise unit. The company says the aim is to accelerate its transformation, simplify the operating model, and strengthen accountabilities. The new unit will provide products and services to organisations in the private and public sectors, as well as wholesale services to around 1,400 communication providers in the UK and Republic of Ireland. It will also include BT's Ventures business which acts as an incubator for potential new growth areas of the company. Gerry McQuade, currently CEO of the Wholesale and Ventures business, will lead the new organisation. ■

## Westcoast to distribute Tenda

Westcoast will distribute Tenda's range of networking products in the UK and France. Through its offices in the Thames Valley, Westcoast has been granted the rights to sell, implement, and support all of Tenda's products in the two countries. The deal includes distribution rights to what Tenda describes as its "market disruptive" meshed Wi-Fi product, the *Nova MW* series. Due to be launched in June, it says this new range will act as a replacement for powerline extenders and enables better Wi-Fi coverage. Founded in 1999, China headquartered Tenda specialises in networking devices and equipment. The company opened its UK office last year. ■

## Boston Networks acquires PEL Services

Boston Networks has completed the acquisition of PEL Services Ltd for an undisclosed sum. The company says the purchase is part of its ambition to become a major UK group and a national provider of integrated life safety, security and networking services. Founded in 1976, London-based PEL is a fire, security and AV solutions company. The combined group will employ 150 specialist staff. The senior management team at PEL will continue to run the business, working alongside Boston CEO Scott McEwan. The deal is Boston's first acquisition since specialist investment fund Aliter Capital acquired a major stake in it in January. ■

# IBM UK to help MoD watch the skies

The Ministry of Defence is to invest up to £80m in an Air Command and Control System (ACCS).

Known as *Project Guardian*, the system will support the continued early detection and rapid response to potential hostile or suspect aircraft that pose a threat to our sovereignty.

This project will see the current systems at RAF bases in the UK and Falkland Islands replaced with the new technology. It will be led by IBM Services in the UK under a deal worth around £60m that could potentially rise to almost £80m.

The ACCS is the computer system that takes in data to generate the 'Recognised Air Picture' – a dynamic, real time depiction of aircraft in the flight information region, with each aircraft being identified as friendly or hostile. The MoD says *Project Guardian* will deliver several new capabilities to improve communication and interoperability between UK, NATO and coalition aircraft.

Paul Hubbard, associate partner with IBM Global Business Services UK and



RAF Fylingdales on the North Yorkshire Moors is one of three radar sites in the Ballistic Missile Early Warning System. The other two are in Alaska and Greenland. PHOTO: OPEN GOVERNMENT LICENCE V3.0.

Ireland, adds: "Having access to real time data from a wide range of sources is vital. The new system will introduce new data sources and a tactical data link so information can be transmitted, replayed and received via radio waves or cable." ■

## Paessler introduces Uptime Alliance monitoring

Paessler has unveiled the Uptime Alliance, a new technology programme designed to help the company's partners include network monitoring functionality in their offerings.

The Uptime Alliance builds on the capabilities of Paessler's *PRTG Network Monitor*. Christian Twardawa, the company's CEO, says: "We're joining forces with our partners to ensure 100 per cent uptime. By offering our partners seamless integration with *PRTG* and creating purpose-built sensors for their

solutions, we provide our shared customers with unprecedented peace of mind."

With more than 200 pre-configured sensors, it's claimed *PRTG* monitors everything from overall network infrastructure health to more granular details.

The firm adds that custom sensors are also easily created and integrated, and that as a member of partner programmes run by Cisco, HPE, NetApp and VMware, it already offers sensors designed specifically for turnkey performance with

some of the best-known IT brands.

Uptime Alliance charter members include: AppSphere; Check Point; Kentix; MachineShop; NetBrain; Plixer; Savision; SonicWall and WatchGuard.

Beyond generating additional benefits for customers and end users, Paessler's says the alliance also creates new business opportunities and synergies to provide partners and organisations across industries with new solutions and improved services. ■

## Kao expands high-speed services with Ai connection to LINX

Kao Data has expanded its high-speed network capabilities with its connection to the London Internet Exchange (LINX) through its partnership with Ai Networks.

As a vPoP (virtual point of presence), Ai has enhanced its carrier neutral services from Kao's *London ONE* data centre (pictured) through LINX. As a result, Kao claims customers in the London-Stansted-Cambridge corridor can now take advantage of new opportunities for more reliable worldwide integrated services.

The firm adds that as well as improved

latency and resilience, customers who become LINX members will benefit from improved routing control, increased capacity and redundancy. Furthermore, it says peering is often a more cost-effective option for networks too. According to Kao, the capability to peer with LINX's global membership and its dual peering LANs, *LON1* and *LON2*, is a unique facility for the UK.

Kao Data CEO Jan Daan Luycks says: "Through our relationship with Ai Networks, we will have access to over 820 member ASNs from over 75 countries on



LINX's dual peering LANs which offers immense opportunities to customers at our London ONE data centre."

Situated in the London-Stansted-Cambridge technology corridor, the £200m Kao says its campus provides around 150,000ft<sup>2</sup> technical space and 35MW power for IT equipment. The site comprises four 8.8MW data centres, each divided into four 2.2MW technology suites. ■



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# Arista offers “cognitive” cloud networking

Arista Networks claims it has come up with new network architecture to address the transitional changes as the enterprise moves to an IoT-ready campus.

The company reckons its cognitive cloud networking approach, which is driven in partnership with Aruba and VMware, helps reduce customer operational expenses through simplified architectures, data-driven analytics and segment-based security.

Arista says its *Universal Cloud Network (UCN)* delivers common cloud principles for simplified networking topologies and architectures across use-cases. As the first step in addressing the campus network architecture, it is introducing the *7300X3* and *7050X3 Spline*. Arista says these *10/25/40/50/100G* Ethernet platforms extend the open *UCN* architecture from the data centre to the campus. As *Spline* switches, it says the *X3* Series collapse multiple tiers of legacy hierarchical campus designs into a single tier, resulting in simplified network designs with fewer touchpoints while still achieving high availability levels.

Arista has also developed the *Cognitive Management Plane (CMP)*, and open framework designed to address this gap for large data sets. The *CMP* combines a state repository, a stream computation engine, and various application components built into a horizontally scalable cluster. Each cluster manages a subset of network devices from different vendors and interacts with other clusters through vendor-neutral APIs and standardised models.

The firm says *CMP*-based turbines can detect network issues that legacy systems have routinely missed and ultimately help to reduce the mean time to identify and remediate these issues.

The platform then leverages Arista's *CloudVision* to federate the state across network types (data centre, cloud, campus, etc.) and can share this data with peers in the *CMP* framework. This is said to result in a new level of visibility which is then coupled with automated provisioning, giving customers the ability to detect and take action for ongoing operational tasks. ■

## Cyber Security Operations Centre to “disrupt” market status quo

Exponential-e reckons its new Cyber Security Operations Centre (CSOC) will disrupt the status quo and equip companies with a real-time view of their compliance status.

According to the company, as networks and requirements change, disparate security systems across the IT environment have their own GUI. It says this creates a “significant compliance headache” for businesses, making it “near impossible” to accurately assess compliance adherence across a multitude of interfaces. “The result is a fragmented view of compliance that is prone to error,” states Exponential-e.

The firm says the CSOC is capable of monitoring for compliance to multiple standards, from PCI-DSS and ISO 27001. It has been designed to correlate and aggregate

information from any device or service across a customer's security estate to provide analysis based on each individual company's priorities through one single ‘pane of glass’.

By layering analyst capabilities over monitoring services, it's claimed the CSOC is able to monitor and report on external and internal vulnerabilities, threat and network intrusion detection, and network security.

During the last 18 months, Exponential-e says it has developed a comprehensive range of security services and partnerships, all of which will be integrated into the CSOC.

The firm adds that the SLA for reporting an event is one hour – it says this ensures a dedicated analyst has investigated the incident before it is reported to avoid providing false positives. ■

## D-Link cloud solution for centralised connectivity management

D-Link is expecting to launch a new subscription-based, cloud-based network management solution in the coming weeks. It claims *Nuclias* will enable managed service providers and business owners to remotely configure and monitor their network infrastructures anywhere and at any time.

D-Link says its all-new app and online portal offer a range of flexible features that are accessible at the touch of a button. It says they give users complete autonomy to manage APs, and capture and analyse insights into every connected device.

According to the firm, *Nuclias* provides a cloud-based management tool without the need for a local controller, reducing cost and complexity while streamlining network infrastructure. It also offers zero-touch provisioning for what D-Link claims is “ease of deployment and scalable architecture to support an unlimited number of devices”.

The company adds that the platform's multi-tenant structure allows deployment across multiple sites and companies, and



**D-Link plans to launch a dedicated range of products to support Nuclias, and has already unveiled the DBA-1510P (pictured above) and DBA-1210P access points.**

its “advanced” traffic report and data analysis tools provide business owners and IT professionals with real-time insights.

Over the coming months, D-Link plans to introduce a complete line-up of high-performance Gigabit smart-managed switches with optional PoE and fibre connectivity to the *Nuclias* family of products. It has already introduced two 802.11ac APs to support the platform, the *DBA-1510P* and *DBA-1210P*. ■

## THE IOT CONNECTION

News & developments from the world of the Internet of Things. This month, views about building the network.

### Is it time for the UK government to regulate the IoT?

The IoT is here to stay and will only keep growing in size. While IHS Market expects the number of connected devices worldwide to increase by 12 per cent on average annually, reaching 125 billion by 2030 globally, Intel is more ambitious and predicts there will be 200 billion by 2020.

Regardless of whose research you go with, the stats remain big.

However, IoT's rapid growth has mostly come at the expense of security. As the number of potential endpoints for cyber criminals to exploit grows, attacks have increased.

We therefore find ourselves at a crossroads with a challenge that needs to be addressed: how do we boost security for IoT devices and who is responsible?

Security often is sacrificed to other business priorities, such as being ‘first to market’ with a new product. The complexity of IoT security often means it is considered last, as manufacturers develop new skills around creating connected devices. But this situation has opened the door to devastating IoT cyber attacks, such as the Mirai botnet. Manufacturers clearly have a responsibility to properly address IoT security, but what happens when the sale is completed? Should we expect consumers to continuously download patches? Consumers need to be protected from cyber incursions and this could mean that IoT regulation is inevitable.

However, this would take time to develop and implement and may already be outdated by the time it's ready. Moreover, a single regulatory body is unlikely – the IoT is just too vast.

A sectoral approach could be beneficial, where current regulators and manufacturers collaborate to share values with a view to agreeing on standards and actions. GDPR is a great example of topical guidance being harmonised across varying IoT verticals. But regulation could negatively impact smaller industry players and act as a potential barrier to innovation.

The other option is self-regulation where stakeholders are encouraged to share experiences, and best security and privacy practice. Through a collaborative process, such as how the actual internet was built, universal (but voluntary) security standards could be agreed. This cooperative framework could solve the pressing security issues, while allowing companies to continue to compete with one another in the marketplace.

Commercial and security issues considered, self-regulation provides the opportunity to develop safer devices and a more robust IoT network. It's encouraging to see the UK government taking steps to

implement this type of solution, with the introduction of a new IoT code of practice. We need to answer the question of IoT security together and this code of practice could be the start of that approach. ■

### Solving the IoT growth dilemma with passive optical LAN

As stated above, the number of connected devices is going to skyrocket over the next two decades. If IHS Markit's prediction comes true, it would equate to approximately 15 device connections for every person currently on the planet. However, these numbers are

not surprising if you consider the limitless number of applications that IoT can deliver.

The network of physical objects, devices, vehicles, buildings and other items embedded with the electronics, software, sensors, and connectivity that enables the collection and exchange data is driving this adoption. The possibilities and numbers are staggering – especially when you think about the infrastructure that must be in place to support these connections.

Passive Optical LAN (POL) is the only infrastructure that can deliver management and bandwidth allocation features, built-in intelligence and scalable bandwidth that can accommodate all IoT demands.

POL offers a number of features worth considering. For instance, it consolidates all systems commonly found in today's buildings. This significantly reduces the amount of cabling and allows network convergence onto a single fibre-based infrastructure to maximise ROI.

It also has the ability to serve 8,000 GbE endpoints across a 30km reach from one system. What's more, POL's architecture can easily scale and makes connecting more IoT devices without a major build-out effort simple. It can also control a broad array of IoT products, often with just one data centre.

The space required for POL is reduced as there are fewer telecom rooms, less cable mass, and smaller and limited pathways. All of which means lower costs. Furthermore, with less space and fewer products required to setup and expand a future-proof LAN, POL costs less than a comparable legacy system.

Last but by no means least, it offers increased security as all Ethernet port defaults are locked. A two-way handshake and network access control mechanisms are needed for activation and offer vastly greater security protection. This is a particularly useful element when the IoT often deals with sensitive information.

Yesterday's legacy copper-based LAN infrastructures cannot carry this burden. Which is why there has been an impressive uptick in the adoption of POL. This is the only solution uniquely positioned to keep pace with IoT's growth. ■



**Marco Hogewoning, senior external relations officer, RIPE NCC**



**Alan Bertsch, chairman, Association for Passive Optical LAN**

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# The pleasure principle

From connecting nature reserves to national treasures, wired and wireless networks are now vital in boosting the customer experience at leisure venues and events.

## A discreet Wi-Fi solution for a national treasure

Portmeirion is one of Wales' premier visitor attractions, welcoming 250,000 visitors every year. The village was built to show how a naturally beautiful setting could be developed without spoiling it, and is also famous as the setting for the cult 1960s' TV programme, *The Prisoner*.

Portmeirion is equipped with one large network that runs both the Wi-Fi and TV system. It gives blanket coverage to various local hotels as well as 72 rooms including cottages in the village.

The solution was designed and deployed by Criccieth TV which, as well as offering a wide range of TV sales and repair services, is also an ISP that is approved and accredited to supply and install satellite broadband. Solwise

supplied the equipment which included products from EnGenius as well as other hardware for guest internet solutions.

According to Solwise, EnGenius' *Neutron Series* of wireless management products can be mixed and matched to create ideal wireless connectivity solutions for hotels, resorts, sports stadia, etc. It says *Neutron* offers a scalable solution for operations that occupy large properties and that need to deploy, monitor, and manage numerous *Neutron* APs from a browser-based platform.

Whilst the *Neutron* solution offers a captive portal hotspot built in, Criccieth TV decided to use the WAS R80 *Guest Internet Solutions* hotspot as it gives the additional functionality of multiple levels of user access, *Facebook* login for users, and *Paypal* and credit card billing services.

Portmeirion is a Grade II listed site and every single cable is therefore hidden. APs on the outside of buildings are mounted flat with *Neutron* dual-band managed units painted the same colours as the walls that they are mounted to. There is even an AP hidden in the top of Telford's Tower which overlooks the village.

All guest cottages have their own 'mini hotspot' which is named after the cottage making it simple for guests to log on to the

Wi-Fi system. For guest Wi-Fi access there is a Guest Internet Solutions hotspot which is designed specifically for use in venues where there are a large amount of users.



## Taking the Tour of Britain online

The *Tour of Britain* is the UK's largest professional cycling race. Wi-Fi access is not only vital for connecting the event with a global audience, but to also ensure seamless communications between the organiser's staff and service vehicles.

But taking the *Tour of Britain* online is no easy feat, as it presents a major logistical challenge of installing eight networks in eight different cities over eight consecutive days. Furthermore, the equipment must be weather-resistant, robust, able to be easily and quickly installed in time for each new finish line, and able to cope with the heavy internet traffic the event brings.

Since 2013, County Durham-based IT technology solutions specialist KBR has undertaken the challenge of connecting the *Tour of Britain*, selecting the equipment to negotiate these demands.

It partnered with Cambium Networks for the 2017 race, and chose the vendor's *cnPilot e500* outdoor 802.11ac APs for the multi-network system. More than a dozen units were installed at each finish line of the race. They were meshed together quickly and efficiently, and deployed using a singular cable which is said to have ensured a rapid, cost-effective and environmentally friendly installation.

The *cnPilots* includes Cambium's *cnMaestro* cloud-based network management system. This is designed to eliminate the need for a central Wi-Fi controller which, according to Cambium, prevents any single point of failure and ensures that the network can handle the potential user density of several thousand simultaneously.

The vendor adds that *cnMaestro's* other "powerful" features include zero touch onboarding, inventory tracking, monitoring, mass configuration and upgrade, troubleshooting, and hierarchical device organisation.

All eight networks were deployed on schedule, with Cambium's equipment integrating seamlessly into KBR's operation. Once installed, it's claimed the APs provided "unparalleled" Wi-Fi performance in each city, meeting the high demands of spectators, event staff and service vehicles, even in adverse weather conditions.

Furthermore, KBR was able to use *cnMaestro* to view network traffic in real time, verifying good connection

and ample delivery of bandwidth for the duration of the event.

## Remote wildlife protection benefits from IP video

For more than a decade, Wildlife Windows has specialised in designing and installing multiple camera systems for nature reserve visitor centres and supplying monitoring equipment for conservation professionals and ecological consultants.

With customers including the National Trust, RSPB and several large private companies particularly within construction, the Dorset-based company often has to overcome significant technical challenges to install surveillance systems in hard-to-reach locations with limited power and connectivity.

In many situations, the company turns to technology from Veracity, a manufacturer of IP transmission devices, surveillance storage arrays and integrated command and control systems.

Although originally working with analogue cameras, in recent years Wildlife Windows has largely switched to IP video and gained many advantages in terms of flexibility and quality. Yet running power and connectivity over longer distances is still tricky. As an example, some years ago a high-profile project helped to protect, relocate and ultimately return nesting peregrine falcons at Battersea Power Station in London. The company needed to install multiple cameras within a complex structure which would have become inaccessible as building work progressed.

The challenge was connecting up to four IP cameras over an existing coax cable across a 400 metre run and, in this instance, Veracity's *HIGHWIRE Powerstar Quad* which enables the connection of multiple cameras using a single cable, proved vital. The project also benefited from using the vendor's *POINTSOURCE* Plus tool for powering PoE IP cameras *in-situ* to complete camera alignment, focus, configuration and test from a locally connected laptop. This also showed the client that the cameras were functioning as expected before the next phase of construction that would make access to the installation almost impossible.

In other instances, the Wildlife Windows team has relied on Veracity's *OUTREACH Max* network extenders to overcome the distance limitations of Ethernet and PoE to deliver projects in hard-to-reach rural locations, including the positioning of fixed cameras above an Osprey nest in Scotland.



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Many IT managers currently have very little control and visibility over their networks or applications – that's where SD-WAN comes in.

# Looking for the promised WAN

**SD-WAN has been described as the biggest trend in enterprise networking today. So should you now migrate and, if so, what do you need to look for? RAHIEL NASIR seeks expert advice from some of the biggest names in the SD-WAN field.**

**W**hen asked what makes SD-WAN so special, two words repeatedly come up: visibility and agility.

For instance, Orange Business Services (OBS) says an increasing number of its customers are using the internet alongside private access technologies such as MPLS as a way to gain access to cloud-based services and also to leverage cost-savings.

“The thing that’s special about SD-WAN in these circumstances is that it gives a way of overlaying control, visibility and optimisation in this hybrid environment,” says Richard Kitney, OBS’ hybrid connectivity specialist. “As we move to these new implementations, SD-WAN gives a dashboard to see what’s happening, and furthermore to be able to control that environment. And because it’s an over-the-top technology – i.e. a technology you can add to your existing infrastructure – you can add those features without a radical redesign.”

Many companies that have traditionally specialised in WAN optimisation technologies are now currently in the SD-WAN vanguard – Riverbed Technology is one of the key players here, and over the past few years it has partnered with the likes of Microsoft, Huawei, Zscaler as well as OBS to develop platforms and services.

Steve Foster, Riverbed’s senior solutions engineering manager, believes

SD-WAN represents the new generation of intent-based networking, giving the modern enterprise an agile platform that can be adapted quickly to business requirements. “It’s moving us from locally significant connectivity and routing – which is done by individually configuring network components, requiring complex configuration and effort to ensure network-wide policy – to a centrally orchestrated management system, simplifying the configuration of connectivity and availability policies. The ability to quickly extend WAN connectivity and services into cloud platforms has changed the way in which hybrid cloud infrastructure has been integrated into the enterprise.”

Aryaka claims that unlike legacy network technology, such as MPLS that takes months to deploy, its global SD-WAN platform is delivered as a service and can therefore be deployed within days.

“SD-WAN is the biggest trend in enterprise networking today,” says the firm’s EMEA VP Ian McEwan. “It offers an entirely new way of managing a WAN across multiple locations. This technology enables the migration of an organisation’s network from hardware to software and represents a shift away from data centres and server rooms towards cloud and SaaS applications.”

This connection to the cloud means specialist platform providers such as Aryaka or Riverbed are now not the only ones banging the drum for SD-WAN. OBS was one of the early adopters in terms of service providers and more recently others like Virgin Media Business (VMB) have also signed-up, as its senior product manager Mark Conrad explains:

“We’re seeing two things happening simultaneously in the market. One, we’ve seen enormous growth of SaaS-based offerings and applications as well as cloud service providers. Essentially this means that more of what takes place in business networks is on the internet and not in private data centres or on proprietary platforms.

“Two, as demand for these internet-based services grows, providing resilient, secure and quality assured networks with the capability to access them is becoming more challenging. Typically, that level of service has been the preserve of private networks such as MPLS IP VPN. However, those private networks are facing a challenge in a world which is cloud and internet first.”

For Conrad, what makes SD-WAN so special is that it bridges the gap between the internet, customer data centres, secure and private networks, quality of service, and quality of experience. “As an

underlying technology which reaches into all of these domains, it allows users to take advantage of almost any technology in a way that’s inherently secure with high levels of service assurance, ultimately allowing IT managers to do more, not just with their connectivity but the applications and services that sit alongside it.”

## Is SD-WAN for you?

Hughes Europe entered the SD-WAN market with the launch of its own platform last year (*see News, Oct 2017 issue*). The firm’s head of marketing Vanessa Armstrong says any organisation that wants to be future-proofed as it embarks on digitisation or is seeking to reduce the cost of running a distributed network will benefit from SD-WAN. But she also points out that businesses that operate from single site or very small estate may perhaps struggle to reap the rewards from the technology.

ICT solutions provider Axians agrees here. Chris Gilmour, the company’s technical practice lead, says that in practical terms, SD-WAN makes the most sense to businesses with 10 or more sites. “Fifty or so seems to be the sweet spot in terms of building a simple ROI model. The technology is especially useful in the wake of a merger or acquisition,

as historically integrating two or more networks can be complex and painful.”

While there are few, if any, companies that would not benefit from SD-WAN, Riverbed's Foster says the exceptions are customers that wouldn't want to utilise hybrid MPLS/internet connectivity, connect to cloud services, or have multiple network links into sites, for example. He adds that some SD-WAN solutions have cloud hosted orchestration platforms that exclude some companies that may be restricted by regulatory considerations about using public cloud hosted services.

While not all SD-WAN features will deliver an immediate benefit to the user, OBS' Kitney says there's almost always something for an organisation to take advantage of. He says one compelling initial benefit will be in switching on application visibility before any customer goes headlong into delivering services to the cloud or re-architecting to a hybrid network topology. "That application visibility tells them a lot that they don't already know; for example, what applications are running on the network, how they are using the network, what bandwidth is being consumed, and where problems are. In short, it provides a looking glass into the existing network."

Kitney adds that even for those customers who wish to remain with MPLS services, application visibility through SD-WAN overlay toolsets can lead to a better use of bandwidth and therefore cost savings and better application responses. "The beauty of SD-WAN is that you can pay to start with a limited feature set and switch on features and functions as you go."

VMB's Conrad picks up on this theme and says because SD-WAN is a technology based in software, it's highly malleable and customisable. "It means that we can take a customer's requirements and develop an SD-WAN solution that works for them and their needs, and this translates in to being able to serve all parts of the market. That said, migrating between IT systems and network infrastructure is a journey, and that's something firms should think seriously about before deciding to go ahead and make a big change."

And change is apparently inevitable for any company that seeks longevity.

"To put it bluntly, businesses won't survive for very long without embracing digital transformation," warns Zscaler's Yogi Chandiramani. "SD-WAN enables this transition securely and cost-effectively."

Chandiramani explains that the concept of backhauling traffic to a centralised data centre worked when applications and users resided there. But with users in branch offices and applications moving to the cloud, he believes backhauling traffic across a hub-and-spoke network provides a "poor" user experience that is expensive and increases security risk.

"Companies are paying to backhaul traffic to bring remote users onto a network that they don't need to access," says Chandiramani. "To overcome these challenges and deliver a fast user experience, traffic needs to be routed directly to the internet. Once businesses understand this, SD-WAN is the only viable option."

## When to change

Aryaka's McEwan says that the top factors that drive IT leaders to adopt SD-WAN include cloud adoption and readiness, application performance needs, cost and complexity reduction motives, need for agility, and service level improvements. He adds that security and regulatory compliance requirements are also critical factors that influence the decision to

migrate: "It's essential that business-critical application traffic isn't exposed to the public internet and doesn't have entry points that can be exploited by threat actors."

For Foster, a telco service renewal or the need to increase capacity is a good time to consider adopting SD-WAN. He says the need to access cloud services or when experiencing performance issues after migrating to SaaS can also be a catalyst to consider using the technology.

Armstrong reckons organisations will reach a point where they realise that their standard MPLS or DSL connectivity is not going to support their business transformation programme or plans for digitisation. She says: "They cannot enhance the customer experience by tweaking their current networks and realise they must look for a more advanced solution that takes them up several levels

of operational agility and efficiency."

Achison Fraser, global head of marketing for Talari Networks, is likely to support this view when he says: "We're in a digital age, driven by a digital economy led by born-digital companies. For organisations and enterprises to deftly manoeuvre and succeed in this new era, they need to implement a pervasive digital transformation strategy across every edge of the network."

"The impact of digital transformation on the WAN will potentially be much more extreme. Merely adding more bandwidth to the last-mile network or throttling bandwidth usage are not viable options alone in a successful digital journey."

Many industry experts, especially those with a background in WAN optimisation, have long held the belief that if your network traffic is suffering from bottlenecks, latency,

or any other gremlin, throwing more bandwidth at the problem is not the solution.

Axians' Gilmour says: "A lot of IT managers have very little control and visibility over their networks currently – you tend to receive a report at the end of the month setting out how much bandwidth you've used, possibly along with the top applications you've used etc., but this is retrospective and doesn't give much insight into tuning your network as you go."

Citing research from a survey conducted by Axians last year, Gilmour says 44 per cent of network managers reported customer complaints about slow application performance happening at least once a week. "SD-WAN works in conjunction with next-generation applications to help them operate properly, so that the business receives the full benefit of adopting those applications in



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So far, and as with all IT innovations that tend to hog the headlines and dominate industry discussions, SD-WAN sounds like the sort of tech that can leap tall buildings and save the planet. But of course it is not the panacea to all your networking woes, and there are certainly pitfalls to avoid when looking for a platform.

## How to choose a platform

An SD-WAN solution will need to integrate into the traditional data centre and branch networks, which means support for technical features such as network routing are key, says Foster.

“Also think about the future – a network manager shouldn’t just focus on the WAN as a collection of wired and wireless services. The WAN could also extend into the branch, so a software defined infrastructure (LAN and WLAN) then becomes part of the solution.”

Foster goes on to caution that not all SD-WAN platforms are equal, so network managers also need to look out for other characteristics: “Embedded services such as path quality, WAN optimisation and network and application visibility are key parts of a fully integrated SD-WAN solution and should be on the list of selection criteria for a network manager. Open APIs to the SD-WAN orchestration platform mean that software and application development teams can now orchestrate their own cloud connectivity, bringing the network into the continuous development cycle, rather than being an afterthought. In order to successfully integrate into

existing networks, preventing the need for a complete ‘big bang’ replacement, an SD-WAN solution also needs to have the routing technology within the solution.”

Aryaka’s McEwan also points out that not all SD-WAN platforms are equal, adding that the technology is more complex than just a “software-defined on-ramp to a private network”.

“It comprises both hardware and software, and the methods in which it is delivered – and by which it performs – differ with each SD-WAN provider. It’s critical for potential buyers to understand the core differences.”

According to McEwan, network managers should ask the following four questions before deciding on an SD-WAN provider to meet business connectivity needs.

Firstly, do they need an SD-WAN with a network or just a routing device at the edge? Internet-based SD-WANs reduce costs and complexity at branch offices, and also provide better application control. But while this works well for businesses with multiple offices in a single geographical location, McEwan warns that global enterprises with offices in multiple continents or separated by large distances will have trouble with application performance due to high latency and the variability of connections. Furthermore, responsibility for building and managing the network around the globe will fall to the IT team.

McEwan explains that a global SD-WAN service provides an integrated solution focused on application delivery and not on buying separate components. “The service embeds SD-WAN functionality into a cloud-native private network, and has redundancy built in. This saves costs compared to the approach of having dual MPLS links or a combination of MPLS



According to Riverbed, the ability to quickly extend WAN connectivity into cloud platforms has changed the way in which hybrid cloud infrastructure has been integrated into the enterprise.

and internet. It also provides an optimised network for faster application performance from anywhere in the world.”

Secondly, network managers must consider whether they need to address connectivity for regional or global deployments. If all branch offices are within a local area, and the internet quality is extremely high, then McEwan says an internet-based SD-WAN deployment might be sufficient for the organisation’s needs.

“With an internet-based deployment, a business can reduce network cost and complexity by replacing regional MPLS links with broadband. However, by using the internet as your WAN backbone, you cannot address global application performance issues. This is because the internet is plagued with unreliable latencies and congestion-based packet loss and these issues are aggravated over large distances. For global SD-WAN deployments, you need to leverage a private network to improve data and application performance.”

Thirdly, if the majority of the organisation’s applications are on-premises and hosted close to end-users, internet-based SD-WANs can address the organisation’s connectivity requirements. However, for accessing cloud and SaaS applications over long distances, McEwan says there are not many viable WAN solutions. “Accessing cloud services and SaaS applications over the congested public internet can be unreliable and slow, due to heavy packet loss and fluctuating latencies. Internet-based SD-WANs cannot address this issue, as they too rely on the vagaries of the public internet.”

Fourthly, network managers must ask themselves if they want to manage their SD-WAN in-house or have it delivered ‘as-a-service’.

“As businesses scale (especially worldwide), they can find themselves dealing with multiple providers managing tens of ISP or MPLS contracts. Furthermore, SD-WAN integration can become a hassle, especially when mergers and acquisitions take place and you have a variety of disparate networks to either combine or manage.

“With an as-a-service model, enterprises can consume their network the same way they as they would applications like Salesforce or cloud services such as AWS. All the WAN management is taken care of by the provider.”

As another managed services provider, OBS’ Kitney says it’s important to bear in mind that there are different types of SD-WAN implementation: “There’s the

standalone option where the provider will sell you the box and the customer does the rest. The risk here is that a specialist SD-WAN standalone solution could mean that you’re locked into that solution. Furthermore, there is still a level of complexity to manage, and separating the control function from the underlying transport leads to complexity and difficulty in managing the end-to-end estate.”

Kitney confesses to being a “proponent of choice” where users have the flexibility to consume different services as and when they want to because they haven’t already invested heavily into the hardware. As a result, he believes that the “compelling option” when it comes to SD-WAN is to work with someone who can provide an end-to-end experience that is covered by a SLA throughout and with quality of service maintained across all elements of the network.

“The future roadmap is key as well. Make sure any provider you choose is able to show you how they will deliver virtualised networking technologies that will help your business in years to come. For example, full automation, NFV and SDN are considerations for the future. Businesses should avoid being stuck in a cul-de-sac of technology”

Talari’s Fraser continues in a similar vein when he says network administrators can narrow their choice of vendors based on the delivery or consumption models on offer. “For example, many SD-WAN vendors are focused on the needs of carriers, which means that the enterprise customer may be locked into a single source carrier for circuits and WAN services. Telcos selling SD-WAN hybrid services are primarily trying to lock customers into long-term, expensive MPLS contracts.”

Hughes warns that one of the key things network managers should avoid, unless they know what they are doing, are zero-touch solutions. “SD-WAN is a technology that is easy, but only if you already know how to do it,” says Armstrong. “The management side is important because although an organisation can adopt a DIY approach, it is very easy to get it wrong. Organisations can end up with a provider who manages the software and little else, which is not a complete solution.”

## A life less complicated

Does the network manager’s role change when it comes to running a WAN based on software rather than on-premise infrastructure? If there is one thing that

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unites all of the companies that we spoke to here, it is the belief that SD-WAN makes working life easier for the network manager.

For instance, Armstrong says: "Instead of managing the performance of 10,000 boxes, everything can be orchestrated from one point of control with huge gains in network visibility. That leaves ample time for managing new initiatives for the organisation or business, as well as strategic planning."

Talari's Fraser agrees that SD-WAN enables network managers to transition out of "firefight mode" and actually sleep easier at night, while Foster says the benefits of network management simplicity provided by the technology can't be overlooked. "By reducing the complexity and speed at which changes can be made, the mundane tasks of the network manager can be removed and the time that used to be needed planning for and testing network changes can be used to become innovative and add value to the business."

But while the technology promises simplification of network orchestration, Foster points out that there's still a need to integrate a solution into any existing infrastructure. "So the skills and knowledge of a network manager in technologies such as routing protocols will be required to establish and maintain an interface between the SD-WAN and existing in-house infrastructure."

As with any new technology, Foster goes on to state that there will be some training required in order to learn how to integrate SD-WAN management processes and procedures into existing network management practices. But unlike legacy networking technology, he says there's no need to learn complex CLI commands or to construct offline configurations to then 'upload and hope'. Instead, Foster says the orchestration platform's intuitive GUI can be used to pre-build device configurations policies ready to be committed. Furthermore, the systems themselves can have failsafe mechanisms to prevent misconfiguration.

"Learning to use the integrated wider capabilities, such as software defined wireless and LAN for branch networking or WAN optimisation may be a new concept to some network managers, but once again, the GUI orchestration simplifies the adoption of these technologies."

Armstrong also says the operation of SD-WAN requires the acquisition of new skills, working with a new interface, and managing the rollout. She says migrating to a platform may also include more involvement in managing suppliers which can be complex and time-consuming if the technology is not being supplied on a full managed services basis.

### The future

According to Axians' Gilmour, SD-WAN is now on most enterprise CIO's radar and the early adopters are already in progress or completing their projects with this technology. But he adds that the main issue he can see slowing down this adoption is that many enterprises have previously outsourced their networks to a managed MPLS provider. "Although the adoption of SD-WAN allows the IT manager to take back control of their network, many either do not have the skills or resource to do this, and so are looking for the managed service providers to catch up with the rest of the market and offer a portfolio of SD-WAN services as a managed service."

Gilmour reckons that, in general, these providers are still trying to find their feet with the technology and then, once they have chosen the right technologies, build

next-gen services around them. "So there is a bit of a lag with customer demand that is slowing the adoption rates currently."

In the meantime, other vendors are identifying what the foreseeable future of SD-WAN could look like. For example, McEwan says major developments will include a continued industry shift from an appliance-only model towards managed services, with a particular premium on those vendors that can virtualise the WAN end-to-end, rather than relying on non-managed Internet backbone links.

He also predicts that SaaS-first enterprise initiatives will accelerate SD-WAN adoption, more global enterprises will recognise that deploying SD-WAN over the internet will not address underlying application performance issues, and that remote and mobile workers and the IoT will be the fuel the

adoption of SD-WAN solutions.

Furthermore, SD-WAN tools will start to adopt machine learning and AI capabilities to take networks to the next level. "The potential is there to predict network behaviour in real time and route traffic over the best path, as well as using machine learning algorithms to identify network issues before the customer even experiences them," says McEwan.

Riverbed's Foster supports this view. He says AI's integration into SD-WAN makes changing the network to resolve business and IT challenges an automated process, and means the network can be adapted on demand. "Using the APIs to allow orchestration of network connectivity and integration into continuous application evolution means that when new cloud resources or connections to third party services are

required for data sharing, access to it can be done without manual intervention.

Foster also believes that SD-WAN is at the forefront of 'white-box' edge networking. He says this will continue with x86 platforms overtaking legacy routing hardware at the WAN edge, all managed and orchestrated using SD-WAN management platforms.

Furthermore, Foster believes that tighter integration with end-user experience management will be led by SD-WAN, resulting in the ability to alter network behaviour to suit the requirements of user experience or application performance, in real-time, to suit business cycles or priorities. "Extracting performance metrics from the WAN and feeding IT and business performance tools will make SD-WAN a strategic platform, not just a transport mechanism." ■

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off-the-shelf: data storage

# Super stores

Some of the latest storage solutions to help deal with your data deluge.

**Buffalo** describes the *TeraStation 5810DN* as a high performance, large capacity NAS solution for businesses.

The desktop device features a single native 10GbE port and NAS-grade hard drives for what the company claims is easier integration and higher overall system quality.

It is available as an eight-bay unit with either four or eight hard drives included. The four drives are partially populated (16 TB and 32TB) while the eight drives are fully populated (32TB and 64TB).

Other features include 4GB DDR3 ECC RAM, certification for VMware ESXi 6.5 (NFS & iSCSI), and a quad-core Annapurna Labs processor.

Buffalo adds that the *5810DN* s “premium” components

are housed in a durable metal chassis, and that an “industrial grade” internal power supply offers higher quality and ease of use.

The device also has RAID pre-configured for what’s claimed to be faster and more consistent deployment. Supported RAID levels include JBOD/0/1/5/6/10. In addition, it offers simultaneous NAS and iSCSI target functionality as well as Rsync support to enable users to backup the devices to an existing rsync-compatible Buffalo or non-Buffalo device, and vice versa.



**QNAP Systems** has released the *TVS-x73e* series of NAS units aimed at small business users.

Housed in what the vendor claims is a “state-of-the-art” metal design, the line-up includes the four-bay *TVS-473e*,

six-bay *TVS-673e*, and eight-bay *TVS-873e*. QNAP says each one is powered by a high-performance and energy-efficient AMD RX-421BD quad-core 2.1 GHz APU (Turbo Core up to 3.4 GHz) processor and 4/8GB DDR4 RAM (up to 64GB).

M.2 SSDs to configure SSD caching, or to create a RAID 5 tiered storage along with the two M.2 SSDs in the NAS (M.2 SSD sold separately) to increase data protection. There are also *QM2* cards that include 10GbE 10GBASE-T connectivity to provide SSD caching with high-speed network connectivity on a single card.



With an optional 10GbE NIC installed, the units are said to deliver up to 1139MBps throughput and up to 1091MBs with the AES-NI hardware-accelerated encryption engine.

With SSD caching and two built-in M.2 SSD slots, QNAP says the *TVS-x73e* series can benefit from its *Qtier* technology to optimise storage efficiency across M.2 SSDs, 2.5-inch SSDs and high-capacity HDDs for balanced cost, performance, and capacity.

It adds that the units include two PCIe slots that allow greater system flexibility.

For instance, users can install an optional 10GbE network card for boosting virtualisation and high-resolution video editing and sharing; a USB 3.1 Gen.2 (10Gbps) card for transferring large media files to/from USB storage; or QNAP’s *QM2* cards that allow for adding up to two

German storage and server manufacturer and vendor **Rausch Netzwerktechnik** is claiming a first with the *Sasquatch StorageAppliance*.

Using software defined storage (SDS), the company says it has created a 3U scale-out system within which Erasure Coding (EC) is possible. The system can be expanded with five server nodes and up to 180TB gross capacity.

According to Rausch, not only is the *Sasquatch* the first ErasureCoding 3+2 in the box appliance on the market, it’s also the first with this feature set. The company goes on to boast that the application possibilities are “enormously versatile”.

The firm adds that the

appliance’s SDS functionality enables users to distribute and manage storage according to policies and without having to modify the hardware. By combining storage hardware with suitable software from partners such as Cloudfian, Nexenta, amongst others, it says it becomes possible to build a custom-designed storage infrastructure that meets individual user requirements for deduplication, replication, backups, etc., and that partitioning the available storage space can be done more efficiently.



**StorONE and Mellanox Technologies** have teamed-up to leverage each other’s technological approaches in order to create powerful, scalable and flexible storage solutions.

According to StorONE, its next-generation SDS system, *TRU (Total Resource Utilization) STORAGE*, achieves maximum performance with minimal hardware because of what it claims is a “transformational” breakthrough in storage software efficiency. Meanwhile, Mellanox’s end-to-end smart interconnect solutions are said to provide the highest performance, efficiency and value for these storage solutions.

With *TRU STORAGE* software and Mellanox interconnect solutions, StorONE says customers can now run at wire speeds of 10, 25, 40, 50 and 100Gbps, while reducing the hardware needed to achieve it to less than \$0.01 per GB. It adds that by using its software technology with a single 40Gb Mellanox port (pictured) and just six SSDs, users can achieve 500,000 IOPS.

StorONE describes *TRU STORAGE* as a “new class of SDS that completely redefines expectations in performance, results, functionality, convenience and cost”. The company says that by using its enterprise-class software, a customer’s hardware investment will match the rated IOPS, throughput and capacity of the drive regardless of whether it is SSD, NVMe or HDD.

Furthermore, it says that the software includes enterprise storage features such as unlimited, near zero overhead, instantaneous snapshots; flexible, high-performance, low-overhead data protection; elaborate data retention; support for any workload mix (block, file and object) on shared drives; and support for any drive types in the same server.



**Toshiba Electronics Europe** has introduced two new internal 3.5-inch hard disk drives (HDD) series for surveillance and video streaming.

The *S300 Surveillance* hard drive range is designed specifically to meet the needs of the surveillance market, while the *V300 Video Streaming* line-up is said to support reliable video recording, editing and streaming.

The *Surveillance* range is available in 4, 6, 8 and 10TB variants – an increase of 2TB over Toshiba’s 2017 lineup. The firm says the drives have a mean time to failure of one million hours, and feature a data buffer up to 256MB as well as its *Stable Platter* technology. The company says the HDDs support large-scale server systems with the ability to back up to as many as 64 high-resolution video streams.

Additionally, the *S300* supports 8+ drive bays, has a workload of up to 180TB per year, and has a maximum data transfer

speed of 248MBps. Built-in RV sensors help suppress vibrations in multi HDD platforms.

The *V300 Video Streaming* drives are said to be optimised for 24/7 operation making them applicable for use in surveillance systems as well as network video recorders, DVRs, etc. Toshiba says the drives reduce energy consumption by up to 25 per cent (compared to its *P300* desktop PC HDD model) by using a lower-spin design. It adds that this also cuts heat generation and gives the HDD a longer life.



## A Solid State Drive You Can Rely On

The popularity of solid state drives (SSDs) continues to be on an exponential rise and customers are increasingly looking to install smart, cost-effective alternatives to those offered by the big OEMs. UK based Ortal Technologies has now entered this hotly-contested sector with two new products: 1TB and 2TB SATA III models. Gamers are an obvious key market, but so are consumers and professionals seeking fast, high-capacity SSD solutions at a lower price point.

Ortal Technologies has been a source of high-quality, third party server and networking upgrades at highly competitive prices since 2014. Sourcing micro-components from leading vendors around the world, Ortal assembles the parts at its UK facility. The product range currently extends to DDR3 and DDR4 server memory, SODIMM laptop memory upgrade kits and high performance optical transceiver modules.

Launched in 2017, the 1TB and 2TB SATA III SSDs are the latest addition to the Ortal portfolio and are already kicking up a storm in the press. Ortal SSDs feature a Silicon Motion SM2246EN 4-channel SATA III SSD controller, which enjoys high popularity across many brands for its combination of high performance and relatively low power consumption. They also use standard MLC (multi-level cell) NAND technology which combines a high endurance with good read performances of up to 560MB/s and 460MB/s write.

In performance testing run on a PC running Windows 10 Pro, the Ortal SSDs performed outstandingly in terms of speed, responsiveness and durability. The lab was able to create a single 953GB volume using all available space with no problems with installation.

The Ortal SSD was found to support TRIM garbage collection with Windows 10 Pro automatically adding it to its weekly optimisation schedule, and enabling manual optimisations through the Windows Drive Properties Tools option.

Running the acclaimed ATTO Disk Benchmark software, the SSD demonstrated top read and write speeds of 554MB/sec and 487MB/sec, which put it in the bracket of a high-performance product able to compete with any other on the market.

Ortal SSDs also show significantly reduced system boot times in the testing environment. Loaded in an HPE ProLiant ML110 Gen10 tower server and stacked up against a standard SATA III SFF hard disk, with Windows Server 2016 installed on both storage devices, the Ortal SSD has been proved to consistently improve boot time by an average of 20 seconds with boot times recorded from system power on to OS login screen presentation.

Both Ortal SSD models come with a 4-year global warranty (4<sup>th</sup> year activated upon product registration).

For more information on the Ortal Technologies SSDs visit [www.ortal.com](http://www.ortal.com) or contact +44 (0) 330 124 3777



## Big Data specialists in high demand

Demand for Big Data professionals increased 78 per cent since the first quarter of 2017, according to the latest *Tech Cities Job Watch* report from Experis.

The recruitment firm's quarterly reports track the changing tech workforce dynamics across the UK. Its study for Q1 2018 reveals that Big Data specialists command the highest salary of £67,464 compared to the four other ICT disciplines that are tracked – cloud; security; mobile; and web development.

But despite the increase in demand, Experis says permanent salaries for Big Data remained static compared to the same period last year, with the average salary standing at £67,464.

With a year-on-year growth of three per cent, London remains the highest paying city for Big Data professionals, with an average permanent salary of £73,026 – that's 8.24 per cent higher than the average salary. Outside of the capital, Newcastle and Bristol offered the highest salaries of £56,425 and £56,124 respectively. Bristol also experienced the highest year-on-year growth (17%) out of all the ten cities Experis includes in its reports (the others include Birmingham, Brighton, Cambridge, Edinburgh, Glasgow, Leeds and Manchester).

Unlike the permanent salaries, the report says day rates for each discipline across the ten cities saw a year-on-year decline, offering an average of £432 for this quarter. Cloud experienced the highest decrease of nine per cent, whilst mobile only fell by one per cent.

Despite a five per cent decrease year-on-year, Big Data remains the highest paying discipline. When reviewing all cities, Experis says Newcastle offered the highest day rate of £578 – 16.68 per cent higher than the national average day rate. Manchester and London were the second and third highest-paying cities, with average day rates of £518 and £516, respectively.

## NSCC certifies ethical hacking masters course

Abertay University's unique MSc course in *Ethical Hacking and Cyber Security* has been certified by the National Cyber Security Centre (NCSC) which is part of GCHQ.

Topics explored within the postgraduate degree programme include penetration testing, web hacking, exploit development, digital forensics, network security and information security management. Students are said to benefit from an active teaching group, links to industry, and knowledge transfer projects.

Dr. Natalie Coull (*pictured below*), head of the cyber security division at Abertay, says the course develops the traits needed for a hacker mindset and teaches an offensive approach to cyber security. "[It provides] detailed knowledge of electronic attacks and how to defend against the methods used to gain access to and exploit a system."

The application for certification was



assessed by a panel from NCSC, including experts from the public and private sectors, as well as independent academics. Chris Ensor, NCSC deputy director for cyber skills and growth, says: "Studying degrees like this one will help prepare students for their future careers in cyber security, and fill the skills gap. Certified degrees are part of our programme to set the standard for excellent cyber security education in the UK."

### IN BRIEF...

■ Girls in the UK are much more likely to consider a career in STEM subjects (science, technology, engineering or maths) if they have a role model who inspires them, according to Microsoft research. In a survey of 11,500 girls and women aged 11-20 across 12 European countries, 52 per cent who looked up to either fictional or non-

fictional people involved in STEM said they were interested in getting a job in the sector. Celebrities were seen as the least influential role models, while women working in STEM roles were rated as having the most impact. "Women represent just 30 per cent of Europe's ICT workforce," says Microsoft UK chief executive Cindy Rose. "The sooner we develop a strategy to empower young UK women in STEM, the better we can prepare for and shape the future."

■ Independent analyst organisation KuppingerCole is hosting a webinar to help infosec professionals secure hybrid IT environments with privileged access management (PAM). The online session will discuss the growing challenges and complexities associated with managing privileged access; how PAM tools could provide the answer; and what security

and risk management leaders should do to ensure an effective PAM solution both for IT and the business. The webinar takes place on 26 June at 3pm BST. [www.kuppingercole.com](http://www.kuppingercole.com).

■ Telecoms and Tech Academy has developed the Telecoms Online Masterclass for those who missed out on one of its public events. As a mirror of the academy's face-to-face Telecoms Mini MBA course, the online class is designed to give participants a critical understanding of the key competency areas required for organisational and individual success within the modern telecoms industry. Programme modules focus on: strategy/business environment; technology; finance; leadership and change management; marketing and customer centricity; and business simulation. <https://telecomstechacademy.com>



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