Skills shortage set to worsen following Brexit decision

by Rahiel Nasir
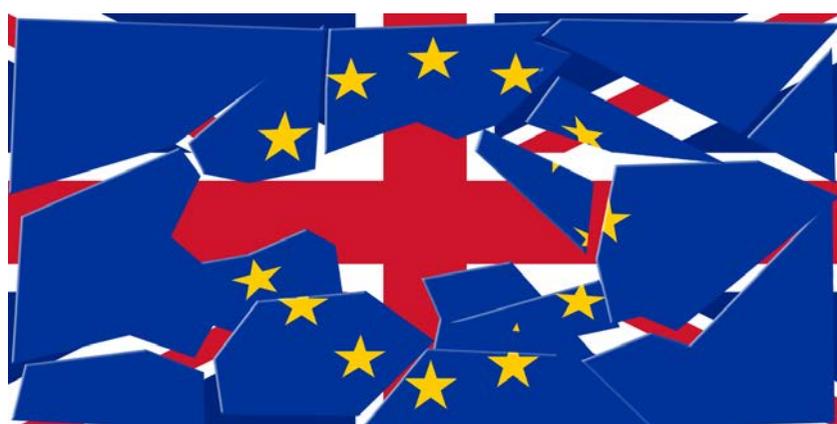
The UK's decision to leave the European Union resulted in a mixed response from the industry. Many, such as Comtek CEO Askar Sheibani, described it as a blow to UK technology businesses and warned that a 'Techxit' could now become a reality. But others, such as Aegis Data, believe the opportunities that now lie ahead could prove beneficial to the data centre industry.

Several organisations have expressed fresh concerns about skills and talent in the wake of the referendum. For example, Tech City UK, which aims to accelerate the growth of the digital economy, polled 1,205 people soon after the referendum. It found that the biggest worry for most respondents (of which 60 per cent were CEOs) is hiring and retaining non-UK staff. Fifty-one per cent said it will now be more difficult to attract and keep the very best talent.

Commenting on Tech City's survey, Martyn Ruks, technical director of MWR Infosecurity, said: "Access to talent has been a key issue, even more so in the cyber security space, for a number of years. In fact, in November 2015, cyber security was added to the UK skills shortage register, allowing those from outside the EU or without an existing right to work in the UK to apply for working visas."

Ruks added that there are "great talent pools" within the EU which companies can draw on. "We see the benefit for everyone in being able to help develop talent within the EU as a whole and use that to then support the international businesses we work with. Many of them have strong presences within the EU, and nurturing skills and developing

While industry doom-sayers now fear a 'Techxit', others believe that Britain's decision to leave the EU will mean new opportunities for the country's technology sector.

capabilities in the EU will drive the growth of our business and those of our clients."

Simon Crosby, CTO and co-founder of IT security specialist Bromium, believes Brexit is likely to lead to a brain-drain. He said: "The incredible technical talent in the UK just became a lot cheaper for foreign countries to hire. Sadly, they will suffer as their standard of living drops, and their opportunity to live and work in other countries in Europe is restricted. Ultimately, I expect many of them to leave the UK for countries that will pay what they are worth, such as the USA."

Vodafone and Huawei trial new mobile tech in Manchester

Vodafone is conducting trials of 4.5G (TDD+) with LTE TDD technology to significantly increase the capacity and efficiency of its 4G network in urban areas, as well as lay the foundations for the introduction of 5G by 2020.

Working with Huawei, the firm is testing Multiple-Input Multiple-Output (MIMO) techniques, and eight-way transmit and receive (8T8R) with multi-user beamforming in Manchester. Vodafone says these will support the expected rapid growth in video and VR applications with the arrival of next-generation smartphones.

The trial involves 4x4 versions of MIMO in order to deliver mobile data services at much greater speeds and with improved accuracy.

According to Huawei, unlike traditional methods of transmitting mobile signals between base stations and mobiles,

beamforming and four-way receiver diversity significantly improve performance in heavily built up areas. They do this by combining the signals from multiple angles and co-located antennas in order to reduce interference and improve throughput.

Huawei says 8T8R beamforming concentrates the user-specific energy and multiplexes the resource between different users, thus increasing the average as well as the edge performance.

It adds that by combining MIMO with beamforming, Vodafone is better able to focus customers' mobile signals in specific directions to ensure the "best user experience", and minimise interference during peak times in highly populated areas. As a result, it's claimed more signal reaches more subscribers, particularly at the edge of base station coverage, in order to provide higher average speeds across the network. ∎

CenturyLink strengthens NY-LON with new fibre

CenturyLink has activated two 100G waves of high-capacity connectivity between New York and London on Aqua Comms' *America-Europe Connect (AEConnect)* submarine cable system.

CenturyLink operates more than 55 data centres in North America, Europe and Asia. The company says it offers a variety of IT and network services, as well as broadband, voice, video, data and managed services across a 250,000-route-mile US fibre network and a 300,000-route-mile international transport network.

The circuits Aqua Comms has provided to CenturyLink from New York City to London are lit PoPs with no intermediate or cable landing station regeneration. Traversing over 6,800km, Aqua says its high-capacity transatlantic route includes diverse terrestrial segments on both ends. It says this enables CenturyLink to provision end-to-end high-capacity connectivity without regeneration, utilising advanced modulation techniques.

"This is a major milestone for CenturyLink's international network," says Pieter Poll, CenturyLink SVP of network planning. "We now can control the provisioning, monitoring and troubleshooting of end-to-end connectivity between our US network and any CenturyLink PoP on our European network." ∎

Pioneering smart city technology

The University of Surrey's 5G Innovation Centre (5GIC) and Digital Greenwich will work together to deliver the technology that will underpin future smart cities.

Digital Greenwich, which is part of the Royal Borough of Greenwich, will host a 5G smart city incubator space for innovators and entrepreneurs to work on new technology that will link transport, mobility, logistics, energy, healthcare and education. 5GIC will provide the technological foundations to build test beds and trials that will lead to commercial solutions.

The partners say they will deliver 'smart', resource-efficient, low-carbon, healthy and liveable neighbourhoods within a city. They add that a 5G standardised approach will provide the opportunity to scale solutions at a wider city and national level.

"Fundamental to next-generation smart city applications is the creation of robust communications systems," says Professor Rahim Tafazolli, director of 5GIC and Institute of Communication Systems. "Working with Digital Greenwich will enable the 5GIC to develop solutions targeted at multiple use cases in a city context. The partnership will also provide the foundation to drive standardised solutions for all of the UK to benefit from the technology."

The University of Surrey claims its 5G Innovation Centre is now the largest European research centre dedicated to the development of the next-generation of mobile and wireless communications. ∎

DSA welcomes Ofcom proposal to boost Wi-Fi spectrum

The Dynamic Spectrum Alliance (DSA) has welcomed Ofcom's recent decision to consult on a proposal to increase the amount of spectrum available to Wi-Fi in the 5GHz band.

In July, it was announced that the regulator is proposing to open up an additional 'sub-band', focusing on the 5725-5850MHz range within the 5GHz frequency range for Wi-Fi. This would increase the number of 80MHz channels available for Wi-Fi from four to six, paving the way for larger amounts of data to be carried at faster download speeds.

The 5735-5850MHz band is already used for Wi-Fi in a number of other countries, including the US, but is not currently utilised for Wi-Fi in Europe.

DSA executive director Professor H. Nwana said creating two extra channels will relieve the pressure that is currently put on the airwaves.

Currently, the most commonly used spectrum band for Wi-Fi in the UK is 2400-2483MHz, but the demand in 5GHz is rapidly catching up as new equipment standards are developed. Ofcom's decision to consult on the proposal follows its *2014 Mobile Data Strategy* which set the objective of opening additional spectrum for Wi-Fi in the 5GHz band.

DSA executive director Professor H. Nwana said the decision was "eminently sensible", given that almost all new routers and consumer client devices can now use both 2.4GHz and 5GHz bands.

"Creating two additional 80MHz channels will be key to relieving the pressure that is currently put on airwaves carrying Wi-Fi signals in the UK, particularly with new and larger bandwidth Wi-Fi standards like 802.11ac," he said.

The alliance also welcomed Ofcom's exploration of outdoor restrictions on Wi-Fi access to 5150-5350MHz. The DSA said it encourages the regulator's intention to retain a longer-term objective to release spectrum in the 5350-5470MHz and 5850-5925MHz ranges during the consultation. ∎

UK hotels struggle to cope with connected devices

While guests are demanding more personal digital services from hotels, more than a quarter of hoteliers admit that their Wi-Fi struggles to cope with the number of connected devices, according to a study by ZyXEL.

In March, the broadband networking technology specialist surveyed 100 UK hoteliers and 1,028 consumers that have stayed in a hotel in the last 12 months. It revealed that one of the top complaints regularly made by guests is poor or no Wi-Fi.

Despite most hotel managers reporting that reliable network access was available throughout the building, 65 per cent of consumers said they've had to rely on 3G/4G at some point during their stay. Thirty-five per cent admitted that they had to move to the hotel lobby, 22 per cent went looking for a café, and 18 per cent said they had to sit in the hotel corridor to get good wireless signal.

ZyXEL says while hotel managers highlight speed and drop outs as the biggest Wi-Fi issues for guests, many remain confused as to the cause. Wall thickness, size of connected devices, and wooden furniture were just some of the answers provided for poor connectivity.

Only 15 per cent are aware that microwaves impact Wi-Fi performance, and only five per cent understand that mirrors can also hinder signals.

To compound this, ZyXEL discovered that a quarter of hotels didn't conduct a site survey before installing their wireless network. Lee Marsden, the company's European president, says: conducting a site survey first is like throwing a party without checking if the venue is large enough for the number of people you want to invite. ∎

Wi-Fi sorted at Clarice House hotel – p8.

Many hotel guests say they have had to move around the building to search for a decent Wi-Fi signal.

Will Brexit lead to Techxit for UK tech Industry?

Crosby also pointed out that more than a third of research funding for UK universities comes from the EU. In the absence of new funding from the Government, he warned that there will be a huge impact on a university's ability to deliver highly skilled tech workers to the UK economy.

BCS, The Chartered Institute for IT, agrees here. In its reaction to the leave vote, it said vital support now needs to be in place for the science and engineering education and research ecosystem if the UK is to continue to succeed in a global economy.

Among the many measures it has called for, the institute said the Government must ensure that the country's universities and technology companies are still able to fully participate in developing and establishing international technical standards, for example 5G through bodies such as ETSI,

or those concerned with future advances in the internet and the web.

While acknowledging Brexit has led to some future uncertainty, others are more positive about the outcome of the referendum. For example, colocation provider Aegis Data believes the immediate impact hasn't caused much disruption to the data centre industry, and is unlikely to for some time. "London is still going to be a central hub for financial and tech investments, if not directly to and from the EU then for other countries," said CEO Greg McCulloch.

He added that whilst there will be a certain amount of flight from UK-based data centres to European alternatives, small to medium-sized operators can weather the storm by providing services to UK firms coming back from the EU and other global companies settling in the UK.

Peter Godden, EMEA VP of business continuity and disaster recovery specialist

Aegis Data CEO Greg McCulloch believes London will still be a central hub for financial and tech investments.

Zerto, advises firms to carefully assess their IT infrastructure to validate that their systems are ready for any disruption that the changing political landscape might cause.

"Now that Brexit is a reality, companies may find themselves needing to move their data into or out of Britain to align with new compliance regulations," he said. "[This] will truly shine a light on the importance of BC/DR software, as many will struggle to manage mission-critical data across disparate systems without experiencing downtime." ∎

World's first bio-inspired network security system

Public services provider Serco will use Chemring Technology Solutions innovative *Perception* network security system across its operations in the UK, USA, Middle East and Australia.

Originally developed for the UK government in 2011, *Perception* is said to be the world's first bio-inspired network security solution. Chemring says the system is behavioural and does not use a rigid 'rules-based' architecture. It is designed to adapt to the network's changing profile, automatically identifying malicious activity and making it more difficult for malware to evade detection.

It's claimed *Perception* will also detect the slow, unauthorised exfiltration of business information, even when obfuscation techniques are used to evade traditional rule-based security defences.

Chemring adds that the system runs at high data rates at the core of a network, rather than at the perimeter as other security solutions do.

Perception will complement Serco's existing computer network security systems by identifying the potential threats they cannot. Mark Henshaw, the firm's head of information security, describes the system as a "powerful" tool that identifies apparently benign events which could have serious impacts. He says the platform collects and analyses information in a different way by looking for the unusual, and linking apparently non-threatening network activity to identify hidden malware.

"[*Perception*] is proving to be simple to implement and has demonstrated value in a very short time by identifying malware, policy violation, suspicious data movement, device configuration issues, and pointers to areas where awareness training should be increased. Many of the issues identified were subtle in nature and were not picked-up by our current network security systems."

Based at Roke Manor in Hampshire, Chemring Technology Solutions is part of the Chemring Group, a global provider of advanced electronic warfare, explosive ordnance disposal, and communication information systems used by the MoD, NATO allies, amongst other customers. ∎

Chemring's Perception system is designed to adapt to the network's changing profile to automatically identify malicious activity.

Newcastle City Council deploys IT analytics to boost operations

Newcastle City Council (NCC) will use IT analytics from Nexthink to improve the visibility of its IT estate. The local authority's aim is to more effectively manage IT operations and provide proactive support in order to deliver higher levels of end-user satisfaction and productivity.

NCC serves around 259,500 residents. To ensure the smooth operation of services, it currently has 4,746 end-user PCs distributed in around 20 offices across the city.

Using Nexthink's *V6* platform, the council can now proactively monitor its entire IT infrastructure. The system reports on important end-user related events, such as performance issues, failures, crashes and security issues. Nexthink says *V6*'s real-time and historical record of the usage and performance of IT services from the end-user perspective provides the council with unique visualisations and actionable insight.

Joe Bradshaw, senior ICT solutions analyst at Newcastle City Council, says: "Nexthink provides a wealth of information literally at our fingertips, and we are

Nexthink's Steven Little says analytics enable councils to perform detailed investigations in real-time from the end-user perspective.

expecting a significant ROI within the first 12 months of using the solution. End-user IT analytics will be instrumental to the success of our agile accommodation project where we want to measure the usage of devices in this new working environment."

Steven Little, Northern Europe sales director at Nexthink, adds that the focus of the council's work is to deliver successful outcomes for customers and citizens. He says: "IT analytics enable local governments to perform detailed investigations in real-time from the end-user perspective, to enhance IT governance and control and implement a cost effective IT operations strategy." ∎

Polycom-Mitel merger called off

Polycom will not be merging with Mitel Networks as announced earlier this year in April. Instead, Polycom has entered into an agreement to be acquired by affiliates of Siris Capital Group, a private equity firm that specialises in buying technology and telecoms companies. The completion of the deal is expected in the third quarter. In early July, Mitel said it received notice from Polycom of a "superior proposal" from a third party. In response, it told Polycom that it will not increase its offer, and the agreement was therefore terminated. Polycom will now pay Mitel a $60 million termination fee as per their original agreement. ∎

Aegis and Custodian partner

Aegis Data and Custodian Data Centres have teamed-up to expand their carrier neutral offering. By partnering with Custodian, Surrey-based Aegis says it can offer a range of IP transit networks to its customers, as well as expand its DDoS protection and high performance computing (HPC) capabilities. Custodian hosts a number of HPC clusters for various universities and financial trading organisations. With the ability to match power and delivery of up to 25kW within the same footprint, Aegis says it is now able to provide a greater service to its customers, including the disaster recovery functionality offered by Custodian. ∎

Novosco acquires NetDef

Cheshire-based security and managed services specialist NetDef has been bought by managed cloud provider Novosco. While the exact value of the transaction has not been disclosed, Novosco says the seven-figure deal will see it increase its workforce to 140 which includes staff at offices in Belfast, Manchester, Dublin and Cork. Novosco says its client base includes many of the UK's largest health trusts, universities and housing associations, more than 50 per cent of Northern Ireland's top 100 companies, and some of the largest organisations in the Republic of Ireland. It hopes its acquisition of NetDef will help it rapidly expand, particularly in the English market. ∎

Traditional IT team "no longer exists"

Today's IT teams are unsustainable when it comes to supporting changing business demands and achieving digital transformation, according to research from Experis.

For its *Tomorrow's Tech Teams* report, the recruitment specialist polled 1,000 IT workers and 200 senior IT managers to explore the current and future strategy for IT departments in the UK.

Fifty-nine per cent said the 'traditional' IT department no longer exists in modern business, and that the optimum teams of 2020 will be "vastly different" from those of today. What IT leaders will be looking for are the skills to deliver and support additional services such as cloud and the increasing use of mobile apps, as well as candidates who offer greater strategic input for critical business decision-making.

To meet these demands and help plug the current skills gap in the sector, 69 per cent said they will become more reliant on temporary staff who they believe can provide greater flexibility, fresh perspectives and unique skills. Experis MD Geoff Smith said: "While contingent workers will

IT departments should also look for people who have boardroom aspirations, says Experis MD Geoff Smith.

become increasingly important to deliver short-term change, IT should also look for people who have the aspiration to sit at the boardroom table, contributing ideas on how IT can support future transformation, bring innovative projects to fruition, and enable business growth and competitive edge."

The research also found that IT departments plan to employ a mixture of both male and female workers from different age groups who possess different skills. It forecasts that more women will enter the sector as businesses address the current imbalance. At present, 71 per cent of workers in the industry are male while 29 per cent are female; over the next few years, this is expected to shift to 59 per cent male and 41 per cent female. ∎

Opengear adds resiliency to world's largest independent media networks

Opengear's *SmartOOB* platform will be used to provide remote console connectivity across what's described as the world's largest independent media network.

Since its foundation in 1995, London-based Sohonet now has additional offices in Los Angeles and Sydney, and is said to serve more than 400 media and entertainment companies such as Abbey Road Studios, BBC Worldwide, HBO, amongst others.

Sohonet says its network services, which include cloud-based storage and compute capacity, enable a global community of media companies to collaborate on content creation. It builds many of the bespoke management tools it needs to ensure its network is ultra-reliable, and uses multiple links to support more than 60 PoPs on three continents.

"But hardware will fail eventually, and having console access to manage remote configuration changes, power cycles, or even for drop shipping new hardware that we can setup over remote consoles, is a simple but critical requirement," says CTO Ben Roeder. "When you need to access a network element that has a problem on the other side of the world, your remote access platform had better work."

Sohonet has now deployed Opengear's *ACM5500 Management Gateway* range of devices at all of its sites. These provide smart, out-of-band access and control of distributed networks to deliver what's claimed to be "complete and uninterrupted" remote management. The solution has also been integrated into the company's in-house

Opengear's solution "might not be sexy" but it works every time, says Sohonet CTO Ben Roeder.

created network management system. Opengear says the devices in the range includes up to eight serial ports, integrated console server, and FIPS 140-2 validated encryption, SSL and SSH, stateful firewall, OpenVPN and IPsec. ∎

Coreix uses Thunder to protect against DDoS strikes

Coreix is using A10 Networks' *Thunder TPS (Threat Protection System)* to safeguard its more than 600 customers from the growing threat of complex cyber attacks.

London-based Coreix provides managed hosting, colocation and network services. As the firm continues to expand its business and customer network, A10 says the flexible scaling model offered by *Thunder TPS* will help ensure it can manage traffic spikes and guarantee the robustness of its hosting.

"Across the various sectors that we work in, customers are being targeted by DDoS attacks and we wanted to better protect against this growing threat," says Paul Davies, technical director, Coreix. "The flexibility of

A10 says its Thunder TPS platform leverages a shared memory architecture to provide efficient tracking of network flows.

Thunder TPS, combined with its blend of automated and manual operations, means that we are not only able to successfully shield our customers from these attacks but also their wider network."

The appliance will be integrated into Coreix's network of data centres around London. A10 says this will route attack traffic away from customer servers, and

effectively combat DDoS threats using automated response capabilities.

According to the vendor, its range of *Threat Protection Systems* enables service availability against a variety of volumetric, protocol, resource and sophisticated application attacks. Built on the *Advanced Core Operating System* platform, A10 says *Thunder* leverages a shared memory architecture to provide efficient tracking of network flows, as well as accurate DDoS protection enforcement for service providers, website operators and enterprises.

A10 worked closely with its channel partner, IT and telecoms services specialist Alternative, to deliver Coreix's solution. ∎

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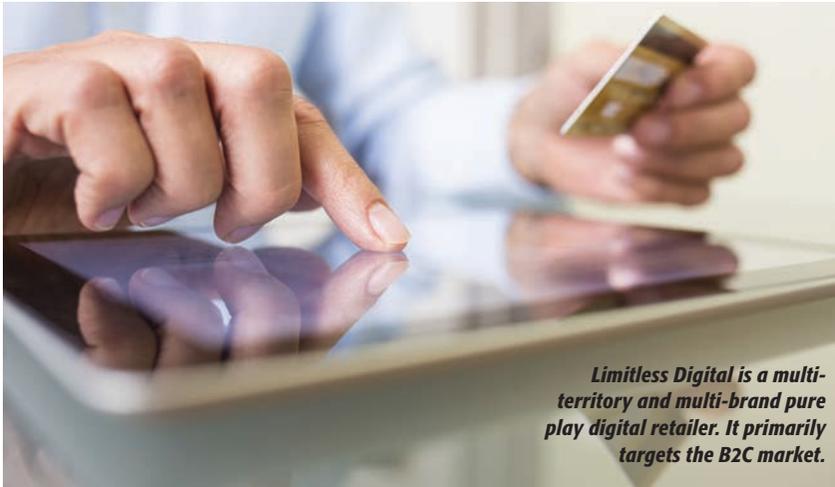
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Limitless Digital is a multi-territory and multi-brand pure play digital retailer. It primarily targets the B2C market.

Managed hybrid cloud will help Limitless Digital power growth

Limitless Digital Group (LDG) has selected managed cloud service provider Adapt to help advance its e-commerce capabilities.

Lancashire-based LDG (formerly the Trueshopping Group) needed to create scale that would deliver against an ambitious business strategy. As a result, the company has overhauled its end-to-end infrastructure, from website, e-commerce, CRM and ERP, to data capture and analytics.

The new solution will initially see CRM capability delivered via Adapt's private cloud, with the retailer's *Magento* e-commerce platform better suited to the natural webscale of Amazon Web Services (AWS) cloud.

Adapt's specialist teams will deliver the integrated service across both platforms later this summer. The hybrid solution will then be managed and supported round the clock by its multi-cloud managed service centre.

LDG CEO Peter Lilley says the aim is to ensure that the company delivers an engaging customer experience which will scale as it grows. He adds: "Adapt's cloud expertise, particularly around AWS, has allowed us to locate our revenue generating and business-critical applications and workloads on platforms best suited to their natural characteristics. Being able to blend the AWS and Adapt clouds in this way is an enormous advantage for us in terms of efficiency and performance."

Over the lifespan of the relationship with Adapt, LDG will be free to move its applications and workloads between cloud platforms to give it ongoing flexibility as business expands, based on budget and application performance priorities. ∎

Verizon out to transform the network with VNS

Verizon Enterprise Solutions claims it will transform the network into software-based solutions running on open platforms. With the launch of its *Virtual Network Services (VNS)* platform, the company reckons enterprises can transition to a virtual infrastructure model that provides greater agility and on-demand resources.

Available immediately around the globe, the new platform will be delivered as-a-service and is said to represent a "significant" departure from how network services are provisioned and consumed today.

Verizon says *VNS* will enable clients to essentially operate a "living" network that can be changed quickly to address the number of company locations and users, bandwidth required by application, and application use by employee to enable a "secure, high performance and efficient network".

According to the firm, the new services will provide a range of business and technical benefits. For example, it says enterprises will gain from: improved time to market through reduced hardware deployment and rapid software provisioning; a flexible on-demand pay-as-you-go pricing model; and a fully automated and managed orchestration platform to enable virtual network function service chains via a web portal.

Verizon adds that multiple network functions and vendors can be supported on the same platform/CPE. The initial service release is supported by a number of partners such as Cisco, Juniper Networks, Fortinet, Riverbed, Palo Alto Networks, and Viptela.

Shawn Hakl, Verizon's VP of networking and innovation, believes that the way in which network services are now being delivered is going through the biggest shift since the adoption of MPLS. He says: "Today, the network is transitioning to a virtualised model using similar technology that drove the disruption in the data centre market.

"With our new solution set, enterprises will be able to balance agility, performance, cost and security necessitated by the growth of mobile-to-cloud applications and the IoT." ∎

Cloud-managed Wi-Fi hots up with IgniteNet

Above: the SunSpot is an indoor AP available with single and dual-radios. Left: the MetroLinq outdoor license-free radio antenna is said to enable network sharing over distances of up to 1.5km.

Zcomax reckons it now offers the UK's most cost-effective cloud system with the launch of products and services from IgniteNet.

Already an established supplier of hardware and cloud services in the US and Asia, IgniteNet's product range includes business-grade indoor access points and outdoor equipment, as well as point-to-point/multipoint radio antennas for connecting buildings up to 1.5km away. A cloud-managed Layer 2 PoE and fibre switches are also planned for launch later this year.

According to Zcomax, "easy, powerful and affordable" cloud-managed Wi-Fi is now a reality as any device can be controlled via *IgniteNet Cloud*. The service includes full configuration, diagnostics, alerts and monitoring, with secure hosting provided by IgniteNet. As well as supporting third-party applications such as Purple WiFi and Hotspot System, *IgniteNet Cloud* also has its own captive portal and hotspot functionality.

The company's equipment range includes indoor use APs such as *Spark* and *SunSpot*. There's also outdoor Wi-Fi hardware such as the *SkyFire* single and dual-radio APs, and *MetroLinq* 60GHz point-to-point radio with 5GHz backup. ∎

Network Utilities launches 'MaaS' for small and medium businesses

Network Utilities reckons it's come up with a way that smaller companies can take advantage of managed IT benefits without breaking the bank.

The company says its new 'monitoring-as-a-service' platform can be used for just four pence per hour and a minimum three-month contract period. The service, delivered by a round-the-clock operations centre and technical team both based in the UK, monitors network, server and storage architectures for security and availability, with optional pay-as-you go incident packs for rapid remediation of any issues.

"In the past, SMEs have sometimes overlooked managed services due to the perceived high cost and limited flexibility," says David Silsby, enterprise sales director for Network Utilities. "With our new monitoring-as-a-service offering, we have created a product that is extremely cost effective and allows the customer to pay for what they need and scale up as they grow – without skimping on crucial elements such as skilled support staff or customer service."

MaaS includes a tailored dashboard to allow clients to view all monitored devices in real-time, supported by monthly reports detailing the network infrastructure's overall health. IT managers can also setup system and troubleshooting alerts via phone or email.

Although SMEs have been initially targeted, Silsby says the service is able to scale to tens-of-thousands of devices under management. He adds that it offers a "huge" cost saving for organisations struggling with headcount and skills shortages. ∎

Networking when not working

Human downtime is certainly no time for network downtime.

DrayTek satisfies tall Wi-Fi order at Clarice House hotel

Clarice House in Colchester is an exclusive health club, day spa and restaurant. As part of a refurbishment programme, the owners decided to provide Wi-Fi for guests throughout the building.

There were a number of key requirements here. Among them, the new system had to maximise the existing ADSL broadband potential and ensure that fibre broadband could be accommodated when available. It also needed to provide a closed Wi-Fi network for the 40 fitness devices in the gym.

In addition, Clarice House wanted to provide free access from its reception seating area to around 200 daily guests using any Wi-Fi enabled device. It also wanted to allow restaurant staff to be able to take orders on Wi-Fi enabled tablets in the restaurant, patio and club reception areas. All three Wi-Fi networks (guest, gym and administration) had to be kept completely separate, but at the same time guests and front of house staff had to be able to move between areas without losing connection.

With such a mix of requirements, Clarice House contacted its local IT supplier, Sicon, for advice. It recommended DrayTek's *Vigor 2860* high-speed router *(pictured below left)* for the broadband access and *AP-900* access points for the Wi-Fi network.

The *2860* high-speed router supports ADSL, VDSL, Ethernet WAN and 3G/4G modems, and was therefore considered ideal for maximising the potential of an ADSL broadband connection today as well as for FTTC when available. The router also includes a wireless management controller as standard, allowing up to 20 APs to be centrally managed.

Using a Wi-Fi mapper, Sicon was able to install the *AP-900*s in key locations to provide building wide coverage. The device's multiple SSID function was used to segment the gym, guest and staff networks. It was important that users in the gym were unable to see the specific gym SSID used for the fitness equipment, so this was configured as 'hidden' and therefore not seen.

DrayTek says the mobility features within its managed wireless solution allow individuals to log on via one specific AP, for example in the lobby, and then move to other parts of the building serviced by different access points without losing connection. 802.1q VLANS were configured for specific networks, while inter-VLAN routing is not permitted to ensure networks are completely separate.

The *AP-900*s needed to be installed high up where no plugs were available. Therefore, a DrayTek *VigorSwitch P2261* fully managed PoE switch was installed to both power and connect the APs to the network.

Ministry of Sound switches to a faster track

Established as a nightclub in 1991, the Ministry of Sound (MoS) has since diversified into a multimedia entertainment business that includes an independent record label, worldwide events brand, a radio station, and other media outlets.

With the organisation's employees and partners now leveraging cloud-based services for business processes, the need for improved connectivity speeds, bandwidth and security became a necessity. MoS therefore needed to move to a faster platform. At the same time, it wanted to take advantage of the latest advancements in switching technology which is where networking specialist ZyXEL came in.

MoS has been working with ZyXEL for 10 years now, and had already been using the vendor's switches in its core network as well as at the edge. These were managed individually. ZyXEL therefore created a centralised management console, the *MM7201* switch, to connect all of the edge switches together, while allowing the main office to run off its own LAN and the nightclub to run off another.

With the same edge switches now across both networks – 10 *GS2210*s in the office and five in the club – the two networks were able to run separate from one another with greater bandwidth.

Centralised management of all switches has increased capacity from 100MB to 1GB, enabling employees to more easily share files and emails via the cloud without the network going down or suffering from lag. Centralised management also means the switches can be more easily controlled if quick changes need to be made.

In addition, ZyXEL used *XS1920-12* copper 10G switches to create a storage network. This gave MoS a cost-effective way to expand and deploy its storage solution, allowing the company to cope with new demand in complex lighting and sound equipment control, as well as the production and storage of media rich content.

With so much data now stored in the cloud, network security was also a big issue that needed addressing. However, ZyXEL says the *GS2210*s provide new features, such as port isolation, which help improve the way the networks are secured, and also make it easier to troubleshoot any problems.

The new network has also boosted MoS' business continuity and disaster recovery capability. Previously, with on premise servers, an external team would have to be called on-site to deal with a major outage. Having moved its data to the cloud, MoS can now solve such issues with the flick of a switch.

Police Scotland upgrades mobile network

Police Scotland regularly deploys its mobile communications infrastructure to various events across the country, such as golf's Open Championship held this year at Royal Troon, the Scottish Air Show, the Grand Prix of the Seas powerboat race that took place at Greenock in June, as well as football matches, music festivals, etc.

The infrastructure includes a fully kitted Mercedes van with a generator and backup batteries that also routes power provided by the venue to the CCTV cameras installed by the police at the site.

The cameras are a mix of analogue and high-resolution IP devices. Site builds are sometimes challenging for Police Scotland's overt engineers, with some venues requiring the mobile unit to connect to cameras across considerable distances of coaxial cable networks to record large volumes of streamed IP camera data.

As a result, the police vehicle has been enhanced to take advantage of new technology enabling it to quickly integrate with diverse CCTV systems and local infrastructure within a small footprint to fit the limited rack environment. Network video specialist Veracity implemented the upgrade which includes Instek's *CCLite* as the VMS client solution, with a pair of Instek 2U 16 channel recorders for the video feeds.

Veracity's *HIGHWIRE Powerstars* and *CAMSWITCH* Quads were installed into the Mercedes to connect to the cameras via a centrally-deployed Peli case which links back to the vehicle through the embedded site network.

The combination of night/day, thermal and HD cameras positioned across a venue are all controlled centrally from the vehicle, and are field-tested with a laptop nearer the camera position using Instek's recently released *CCLite* app. This means that the presentation of the camera feed to the controller's screen can now be seen on a tablet or smartphone, providing even more flexibility for commanders on the ground.

Veracity says that it is now feasible for Police Scotland to deploy and be fully active with a fully-functioning security control suite on site within three hours of leaving their station.

David MacGregor, the force's senior technical officer, adds: "Veracity's ability to provide innovative solutions and reliable products has enabled us to continue upgrading our vehicles and exploit emerging technology in a very tight space, without having to revisit the system connectivity."

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BYOD, ever-growing cyber threats, cloud, virtualisation, mobile workforces, IoT… How do all these IT 'trends' impact WAN optimisation? RAHIEL NASIR finds out

There's no denying that today's enterprise networks are radically different from what they were just a handful of years ago. As a result, many experts argue that WAN optimisation is now more important than ever before.

"Quite simply, if you are unable to see what is going on within your network, how can you troubleshoot problem situations or detect abnormalities in usage of your infrastructure or your services by users?" asks Paul Griffiths, technical director for Riverbed's advanced technology group.

He describes WAN optimisation as a "golden opportunity" to provide telemetry data on all the traffic flows to a centralised visibility and reporting platform. "Security may be top of CIOs' minds, but with the sheer quantity of encrypted traffic flowing in today's corporate networks, having transparency of how that data is flowing across the network should never be low on the priority list."

Silver Peak agrees that optimisation has become more crucial in an era when companies are increasingly embracing virtualisation, cloud, etc. But when connecting users to applications across geographically distributed organisations, the company says network managers are introduced to new challenges that traditional WANs were never engineered to address. This includes poor and unpredictable application performance, which impacts user productivity, and cloud applications consuming the WAN.

Nick Applegarth, Silver Peak's VP of sales for EMEA, says: "While the rest of the infrastructure has become more fine-tuned for a cloud and virtual world, the WAN continues to be subject to the limitations associated with traditional private MPLS networks and branch office infrastructure. Today's networking solutions need to be able to incorporate broadband and the internet into the WAN, not only for the potential costs savings involved, but to fully address enterprise's changing connectivity requirements."

Same old, same old?

So can network managers still use the same hardware/software that their company invested in years ago to optimise today's networks? Or are these now past their use by dates?

Chris Wade, commercial director with The Networking People (TNP), believes the integration of old and new should be a key element of any network progression strategy, particularly in the public sector where there is a heavy focus on value for money and the current drive to reduce cost.

"At TNP we often find that organisations, such as local authorities, are being pushed to replace relatively new infrastructure when this existing investment could be leveraged to optimise the network, thus allowing either cost savings or more focused investment in hardware and software to improve the core or security elements of the infrastructure."

Mandana Javaheri, CTO of Savvius (formerly WildPackets), supports this approach to an extent: "There's no denying that new hardware and software for network optimisation is expensive. However, with the right vendor support and upgrades, many of these tools can be used for quite a few years. It's up to the network manager to understand the overall health of the network, and to be the judge of when a substantial upgrade or change is justified."

Javaheri says the key here is to constantly test the network to ensure that everything is operating within acceptable parameters, and look at whether the existing solutions offer a good mix of performance, visibility and control over the network. "Is there a business need to get the most out of every protocol on the network? Does the GUI offer an intuitive and efficient experience with a good feature set such as SSL decryption? Does the solution provide solid reporting, and the ability to facilitate cloud-based application deployment? If not, then it may be time to start working on a shortlist."

For Griffiths, the need for such as shortlist may come sooner rather than later. "There is some exaggeration in this comment, but it often seems that companies purchased their networking equipment back in the 1980s, installed it, locked it in a closet, and forgot about it because it doesn't keep up with the times."

More realistically, he says that while optimisation technology has developed in terms of speed, capacity and functionality, the administration approach to configuration and change control is still 'per device' via a CLI. "That may seem ridiculous but it shows how little has actually changed in terms of how IT approaches networking technology. Legacy management tools are prone to error, are inflexible, and not fit for the business demands of the 21st century."

So what should you look for when selecting an optimisation solution? The answer may not be as straightforward as you'd expect. According to Mav Turner, director of product management for SolarWinds, network managers need to be investing in the future while taking care of the present. But he reckons many software vendors struggle to provide the management capabilities for both cloud and on-premises application. This leads to companies purchasing multiple solutions, which ultimately adds to the complexity.

According to Microlease technical manager Geoff Kempster, the IT department should begin the optimisation process by ensuring that the physical installation is fully compliant with the stipulated requirements. "This may involve the physical testing of LANs to certify their conformance to the relevant Cat 6 or Cat 7 standards.

> **"It often seems that companies purchased their networking equipment back in the 1980s, installed it, locked it in a closet, and forgot about it because it doesn't keep up with the times."**
>
> *Paul Griffiths,*
> *Technical director,*
> *Riverbed Technology*

Alternatively, it could be verifying the characteristics of a fibre in a WAN, which may include dispersion testing and thorough optical time domain reflectometer measurements."

Once the physical environment of the network has been verified, Kempster says data performance can then be tested. "This could be a simple RFC-2544 test of the network, but more companies are looking to use the newer, highly sophisticated Y-1534 test processes, which are designed to enable testing of the network that is more real-world applicable."

However, Griffiths says there is still a lot of human interaction at the low level which isn't totally necessary. He believes that in today's 'software-defined' world, organisations no longer require someone to provision all the intricate components that go into their networks.

Earlier this year, Riverbed launched *SteelConnect*, a new software-defined platform which it claims is unique in its ability to unify network connectivity and orchestration of application delivery across hybrid WANs, remote LANs, and cloud networks *(see News, p6, Jun 2016 issue)*.

Silver Peak is also an exponent of the software defined WAN (SD-WAN). Applegarth says the benefits are four-fold: increased flexibility; more visibility and control; optimal performance; and reduced connectivity, equipment and admin costs.

He says that while network managers may be reluctant to completely replace their traditional MPLS networks with broadband connectivity, SD-WAN technology allows them to move at their own pace. At the same time, it enables their organisations to keep on top of innovation trends such as cloud and virtualisation. "With SD-WAN, the ultimate goal may be a 100 per cent

> ### "The WAN continues to be subject to the limitations associated with traditional private MPLS networks and branch office infrastructure."
>
> *Nick Applegarth,*
> *VP of sales, EMEA,*
> *Silver Peak*

broadband WAN, yet most companies will take incremental steps by deploying a hybrid WAN. As MPLS upgrades arise, businesses can then evaluate lower-cost broadband internet services as an alternative or complementary path for connecting users to cloud-based applications."

This, says Griffiths, provides an opportunity for organisations to gradually reduce reliance on MPLS bandwidth or preserve that connectivity for remaining data centre applications. "Enterprises can then begin to migrate additional applications from the data centre and into the cloud as desired, and do so in an optimal way."

Critically, in these financially constrained times, Griffiths adds that SD-WAN architecture has a strong economic incentive for organisations, with reduced connectivity, equipment and administration costs – up to 90 per cent in some cases, he claims.

What to avoid

It could be argued that if you get optimisation right from the very outset, your network will be in a better position to more easily handle new technologies as they evolve.

"Network managers need to be continually monitoring and upgrading the performance of their networks, as well as ensuring that they are functioning at maximum efficiency," says Microlease's Kempster. "This has to be a whole life process, from the initial installation of the network all the way through its operational lifespan."

But if you are considering a new optimisation solution, Savvius says that some of the biggest pitfalls facing companies today include ignoring warning signs from existing equipment. Javaheri says it's important to monitor utilisation – not just averages, but peak periods to see how much stress the network is under.

Turner advises network managers to look for platforms that offer a clear value for the hybrid IT environments which they are responsible for. He believes usability is the key characteristic to look for, and is more important than any specific feature. "The network is more important than ever given the digital nature of all businesses. To make sure your network is running and you are delivering services securely, you need products that are easy to use and just work."

While that may sound obvious, Turner also says that when you are in the purchasing cycle, if you don't make a commitment to deploying some of the new technology, you probably shouldn't pay the extra money for the features.

"My favourite example of this was the 1GB to the desktop experience we had a little over a decade ago. All of the network vendors where pushing GB in their access layer switches, but for the vast majority, this simply wasn't needed or where the bottleneck existed. The same thing can be said today. If you don't plan to roll out the new feature quickly, be careful about buying more than you need."

Griffiths may not fully agree here. He points out that mature product sets provide additional functionality which some organisations may not even realise that they need. Network managers therefore need to ensure that what they invest in is aligned with their company's plans for the future.

Silver Peak warns that while virtualisation and cloud technologies promise to optimise and enhance the enterprise, they can often result in slower performance not to mention "wasted costs" for the business.

"This is particularly true for cloud applications as a result of the transmission being sent back over MPLS connections to the organisation's data centre and back again," says Applegarth.

"Network managers can also lose visibility and control over the expanding mix of applications. In fact, most network managers would not be able to say how many SaaS applications are running on their company's WAN. As such, they need to be able to rein in how applications are being used on the network."

He continues by saying that SD-WAN will ensure private line performance over broadband and internet connectivity by overcoming quality problems created by packet loss and out-of-order packets.

"This is especially important for cloud users and those that are increasingly using SaaS applications in the branch.

"Once connected, an SD-WAN fabric should also provide visibility into both data centre and cloud traffic, and provide the ability to centrally assign business intent policies to secure and control the WAN traffic. It should dynamically select the best path – whether that's MPLS or broadband – for each application based on customer-defined policies and real-time network quality measurements, all while keeping the data in-flight encrypted edge-to-edge."

Griffiths offers further advice to network managers and says they should avoid 'point products' – i.e., those that offer only a single function or limited feature set, as these create a deployment where you don't have a complete solution.

"Administration becomes fragmented and complex when you start to include other vendor's products to make up the shortfall. They only lead to siloed IT management practices, confusion and conflict.

"A decade ago, when Riverbed was making a pure play for WAN optimisation, we saw that if we did not evolve by adding more functionality and creating an integrated suite of platforms, then we were going to go the same way as other vendors who have fallen by the wayside over the years.

"For pure play vendors, be careful about adopting tech that looks very attractive on first glance, but falls short in key areas because they simply don't have the experience or fail to innovate."

Ready for the future

So what of tomorrow's optimisation platforms? In Turner's words above, if network managers "need to be investing in the future while taking care of the present," what are the features such products will need to incorporate in the future?

"The constantly changing nature of business and the rate at which IT is progressing can make it challenging for organisations to look forward and say definitely what features will need to be incorporated in the future," says Griffiths. "Many companies want to take advantage of public infrastructure, but equally they don't want to risk security. There has to be some level of compromise. You can't lock everything down to such an extent that nobody can get access to services they need in the time that they need it."

As a result, Griffiths says products need to incorporate zero-touch deployment so companies can deploy rapidly at the right place and right time. He adds that when they are deploying that technology, it must fit in with their security models and project timelines, and provide them with continued control and visibility. "That way they can see what is going on over the network, and make sure they can change things as and when needed."

Meanwhile, Applegarth forecasts a future where SD-WAN innovations will enable enterprises and service providers to build WANs that automatically learn and adapt to dynamically changing network conditions and application demands.

TNP says that one of the major development areas for its customer base is in the advent of smart cities and the IoT. To address these trends, Wade points out that networks need the flexibility

"If you don't plan to roll out the new feature quickly, be careful about buying more than you need."

Mav Turner,
Director of product management,
SolarWinds

to accommodate a large variety of connectivity media and interface types. "If we are connecting every device in a town, city or rural environment, then it is no good just having pervasive fibre connectivity because this will be too inflexible and probably too costly (not to mention the logistical issues surrounding plumbing it in).

"Networks need to have a variety of speeds and media: fibre, copper, wireless and, more importantly, the core design to accommodate connecting each one

of these in a flexible and cost-effective management. A traffic signal, public refuse bin or a lighting post (with a requirement for a low level of bandwidth/signalling data flow) needs entirely different connectivity than a council office or school with a 1-10Gbps requirement."

Wade reckons that while the provider chosen to deliver these types of networks needs to have the flexibility to encompass all the media required, there aren't many companies currently out there that can offer this capability. "Much of the industry is polarised to its preferred method of connectivity and interface. We believe that networks should have the core and edge technology to accommodate the necessary end-user devices flexibly and cost effectively.

"We often see public procurement documentation that specifies fibre connectivity when a more flexible and lower-speed alternative would be more than capable and, significantly in the current economic climate, deliver fit for purpose connectivity at significantly lower cost."

Riverbed is also critical of what could be regarded as IT practices that have become ingrained over the years but are could now be considered as outmoded.

"When businesses look at troubleshooting in their IT environment, a certain level of hubris always creeps in," says Griffiths. "When you spot a symptom within the system, you automatically assume, for example, that 'it must be the web server that is causing the issue'. IT's approach to troubleshooting is to focus on one specific area they think is causing the issue. Narrow-mindedness in troubleshooting is worrisome, and fixing one symptom doesn't ensure the problem is fixed. IT teams should endeavour to step back and examine the whole picture." ∎

off-the-shelf: switches
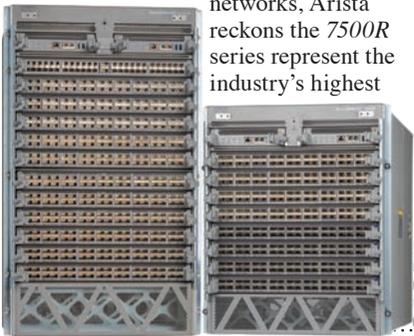
Super switches are here

Manufacturers are claiming a number of industry firsts with the launch of some of these state-of-the-art network switches.

Arista Networks' *7500R Series* is said to be the industry's first switch and router combination for cloud networking. The vendor claims it provides "unprecedented" 100GbE density and large table sizes in a single chassis.

The modular system offers up to 432 wire-speed 100GbE ports in a choice of three form factors: the *7504R* and *7508R* which are both available now, and the *7512R* which is expected in the coming weeks.

Designed for large virtualised and cloud networks, Arista reckons the *7500R* series represent the industry's highest performance universal spine switches. It says they combine 100GbE density with internet scale table sizes and comprehensive L2 and L3 features.

According to the firm, the system features a chassis Fabric capacity of up to 115Tbps, and 288Gb of deep and smart packet memory for reliable packet transfers. 13,824 virtual output queues per port are used for lossless forwarding, while the vendor's *FlexRoute* technology is said to deliver up to one million wire speed routes with MPLS, segment routing, and Ethernet VPN protocol support.

As well as the switches, the *7500R* series also includes wire speed line cards. There are three types to choose from: 36 x 100GbE QSFP (with a choice of 10/25/40/50/100GbE); 36 x 40GbE with flexible combinations of 10GbE and up to six ports of 100GbE; and 48 x 10GbE SFP+ and 2 x 100G QSFP.

Belden says it's come up with a first with its new midrange Gigabit Ethernet switches for industrial networks. Available under the company's *Hirschmann* brand, the *GREYHOUND*

1040 switches come with a 2.5GbE fibre port option. Belden says this fills the gap between 1Gb designs which may not offer enough capacity, and 10Gb models which may be too costly.

The switches include 12 fixed ports as well as two media module slots. These enable users to add eight additional ports each, for a maximum of 28 ports per device. Ports can be mounted on the front or rear of the device.

For networks with strict uptime requirements, Belden says the *1040s* enable system updates, modifications and expansions without taking the network offline. The switch's two power supplies, available in high- or low-voltage options, can be changed in the field for maximum uptime. Users can keep their systems up and running by quickly swapping out one power supply while the network is powered by the redundant one.

The *1040*s support up to 16 PoE and PoE+ ports. For all-around network protection and uptime, Belden says they offer enhanced Layer 2 and Layer 3 features through the *Hirschmann HiOS* operating system. It says the software includes comprehensive security, diagnostic and redundancy features, while the device's precise synchronisation also enables applications to comply with stringent real-time requirements.

In what's described as yet another industry first, **D-Link** has unveiled the world's first PoE+ switches featuring Open Network Video Interface Forum (ONVIF) support. The company says this enables the devices to automatically recognise both D-Link and third-party IP cameras, network video recorders, and other IP devices such as access control systems.

Automatic device recognition via ONVIF means installation teams just need to plug network cables into CCTV cameras and other components, connect the cables to the smart switch, and all system details will appear in a dedicated surveillance optimised web interface. This shows real-time information about the surveillance network such as device status, PoE consumption, bandwidth utilisation, etc. It offers full control over the PoE ports, as well as remote configuration and management of cameras.

There are three switches in the range to choose from. The 10-port *DGS-1100-10MP* includes two SFP ports (802.3af/802.3at), eight PoE ports, two SFP uplink ports, and PoE support up to 130W. The *DGS-1100-10MPP* includes all of the above plus SFP ports that support 802.3bt draft/UPoE, and a 242W PoE power budget.

The *DGS-1100-26MP* is a 26-port model which includes two combined ports (802.3af/802.3at), 24 PoE ports, two combined SFP/1000BASE-T uplink ports, and a 370W PoE power budget.

Huawei has launched an InfiniBand EDR 100Gbps switch solution based on its *FusionServer E9000* converged architecture blade server.

According to Huawei, the *E9000* *(pictured)* has become one of the world's first blade servers to support the InfiniBand EDR 100Gbps networks provided by Mellanox.

The company says its new EDR InfiniBand switch targets high-performance computing, cloud data centres, and real-time financial transaction applications.

It claims the switch is ideal for high bandwidth and low latency applications because it supports up to 100Gbps bandwidth and 90 nanosecond latency. Featuring virtual protocol interconnect and remote direct memory access, the firm reckons its solution can dramatically improve data centre network performance, and reduce TCO and infrastructure complexity.

FusionServer E9000 integrates computing, storage, and networking. As well as now including InfiniBand it also features all-flash memory blades. Huawei claims this combination results in single-blade throughput of 10 million IOPS.

Westermo has launched three new Ethernet devices that support the growing need for higher bandwidth networks with industrial applications.

The *SDW-541-F1G-T4G (pictured)* and *SDW-550-T5G* are unmanaged Ethernet switches that offer a choice of five copper or one fibre and four copper ports. They support 100Mbps or GbE with the *SDW-550-T5G* also supporting 10Mbps communications.

The *MCW-211-F1G-T1G* is an unmanaged industrial Ethernet media converter with one SFP fibre port and one copper port that enables the connection of legacy serial devices to new GbE networks.
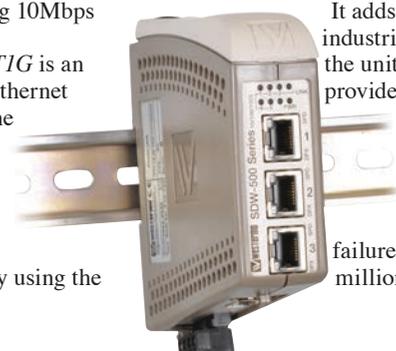
Westermo says that by using the devices with its range of pluggable 100Mb or Gigabit SFP transceivers, different types of fibre can be easily converted and distances of up to 120km can be achieved.

All three units feature tri-galvanic isolation between the ports, shield connection and power supply. Westermo says this helps to avoid ground loop currents and increases reliability.

It adds that by using only industrial grade components, the units are robust and provide a long service life.

For example, the *SDW-541-F1G-T4G* is said to have a mean-time-between-failure of more than 1.1 million hours.

Security skills need to prepare for the IoT age

A security expert has warned that the proliferation of new wireless technologies within consumer devices is overtaking the skills of the infosec industry.

Larry Pesce, an instructor with cyber security training specialist The SANS Institute, says there is a great deal of disparity between the security of different wireless standards such as 802, which was mainly built for enterprise use, and emerging technologies that have come from the consumer landscape.

"For example, Bluetooth has some solid maths around encryption but many of the security decisions are left in the hands of the users which means things can go horribly wrong," says Pesce. "Zigbee has a poor design for how it handles pass phrase and replay packets which are highly vulnerable, while security in some of the proprietary formats like Z-Wave is almost non-existent."

Pesce also warns about the future when a large number of wireless devices in homes and workplaces will communicate autonomously between each other and back to manufacturers. "Unless more consideration is given to securing both the devices and the communication links, there are likely to be breaches that will burrow into this Internet of Things infrastructure and start to gather private information or act as a staging post for more damaging attacks.

"We are at a crossroads from a standards perspective. The vendors are still mostly obsessed with bigger and faster, but there is increased pressure from a privacy prospective and many are having a hard time figuring it out."

UK firms trail rest of the world in data skills

UK organisations that have a well-defined data strategy report stronger financial performance than their competitors, according to research by SAS. But one in five revealed that they lack the skills needed to use data effectively.

SAS' study was based on a global survey of 632 executives and senior personnel carried out by The Economist Intelligence Unit. Eighteen per cent of the respondents were from the UK, and almost a third of them said the increasing availability of data has presented opportunities for strengthening operational efficiency.

However, more than a third believe they have little to zero capability for using data to open up new markets, and 20 per cent admitted that they are not or don't know if they are competent at training or acquiring analytical talent to glean business insights from data.

In 2011, eight per cent of global respondents strongly agreed that their company had so much data that they struggled to make sense of it. In the UK, this figure has grown to 17 per cent and tripled to 24 per cent for the rest of the world. More than half (57 per cent for the UK and 53 per cent for the rest of the world) also said they probably leverage only half of their valuable data.

The researchers found that organisations are placing more emphasis on recruiting data strategists, data scientists, and technology staff to manage data systems. But in overall terms, the UK is said to be trailing behind the rest of the world, which

placed a higher emphasis on recruiting candidates with these attributes.

NEW COURSES

Firebrand Max – Firebrand
As part of a new premium service designed to deliver top tier knowledge, *Firebrand Max* will include a series of courses, with the first focusing on security. It combines official courses from EC-Council, ISACA and (ISC)2, aligning to the roles of network security architect, ethical hacker, and CISO.

Through one-on-one expert instruction, Firebrand says individual delegates will receive an "accelerated training experience" that is "perfectly tailored" to their unique learning requirements. On-site testing, complete with a personal exam invigilator, ensure the individual can sit exams in perfect isolation as part of the programme.

Prices range from £170,000 for the 22-day *Security Architect* course, to £200,000 for *Ethical Hacker* which takes place over 28 days. Each programme begins with a helicopter flight to five-star luxury accommodation at the secluded Aikwood Tower house in Scotland. To maintain energy levels and concentration throughout, Firebrand says an "expertly crafted" nutritional plan is provided by a personal chef. *www.firebrandtraining.co.uk/max*

Software-Defined Networking with OpenDaylight – Linux Foundation
This self-paced online course (LFS265) is designed to provide network administrators and engineers, as well as system administrators who want to move into networking, with the skills needed to maintain an SDN deployment in a virtual networking environment.

Linux says application developers may also be interested in the course, as most are familiar with virtualisation due to use of the cloud, but lack an understanding of how to deploy applications in an SDN framework.

According to the foundation, open source is leading the charge in the growth of SDN and virtualisation. In its latest Open Source Jobs Report compiled in association with Dice, it found that networking is the most in-demand knowledge area for 21 per cent of hiring managers, second only to expertise with cloud technologies.

"The future of networking infrastructure is SDN and virtualisation," said Linux Foundation executive director Jim Zemlin. "As the home of SDN projects OpenDaylight and ONOS, the Linux Foundation is the logical organisation to begin offering this type of training." *linuxfoundation.org*

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