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FIXED & WIRELESS NETWORKS FOR ENTERPRISE USERS

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BT and Arqiva battle it out to control UK Internet of Things

by Ian Grant

BT has teamed up with open source machine-to-machine (M2M) equipment supplier Neul to supply a city-wide test-bed for Internet of Things (IoT) applications in Milton Keynes. It has invited interested parties to get in touch with project ideas.

The news came less than a week after wireless infrastructure supplier Arqiva said it had joined Sigfox, a French competitor to Neul, in setting up a 10-city IoT network, and shortly after UK start-up Senaptic announced plans to build specialised, 'cellco-free' IoT networks for specific customers and segments.

Neul CEO Stan Boland said the Milton Keynes system is based on the Weightless open communications standard for the IoT *(see News, Nov 2013)*. The standard has attracted over 1,400 member companies and is backed by ARM, CSR and Accenture. "Weightless was developed specifically for the Internet of Things. Though initially targeted at TV white space spectrum, this has now been generalised for other sub-1GHz license-exempt bands. Open standards and ecosystem collaboration are a requirement to make the IoT a reality."

Boland says the first of 1,000 planned sensors will be installed in June and connected by an initial 12 base stations that cover most of Milton Keynes. Backing for the project comes from the Connected Digital Economy Catapult, Future Cities Catapult, Milton Keynes Council and The Open University.

Meanwhile, BT and Arqiva are already partners in a consortium with US-based Sensus and Detica to provide the £625m smart meter network for 10 million homes in Northern Britain, while Telefónica scooped the rest of the country with a £1.5bn bid *(see News, Jul-Aug 2013)*.

Far left: Neul CEO Stan Boland is pitting open source against a proprietary French network from Arqiva. Left: Arqiva's M2M MD Wendy McMillan is used to working with rival companies on exploring mutually "interesting" projects.

Arqiva MD for smart metering and M2M Wendy McMillan played down suggestions of a rift between the two network operators: "BT is both a customer and a supplier, a partner and a competitor, so we are used to working together in many different ways and this does not impact our relationship in any way," she told *Networking+*.

She declined to say whether Arqiva spoke to Neul before signing up with Sigfox, which provides proprietary ultra-narrow band radio technology in the 868MHz or 902MHz bands. "We regularly meet with a number of companies in the various sectors we work in, and while competing in some instances, there are also a number of overlaps that are interesting to explore together," she said.

The cities in the Arqiva-Sigfox network include Birmingham, Bristol, Edinburgh, Glasgow, Leeds, Leicester, Liverpool, London, Manchester and Sheffield. They will also have access to Sigfox networks in France, Holland and Spain, as well as other cities, including Moscow and Munich.

All these IoT initiatives are likely to pose a threat to mobile network operators such as Vodafone and Telefónica who are targeting the M2M market. Caroline Gabriel, research director at consultancy Maravedis-Rethink, says: "The cellco community will need to respond to these developments not just with the lure of its controlled licenced spectrum, but with a network that is better suited to IoT applications than LTE in its current form." ■

Connected homes to boom – News p6.

Zayo purchases Geo Networks

US-based network operator Zayo has extended its UK footprint with the acquisition of independent dark fibre operator Geo Networks.

The deal adds 2,100 route miles to Zayo's European network, and connectivity to 587 on-net buildings, including more than 130 data centres and exchanges in the UK.

Geo owns and operates a high-capacity fibre network in the UK and provides managed networks, dark fibre and co-location services to media companies, service providers, financial services, data centres and gaming organisations. Its network includes 100 miles of fibre housed in the London sewer system, which minimises the threat of physical faults, boosting reliability and security.

The integration of Geo with Zayo will create a 79,000 mile network that covers eight countries and links 650 data centres. Chris Smedley, Geo's outgoing CEO, said: "Our customers will benefit from the expanded reach of the combined network, and also the opportunity to access Zayo's full suite of services."

The sale price to AlchemyPartners – Zayo's parent firm – was not disclosed. In March 2012, Zayo paid $2.2bn for UK MAN/WAN operator AboveNet. ■

MI5 warns firms of insider threat

MI5, Britain's domestic intelligence agency, has repeated its warning that foreign agents are trying to persuade company insiders to reveal secrets. IT staff with sysadmin access are considered popular targets because of their privileged access rights to many corporate systems.

Udi Mokady, president and CEO of CyberArk, points out that the targets are not the people but their access: "Privileged and administrative accounts are the most powerful in any organisation. They provide absolute control over a company's infrastructure. Attackers use techniques like malware and phishing to steal these privileged and administrative credentials.

"Once the credentials have been hijacked, the attacker has full access to data stored on the device, the ability to bypass security controls and hide their activities. And because these accounts are typically shared among IT workers, malicious activity often appears to security systems as an authorised employee performing legitimate work."

Mokady warns that administrative and privileged accounts need to be treated as critical vulnerabilities. "From Stuxnet to Snowden, the common denominator is that the breach occurred through an exploited privileged account. Attackers understand this – it's time for businesses to understand the pattern as well and proactively address these critical security gaps."

Paul Ayers, VP EMEA at enterprise data security firm Vormetric, adds: "This warning confirms our contention that the abuse of privileged credentials is the next frontier for cyber crime against enterprises. With organisations such as Target, Morrisons and Korea Credit Bureau falling victim in quick succession, it is clear businesses are still struggling to defend their most critical assets from those legitimately within the perimeter."

Vormetric recently surveyed 500 IT decision makers and found almost half believed insider threats had become harder to detect. They were concerned about the things their own users could do with sensitive data, and just nine per cent said they felt safe from insider threats. Ayers advises companies to adopt an inside-out security architecture based on strict need-to-know principles. "Businesses must ensure constant monitoring of their IT to detect and respond to data breaches as soon as they happen – irrespective of whether the attack was internal or external. Encryption of all data must be a mandatory security blanket."

Ross Brewer, LogRhythm's VP and MD for international markets, says it is hard for staff to believe that they might be sitting next to a mole. He adds that a recent LogRhythm study revealed that almost half of UK employees admitted having accessed or taken confidential information from the workplace, while 79 per cent claimed their illegitimate actions had never been identified. "This indicates a gross level of negligence by companies who really should know better."

Brewer agrees with Ayers that constant access and network monitoring is now essential: "As the insider threat gets bigger, ignorance is no longer bliss. Only by taking control and monitoring both external and internal activity will businesses be able to compete with the bad guys." ■

Shepway to offer businesses high-speed internet

Shepway District Council has a three-year deal with Kent-based Custodian Data Centre to provide 100Mbps wireless internet connectivity to local businesses.

The service will come from a large antenna to be installed on the civic centre roof in Folkestone. High-quality internet connections at speeds up to 100Mbps will then be available to businesses in the district's main employment sites, and to those moving into the building. Custodian will operate the service from its 24/7 network operations centre.

The council anticipates the cost of providing this connectivity will eventually be met out of income from business customers. Premium connections will be available at a significantly reduced rate compared with those currently offered.

Call Flow Solutions, which will act as the ISP for the service, is already providing high-speed broadband to rural Shepway areas in Dungeness, Lydd, Lympne, and Stanford. Shepway Council made this possible with funding from Kent County Council's community broadband fund.

Shepway councillor Alan Clifton-Holt said: "Businesses at our main employment sites have told us that this will give them a competitive edge, enabling them to secure more business, recruit more people and work more cost-effectively.

"It is vital for firms to be competitive and we want to make that happen. This investment supports our ambition of being 'Kent's Connected Coast' for culture, for business and for growth opportunities."

Shepway Business Advisory Board claims that as well as "outstanding" transport links, local enterprises are now also set to benefit from the UK's "fastest internet capability". ■

Chunnel now offers mobile connectivity in both directions

Channel tunnel operator Eurotunnel has completed mobile phone and internet connectivity in the North Tunnel (UK to France). It complements the connectivity provided in the South Tunnel for the London 2012 Olympics and comes in time for the chunnel's 20th anniversary.

Eurotunnel now offers mobile services for continent-bound Eurostar travellers. UK-bound services were introduced for the 2012 Olympics.

The fibre optic GSP-P retransmission system from Alcatel-Lucent provides Vodafone, EE and O2 UK 2G and 3G customers with mobile telephone and internet services inside the Channel Tunnel. An upgrade to provide LTE services is also said to be in the planning stage.

Eurostar trains carry some 20 million passengers a year through the 50km tunnel. Separately, Nomad Digital will provide the Wi-Fi system on board the newer fleet. ■

Metronet aims to connect 50 per cent of Manchester's buildings with up to 10Gbps links.

Connectivity more important than floorspace in Manchester

Metronet has teamed up with Greater Manchester's leading property companies and agents to provide data connectivity up to 10Gbps to the city's key buildings.

The locally-based ISP reckons that it has now connected almost 20 per cent of Greater Manchester's most important buildings and almost 30 per cent of those in the city centre with speeds of up to 10Gbps.

"The city's property sector understands the difference high-speed connectivity can make," says Metronet CEO Elliott Mueller. "Some have even told us that connectivity is more important than floorspace – any landlord can offer floorspace in Greater Manchester but not everyone can boast superconnected floorspace."

Mueller believes that connectivity is a fundamental right, not just a privilege: "In this day and age, where the internet is as important to businesses as electricity or water, no matter where businesses choose to locate themselves, superfast connectivity should be available within hours."

In the past, BT and Virgin Media have taken Birmingham to court over its plans to spend £10m on a city fibre network under the government's £150m Superconnected Cities plan *(see Networking+ June 2012)*. That forced a rethink that led to a £3,000 per customer voucher system aimed at providing a 'step change' in the broadband speed available to city businesses.

Landlords such as Bruntwood, Matthews and Goodman, OBI, WHR, Allied London, Capital Properties and others have taken it upon themselves to provide high-speed connectivity to office spaces they control. They say the aim is to make it easier for clients to move into new premises "at the flip of a switch". ■

How to avoid a £500k ICO fine – by the ICO

The Information Commissioner's Office (ICO) has published advice to data controllers that might help them to avoid a maximum £500,000 fine if they lose confidential personal information.

The advice is aimed a those generally responsible for IT security, but not technical experts. Based on its casework, the privacy watchdog identifies eight common vulnerabilities through which personal information can leak out. These include: software updates; SQL injection; unnecessary services; decommissioning of software or services; password storage; configuration of SSL and TLS; inappropriate locations for processing data; and default credentials.

"In many ICO data breach cases, the measures which could have prevented the breach or reduced the level of harm to individuals would have been simple to implement," states the commissioner.

The ICO adds that while these are not the only weak points, its experience shows that other common attacks such as cross-site scripting have rarely led to data breaches.

For each vulnerability, the ICO provides advice on what data protection problems might be caused and good practice for avoiding them.

It also notes common reasons for not updating software, for example, but says that systems can become progressively more vulnerable unless the latest patches are implemented "within a reasonable time". With many firms now outsourcing their networks to third parties, it warns that someone must be contractually liable for maintaining the update process or else the task will fall between two stools.

Commenting on the advice, Trevor Dearing, EMEA marketing director for network traffic visibility expert Gigamon, says: "It is encouraging to see the ICO has included advice on practices that are less frequently discussed than password updates, such as the design of networks.

"Organisations must implement tools that enhance visibility into the network and use flow mapping technologies, which ensure network tools only see the information they are best equipped – or authorised – to deal with. This will ensure a far more robust approach to securing the network."

■ The European Court of Justice (ECJ) has backed an individual's 'right to be forgotten' online. It follows a case in Spain where Google was taken to court by Mario Costeja González who asked for the removal of links to stories that reported he had to sell his house to payback taxes.

Costeja González argued successfully that the facts were no longer relevant, and that Google should no longer provide links to the stories, even though the information is still available from other sources, including official ones.

Google chairman Erich Schmidt claimed that the ECJ's finding struck the wrong balance between the 'right to be forgotten' and the 'right to know'.

Reports say that the internet giant has received more than 1,000 take-down requests following the court's ruling. ■

ON THE NETWORK

Ian Grant, Deputy Editor

We're not all right, Jack

The revelations of former NSA contractor Edward Snowden continue to drive the debate about what kind of society we want to live in, now that everything is online and therefore subject to electronic surveillance.

Cisco CEO John Chambers complained recently that customers were buying less of his kit because Snowden reports showed that the NSA had diverted some shipments and installed its own surveillance monitors. Ironically, this is the very thing the US accuses China of doing with Huawei.

Snowden's revelations, which also implicated GCHQ, Britain's electronic surveillance arm, have not caused much fuss in this country. Europe, with bitter experience of state surveillance, has been much more worried.

The first sign (after complaints about the NSA reading Angela Merkel's emails) was the European Court of Justice's (ECJ) decision that the Data Retention Directive, which underpins Europe's electronic surveillance legislation, was invalid (*see last month's News*).

Second was the ECJ's finding that just because Google might not process data in Europe does, that not mean it is beyond European jurisdiction. This was part of its decision that people have a "right to be forgotten" by search engines, and puts the entire global cloud business in jeopardy.

Europe has already pushed for keeping the internet "open" and "neutral", phrases that desperately need firmer definition. There is also a growing backlash against mass indiscriminate electronic surveillance. So far, this has focused on state snooping, but it is inevitable that people will start to scrutinise the vast amounts of personal data accumulated by the likes of mobile network operators, retailers, and health organisations.

With rare exceptions, the incoming crop of European parliamentarians are almost clueless about the technical aspects of networking. It is partly why the Telecoms Directive of 2009, which was meant to introduce a single market in telecoms, took so long to make its way through the legislative alimentary canal. At a pre-election hustings organised by the Open Rights Group for would-be MEPs, all five admitted their inability to say with confidence they knew and understood the implications of current comms technology.

On the 25th anniversary of the Web, Tim Berners-Lee proposed a digital bill of rights to head-off the threat to personal privacy, free expression and security posed by big business and government. He said: "These issues have crept up on us. Our rights are being infringed more and more, and the danger is that we get used to it."

As experienced and knowledgeable citizens, *Networking+* readers should take a leading role in the debate.

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Biomass power to cut carbon 80 per cent in new Scottish DC

A new environmentally-friendly data centre could cut users' carbon footprint from data centre activities by up to 80 per cent, thanks to biomass power technology.

An artist's impression of AOC Group's proposed 75,000ft² data centre in Glenrothes, Fife.

AOC Group has submitted a planning application for the 75,000ft² data centre facility at Queensway Business Park in Glenrothes, Fife. Group director Alan O'Connor says it has received an "extremely positive" response. He says local property developers have reported "substantial interest" in the proposed data centre, given the relative lack of similar facilities elsewhere in the region.

If given the go-ahead, work could start on the £40m facility as early as this summer. It will create up to 250 construction jobs and around 50 full-time skilled technology and engineering roles when completed in just over a year. O'Connor says the facility will be the first in the UK to draw its energy from a renewable source. AOC is aiming at a power usage effectiveness (PUE) rating of less than 1.15. The power will come from the largest biomass plant in the country at Markinch in Fife. The carrier-neutral, diversely routed data centre will house up to 1,500 high performance computer racks, and it's claimed it will offer the highest levels of resilience and data security. ■

Broadband and DDoS both up: Akamai

Global peak connection speeds rose 38 per cent in 2013, but DDoS attacks grew 75 per cent, says content distributor Akamai in its *State of the Internet* report for 4Q13. It also finds that Europe continues to lead the world in adopting IPv6, the successor of the IPv4 scheme that has run out of addresses. The UK recorded one of the highest peak connection speeds at 43.5Mbps but its average lagged South Korea's 21.9Mbps at just 9.5Mbps. Romania leads with 50.6Mbps. China beat the US as the source of cyber attacks, with port 445 (Microsoft-DS) the most targeted in the fourth quarter, growing to 30 per cent of reported attacks quarter-over-quarter, followed by port 80 (WWW/HTTP) and port 443 (SSL/HTTPS). ■

Multi-million pound upgrade for Pulsant

Pulsant has upgraded the electrical and mechanical infrastructure at its twin data centre campus in Maidenhead as it pursues PCI DSS accreditation and Business Impact Level 2 certification this year. The upgrade began with the installation of a new UPS architecture, a new network operations centre to complement its existing onsite support team, and a £200,000 upgrade of its core campus switch network. Pulsant recently added connectivity options with its partner Equinix, as well as high-capacity interconnections to its Reading and London DCs. It says all this aims to meet it clients' changing needs, which include added stability, more bandwidth and faster connections. ■

Easynet founders pick Sweden for next DC

Easynet founders David Rowe and Justin Fielder have sited the data centre for their new cloud services venture 100km short of the Arctic circle in Boden, Sweden. They say the main reasons for the location are cost and sustainability. The new facility, dubbed 'Hydro66', harnesses abundant renewable power from the 4,200MW hydropower project on the Luleå Älv river, is fed by the 78MW Boden hydropower station which is less than 500m away, and benefits from low ambient temperatures which result in free air cooling for 360 days a year. It's claimed all this, as well as some of the lowest electricity prices in Europe, enables the new data centre to offer significant cost and operational advantages over similar facilities in high-cost urban areas. ■

Shetland saves £1.6m with new PSN from TNP

A new PSN supplied by The Networking People (TNP) is saving Shetland Islands Council up to £1.6m while delivering a nearly ten-fold increase in speed in some areas via dark fibre, microwave radio, ADSL and satellite links to 60 sites.

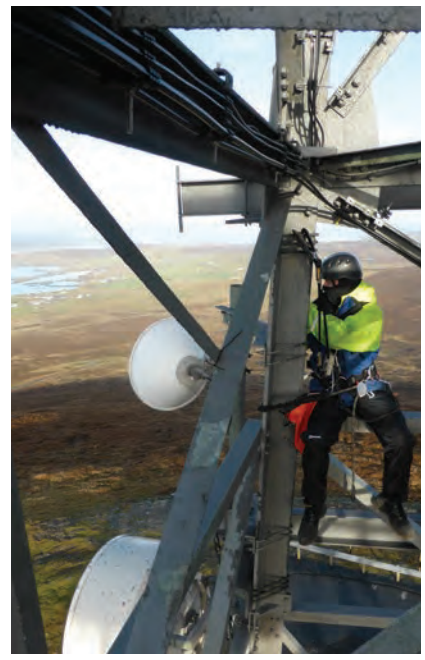
Lancaster-based ISP TNP says it reused existing assets and equipment, and boosted these by installing a high-speed backbone tied into a fibre network at strategic points. This was augmented by the design, procurement and installation of the latest point-to-point and point-to-multipoint microwave radio technology with power, cabinet and steelwork infrastructure. The company used equipment from Ceragon for the point-to-point systems and Proxim for the point-to-multipoint systems.

The network provides WAN connections throughout Shetland via the Shetland Public Sector Network (SPSNet). It offers islanders telephony and video conferencing, internet access and public Wi-Fi, remote desktop support and a virtual learning environment.

Instead of starting from scratch, TNP says it persuaded the council to buy some equipment directly from the manufacturers, which it then installed and integrated with existing hardware. TNP claims that this led to "huge cost savings".

It adds that the project was finished on time and to budget – despite facing the worst weather conditions in over 20 years during construction of key infrastructure, including equipment on seven telecoms towers.

The switchover was "absolutely seamless" according to Susan Msalila, executive manager for the council's ICT department. "We chose to work with TNP because of their deep understanding of our needs. Their forward-thinking, positive attitude reflected our own in taking a bold approach to replacing our entire network – a huge undertaking. Even for sites they didn't directly install, the team was on hand to test solutions on our behalf and guide us through options every step of the way." ■



A TNP engineer fits new microwave equipment to one of seven towers in Shetland.

Quantum security moves a step closer following QKD trial

The first successful trial of Quantum Key Distribution (QKD) technology over a live fibre network has been carried out in the UK. The test is said to pave the way for more advanced research into QKD, the next frontier of data encryption technology, which aims to deliver greater levels of network security.

Researchers from the National Physical Laboratory (NPL) worked with Adva Optical Networking, BT and Toshiba Research Europe on the trial.

QKD shares a key between two users that is made completely secure using quantum mechanics. It provides an additional layer of security over and above standard methods used by banks and credit card companies to send data encryption keys across a network.

Previously, one or several dark fibre links were needed to send an encryption key and the content separately, making commercial implementation of such data security technology very expensive.

According to the researchers, QKD is used only to produce and distribute a key, not to transmit any message data. This key can then be used with any chosen encryption algorithm to encrypt (and decrypt) a message which can then be transmitted over a standard communication channel. The algorithm most commonly associated with QKD is the one-time pad, as it has proven to be secure when used with a secret, random key.

The system works by putting single photons into a quantum state. Any attempt to inspect it en route collapses the quantum state. This automatically cancels the transmission and prevents eavesdroppers from reading the message. By sending multiple quantum keys every second, the demo showed that monitors were able to instantly detect attempts to tap the signal and stop transmissions.

For the trial, NPL produced the equipment that detected a single quantum photon in a stream of commercial traffic, despite the 'noise' that could collapse the quantum state. Toshiba was responsible for the quantum equipment, Adva developed the encryption hardware, and BT supplied the live fibre link between its technology research centre at Adastral Park, Suffolk, and another site in Ipswich. ■

'Connected army' created by new WAN

The Salvation Army has asked managed service provider Redcentric to provide a full WAN to link more than 1,000 locations from where the charity delivers its mission.

The competitive three-year contract is worth about £1.5m with annual revenues of approximately £400,000 thereafter. The deal will enable the charity's staff to connect to a MPLS network that provides secure access to internal services as well as services for the community using a variety of corporate systems and safe internet access.

Martyn Croft, CIO of The Salvation Army UK and Republic of Ireland Territory, says that the network is important as it will help the charity in carrying out its mission, and create a 'connected army' that is able to help the people it serves.

Redcentric offers managed services via three wholly owned data centres, a national MPLS network, and its own fibre-based MANs. Last November, it acquired managed services provider InTechnology for £65m. ■

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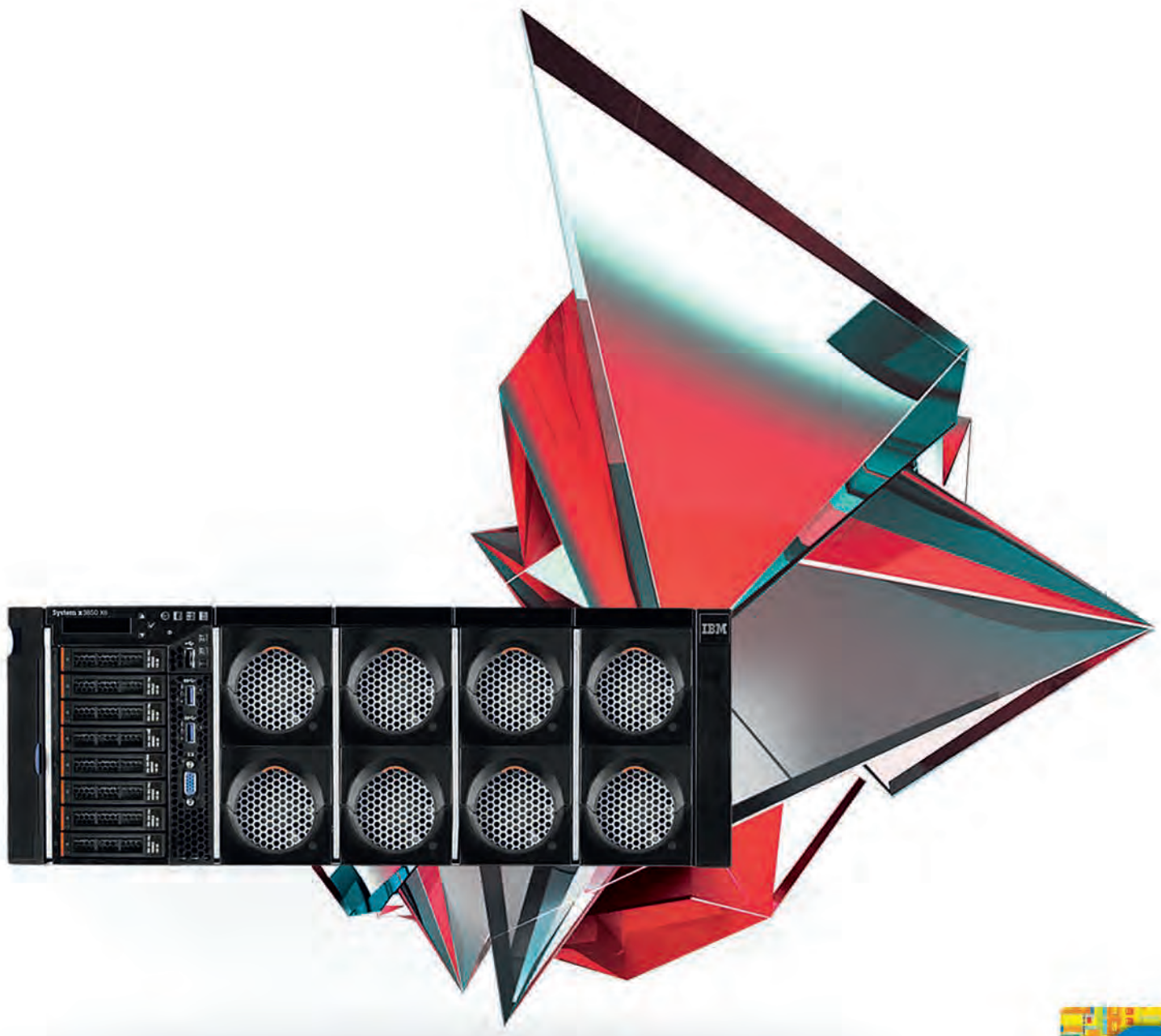

[1]Based on preliminary IBM testing of x3850 X6 with PCI-E based flash storage achieving write latency of 15µs and DIMM-based flash storage achieving 10µs write latency. These preliminary results are subject to change.

Warning of "chaos" in rush to adopt services

A rush by both private and public sector companies to adopt cloud services is resulting in "chaos", according to Capita IT Services. It warns that this is leading to applications and services that are often ineffective and incompatible, and therefore impacts business performance.

The company suggests three key trends that are driving businesses to adopt cloud services and applications which may not provide the best return on investment in the long run and may not meet their needs. These include what Capita describes as the 'multiple choice' effect, the 'benefit rush' effect and the 'entry point' effect.

While cloud opens up the opportunity to purchase from multiple suppliers on multiple platforms, the company says that this increases complexity. Meanwhile, the promise of substantial savings has led to a rush to adopt cloud, often leading to a lack of strategic planning. And with the 'entry point' effect, Capita says that some parts of an organisation adopt IaaS while others opt for SaaS, leaving gaps in cloud adoption strategy without a platform from which to operate cloud services.

"A robust cloud adoption strategy should already be at the heart of every IT policy for every organisation if they want to avoid falling into the cloud chaos trap," says Capita IT Services' CTO Paul Birkin. "The potential for the cloud to offer increasing innovation and agility to businesses of all sizes is clear. But unless it is adopted in a coherent and planned way, it is unlikely to bring the returns on investment that chief information officers expect." ■

Paul Birkin, CTO of Capita IT Services, says cloud is unlikely to deliver investment returns if it's not adopted in a "coherent" way.

Cloud advice from Law Society

The Law Society has published a practice note on the use of cloud computing services in law firms, which may also guide lay companies in assessing the risks and rewards of migrating to a platform.

The guidance is aimed at all solicitors, practice managers or law firm IT staff using or planning to use hardware and software which can be accessed and operated via the internet, and is owned or controlled by a third party.

The practice note advises them to: "Understand prospective cloud service offerings fully; make sure that they meet business requirements; are procured under a robust business case; and that they have been subjected to a full risk and compliance analysis."

It recommends calling in consultants if firms don't have relevant in-house expertise, and goes on to say the starting point for evaluating cloud services should be existing data protection, information security and business continuity management frameworks and policies.

Sam De Silva, chair of the Law Society's technology and law reference group, and a member of the EU Commission's Expert group on cloud computing and technology partner at law firm Penningtons Manches, welcomed the new guidance.

"While cloud computing has a number of advantages for businesses, such as reducing costs and increasing storage, it carries risk which firms must consider when engaging with a third party to handle sensitive information."

De Silva adds that anyone involved in the collection and storage of personal data must comply with the Data Protection Act, and law practices are also subject to professional conduct obligations to maintain client confidentiality and properly manage their practices. ■

Azure chosen for Dimension Data's private cloud platform

Dimension Data, the $5.8bn ICT solutions and services provider, has chosen Microsoft's *Windows Server 2012 R2 with Hyper-V* as the basis for its global private cloud platform.

The platform supports hybrid 32-bit and 64-bit *Windows* and Red Hat Linux environments. The firm says it enables users to move Microsoft workloads between their own premises, *Azure* and Dimension Data's cloud environments with enterprise-class security, compliance and control, and flexibility.

Microsoft's director of product marketing for cloud and enterprise Brian Hillger says: "This collaboration enables customers to bridge their on-premises investments with cloud-based deployments to innovate faster, deliver new services and capabilities, improve productivity, and lower costs. It will also suit clients with specific security or compliance requirements."

Dimension Data says its existing private cloud service, *Private Compute-as-a-Service* (*CaaS*), features a hybrid architecture and provides "seamless" integration with various environments, including other private or hosted clouds, public clouds, on-premises data centres as well as its own data centres.

■ Dimension Data has now rebranded the subsidiaries of NextiraOne which it acquired in February.

Andrew Coulsen, the company's CEO in Europe, says the aim is for Dimension Data to be seen as the continent's leading IT solutions and services provider. "We've already kicked off the process of taking our combined portfolios to market and adding NextiraOne's skills in communications, UC and collaboration networking, the contact centre, video, and data centre to Dimension Data's existing portfolio."

Coulsen says the combined entity now has an expanded footprint across Europe with a large, skilled and experienced personnel base that includes 1,850 employees across 13 countries. ■

Connected homes market to grow eight-fold in five years

Cloud-based home management systems that give users remote control of household facilities like lighting and air conditioning will grow eight-fold between 2013 and 2018, predicts market researcher IHS.

It says the global installed base of such systems will grow to 44.6 million at the end of 2018, up from 5.6 million at the end of 2013. IHS expects the installed base to surge 63 per cent to 9.1 million this year.

"Cloud-based home management makes it all possible, and much more," says Lisa Arrowsmith, IHS associate director for connectivity, smart homes and smart cities. "With a wide range of companies offering such solutions, the cloud-based home management system business will expand dramatically in the coming years."

Other applications include home monitoring, energy management, lighting control and independent-living services. Existing apps include receiving an alert when children leave school, heating or cooling the house while you are out, and alerts if an elderly relative changes their routine.

Arrowsmith says the market is awash with suppliers. One big group consists of incumbent service providers who supply security, telecoms or utilities. They aim to reduce customer churn, add new subscribers and boost average revenue per user. Other companies entering the fray include device suppliers, retailers and specialist system integrators such as Nest, Revolv and SmartThings, amongst others.

North America is currently the largest market but IHS forecasts rapid growth worldwide. Security providers like ADT and Vivint have led the way with telcos like Comcast and AT&T close behind. ■

Visibility key to today's complex networks

The growing complexity of today's enterprise networks is creating significant headaches for the IT professionals who have to manage and monitor them.

In a recent survey of a 150 organisations with 1,000 or more employees, Emulex found that the number one challenge for 43 per cent of respondents is monitoring and managing network performance between groups of web, application, and database servers in the data centre. The second most cited challenge is maintaining end-to-end network performance to endpoint devices connecting either via public networks or WANs.

Emulex says these challenges reflect a rapidly changing environment marked by data centre consolidation, server virtualisation/private cloud, compute layer virtualisation, new application architectures, and the shift to dense 10GbE or higher network speeds. It adds that an increasingly mobile workforce also requires extending the boundary of end-to-end management to mobile devices.

As a result, Emulex says deeper levels of network visibility are now essential to aid in the management and trouble-shooting of enterprise networks.

The company also found that security challenges also increase when there is a lack of proper network visibility. Survey respondents said they struggled to: capture network behaviour for incident detection (38 per cent); monitor network flows for anomalous behaviour (35 per cent); capture and analyse logs from network and security devices (29 per cent); and establish a baseline of normal network behaviour (27 per cent). ■

Nimans launches "unique" hosted voice service

Nimans claims to have launched a new hosted voice service that "promises to 'shake-up' the whole market".

The firm says *GreenSky* offers resellers a "powerful" route into hosted voice that puts them in "complete control". Richard Carter, Nimans' group sales and business development director, says resellers can capitalise on an easy migration and take advantage of a host of opportunities.

"This unique and compelling proposition allows resellers the choice to sell hosted in a completely different way. Free hosted voice, plain and simple. It's based on a traditional 'tin' style revenue model where resellers can sell phones upfront with included licences – or they can embrace a more modern approach of charging on a monthly basis."

GreenSky includes a free three-year hosted seat licence (worth £360) with every handset purchased. A choice of three models are available – *Standard*, *Advanced* and *Executive* – with a claimed upfront margin potential of 45 per cent.

Nimans says it is shifting away from its traditional box shifting roots, although Carter points out that the firm remains focused on its core business activities while recognising the need to diversify. ■

Nimans' Richard Carter shows off the reseller guide to spearhead the launch of GreenSky, a new "game changing" hosted voice service.

VIEW FROM THE TOP

Lilac Schoenbeck, VP, product management and marketing, Iland

It may be your data – but when it's in the cloud who controls it?

The European Court of Justice's recent decisions on data retention and the right to be forgotten highlight the need for companies to control their cloud operations more closely.

Cloud computing has many attractions. When done right, cloud takes away barriers to entry and makes technology available to all organisations regardless of size. From day one, a business can 'try before they buy' a new system, and ramp up very quickly and easily without having to make serious upfront capital investments. The move to the cloud is seamless; costs are predictable; there are no big step changes or spikes in costs for maintenance or renewal requirements; and remote working and disaster recovery can also be built in.

However, once something is uploaded to a sharing site, a great deal of control is lost. What many users believe and fear is that once something is in the cloud, it is completely out of their control. This is a misconception. Many large enterprises and government organisations only use the cloud for testing and development; data is bought back in-house when the IT project is ready to go into live production.

Equally, many organisations have data sovereignty issues, i.e. they cannot permit their information to reside on servers outside the European Union. This limits the extent to which they can utilise cloud services.

But this doesn't have to be the case in all instances, and some cloud service providers are evolving to address this concern. If a workload is hosted in the cloud with a service provider, users should be able to define the actual location of that workload so it can be as close to home as they'd like, or further away for disaster recovery purposes.

It's important that user companies look for a provider that offers this level of control. This is important because governments today are still defining their laws regarding jurisdiction and access to data in their territory, and many organisations have preferences regarding which country they'd like to host their data, both at rest and in transit.

If workloads can be sent willy-nilly flying around across national borders, users indeed have lost a great deal of control over their own fate, and that of their data. This can be a costly trade-off so always check the fine print of your cloud service provider agreement.

No matter what an organisation's definition of the cloud, users need to select infrastructure providers that are able to make it usable to the everyday business while addressing regional data sovereignty issues.

SMEs are big on outsourcing

Sixty per cent of UK SMEs have partly or fully outsourced their IT infrastructure, according to a new report from data centre and comms specialist Node4. With more than 31,000 SMEs in the country, this means there are now more than 18,600 businesses that have moved some part of their IT provision off premises.

The report also highlights that one in 10 SMEs have already deployed a fully cloud-based IT infrastructure – over 300,000 employees in the UK are now experiencing the full flexibility and efficiency benefits of cloud-based IT solutions, says Node4.

The firm surveyed 250 IT decision makers in organisations of between 50-500 employees. It says that they increasingly see technology and IT as a business enabler which they can't do without, and if they don't keep pace with it they will fall behind and miss the opportunity to capitalise on the renewed economic growth. ■

Networked for learning

Educational institutions need to be at the forefront of technological development if they are to compete and remain relevant in a rapidly changing global environment.

100Gbps SSE Telecoms network frees Janet

SSE Telecoms has supplied a 100Gbps core platform to Janet, the biggest private network in the country. Now in its sixth version, the network is designed to meet the evolving needs of UK universities and schools and to support distance learning, remote working and the globalisation of education and research.

Janet needed to deliver specialist 'any place, any time' connectivity without compromising reliability or security in the face of a shift to BYOD access and a massive increase in traffic volumes. Janet6 now provides a fibre optic network that is estimated to give the UK's research and education community enough scope for collaboration and technical innovation for around the next 10 years.

SSE Telecoms' 6,500km fibre network connects 30 core sites to nearly a thousand premises that house Janet's 18 million end users across the UK and Ireland. It can also extend its reach and accessibility over a 100Gbps core network infrastructure to support the anticipated growth in bandwidth demand, including interconnection with high speed pan-European research networks like GÉANT.

Previously, Janet's network was based on managed services from third party suppliers; this limited its influence over vendor types and service provision. By moving away from this model, Janet can now develop, deliver and control bespoke network services, such as its Aurora dedicated dark fibre international network, and Lightpath for dedicated point-to-point connections between UK researchers.

SSE Telecoms worked to tight deadlines and a "very demanding" performance specification for the entire network rollout. This ensured the service is both future-proof and that Janet can roll out new optical, Ethernet and IP services, as well as research MPLS and SDN projects, without capacity limits or inadequate underlying infrastructure.

"As one of the world's leading collaborative network providers, it is important to us from an innovation, autonomy and example-setting perspective that we are able to manage and run our own network," says Jeremy Sharp, head of strategic technologies at Janet. "With SSE Telecoms, we have complete control over the technologies that we roll out over the infrastructure. When it comes to furthering the capabilities of our research and education community, the sky really is the limit."

Academy watches net grow with PRTG network monitor

Oxford Spires Academy (OSA) opened in 2011 to primarily serve the east of the city, and now has 800 pupils aged 7-14, and employs116 staff. A major hardware upgrade revealed the limitations of the network monitoring tool it was using. "As our infrastructure became larger and more sophisticated, it was increasingly hard to keep a handle on exactly what was going on in the network," says James Preston, OSA's ICT network manager.

"In addition to nine brand new IT labs, we have been gradually equipping all of the classrooms with smart boards and ensuring that all the teachers have mobile access to our ICT services through a tablet or a laptop. In addition, the school was adding new multifunction printers and IP-enabled phones.

OSA found that its existing network monitor didn't have the features needed to do the job with the new systems. Preston says he'd heard about Paessler's *PRTG* and decided to investigate it. "We could tell immediately that there was a lot more of the detail we needed. After switching to *PRTG*, we were able to monitor all of our network devices for any information we wanted."

He explains that *PTRG* allows the school to provide pupils with remote access to upload homework and see lessons online. "Network monitoring is really important in this new setup. *PRTG* acts as a status dashboard which allows us to check up on the network in near real-time, picking up on potential problems before they happen so any disruption to the intranet is minimised."

It has also exposed bottlenecks, which resulted in fibre replacing some copper cables, and new time of day usage patterns. "We can now have just the right capacity, rather than paying too much for what we don't need or risking downtime by having too little," says Preston.

PRTG is also monitoring paper levels in printers, allowing better stock control. OSA now plans to monitor the health of internal email clients and to integrate Paessler's platform with its Microsoft service manager system to give it a central location to monitor all its service tickets.

"*PRTG* has been an invaluable tool for monitoring the infrastructure that, when combined with its network maps, can really change the way you see your network and how it operates," concludes Preston.

Birmingham City gets network fit for students

Birmingham City University has completed a root and branch revamp of its IT and network infrastructure to get it fit to compete for students in the next decade.

The overhaul, conducted by systems integrator Logicalis, includes the design and deployment of two on-site data centres, wired and wireless networks for employees and students, and the rollout of *Cisco Unified Communications Manager* for the 4,000 staff.

The project is part of a £180m investment in new facilities to support innovation and evolving service expectations from all users. Shaun Buffery, the university's associate director for converged infrastructure, says: "Nowadays, you're not only competing on the level of education students will receive, but also facilities and services. This new infrastructure will adapt to innovation in student technology and teaching resources, and also enable staff to be more collaborative with one another and with the students."

The new infrastructure has delivered immediate performance and financial benefits through faster networks, more reliable performance and capacity, and less operational maintenance that has allowed the university to redeploy IT skills.

Dean England, who led the re-design and implementation of the two data centres, says: "We've reduced server sprawl, increased utilisation, and can already see savings in energy bills."

The university has also been able to beef-up its disaster recovery strategy, introduce advanced backup and de-duplication functionality, and improve storage and archive policies. There is now enough bandwidth to support increasing traffic from mobile devices and rich media apps.

The ability to adapt to changing usage patterns, particularly among students, is especially important to England: "This means providing fast and secure access to e-learning tools and resources, from anywhere and any device. We're confident our network will adapt."

Buffery adds that the Cisco telephony system allows staff to spend more time face-to-face with students because they are no longer tied to their offices. "Logicalis has provided us with a foundation that will adapt with our needs and help the university achieve its mission to provide a business class learning experience for its students."

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Will SDN revolutionise the data centre?

One of Colt's data centres now being run using an orchestration suite that was developed in-house to allow staff and clients to speed up service provision and avoid SDN vendor lock-in.

Yes. But that probably requires some explanation to be truly convincing, says IAN GRANT.

In the mid 1980s, ICL gave a presentation about how it saw the development of the data centre. The leading UK IT firm said that the future centre would run "lights out" – i.e. without any staff except for one man and a dog: the dog was there to stop the man from touching anything, and the man was there to feed the dog.

At the time, ICL had no idea how the scale and scope of what was happening in the data centre would change: Google, Amazon, *Microsoft Azure*, Rackspace and the rest didn't exist; Cisco and Juniper were just getting started; network owners rented fixed lines and dial-up modems; and mobile data connectivity was just a dream.

Thirty years on, networks have become too complex to run and too expensive to own, but they are essential to almost every aspect of modern life. So users are doing to networks what they've done to computing and data storage: virtualising them. As John Donovan, senior executive VP of technology and network operations at AT&T – which buys more communications kit than anyone else in the world – says: "There's no army that can hold back an economic principle whose time has come."

Virtualising the network requires a return to the original, simple principles that underpin the design of IP, according to Nick McKeown, professor of electrical engineering and computer science at Stanford University. Giving the annual Appleton lecture at the Institution of Engineering and Technology in May, he said these principles are the capacity to deal elegantly with corrupted, out of order, duplicated and lost packets. "The fact that it was so simple and so dumb was the reason for its success," said McKeown.

This simplicity led to low barriers to entry, affordable kit that was plug and play, and consequently high rates of innovation. Placing the intelligence at the network edge meant core networks were easy and cheap to upgrade to cope with rising traffic volumes. Decentralised control allowed the network to grow very fast but organically as long as the rest of the network could recognise and deliver the packets.

But as McKeown pointed out, a market now annually worth $300bn that provides 70 per cent gross margins gives vested interests every reason to protect their cut. As a result, the vendors developed unique proprietary enhancements, and network routers and switches became as complex or more so than mainframes. Worse, they are now surrounded by add-ons such as load balancers, firewalls, DNS/DHCP servers, etc, and attached to virtualised compute and storage servers.

Faced with traffic volumes growing 40 or 50 per cent a year, firms like Google and Facebook started designing their own 'white boxes'. These are switches and routers based on 'merchant silicon' – generic microprocessors that do a few things very fast and put the complex functions done by network appliances into software. McKeown said he was researching "primitives", the smallest functions that enable networking and speed it up even more.

"Switches might have come down in price to $5,000, but firms like Google had plenty of incentive to develop a $1,000 switch, not only for cost, but also for control," he said. As a result, the network equipment industry is going from being a closed, vertically integrated, proprietary industry to one that is open and horizontal.

SDN defined

For all the hype that surrounds it, all the software defined networking (SDN) initiative has done is to separate the data forwarding from the control mechanisms in routers and switches. As a result, instead of duplicating images of the network in every device, engineers can define all the network intelligence – such as which devices are connected to the network, which network policies are in place, and what to do with a packet when it arrives – in a central controller. All the routers and switches have to do is forward the packets according to the rules sent to them by the controller.

In its April *Magic Quadrant* report on data centres, Gartner said: "The differentiation between vendor solutions is now relatively balanced between software (management, provisioning, automation and orchestration) and hardware (bandwidth, capacity and scalability)." Thanks to the past three years of hype, more customers are interested in SDN. "Search volume for SDN on gartner.com is now higher than searches for MPLS, WAN optimisation, application delivery controller and router," said Gartner. It added that customers hope SDN will allow faster provisioning of workloads in the data centre, improve management and network visibility, improve traffic engineering or capacity optimisation of their networks, cut networking costs, improve performance, and reduce vendor lock-in.

While some (mostly new) firms are building their SDN architectures from the bare metal up, others advocate implementing an overlay network. This typically integrates the provisioning of network and compute resources in a more agile infrastructure. But while this is an important development, Gartner warned that the overlay is still fully dependent on a physical underlay network, and issues of network control and visibility are critical to ensure the reliability of overlay solutions.

Those calling for overlays tend to be the incumbent vendors. Some have acquired the most promising start-ups, either to hedge their bets or to take out rivals. Others, such as Ericsson with Ciena, or NEC with IBM, are forging strategic alliances.

The standards soup

Given that the oldest SDN standards body, the Open Networking Foundation (ONF), is only three years old, it will be some time before there are genuine plug and play solutions across the entire network stack. The network space is also different. Unlike compute and storage, where VMware and EMC were able to grab leading market shares quickly, networking is more complicated politically and technically.

Such is the threat to their futures that incumbent vendors quickly countered the formation of the ONF with their own version, the OpenDaylight movement. There is now some agreement that the ONF will develop the APIs for 'south-bound' traffic, i.e. between L3 (network) and L2 (data), while OpenDaylight will deal with the 'northbound' traffic to the higher application layers (L4-L7). Meanwhile, European standards body ETSI will develop specific tools and protocols to virtualise network functions, and all three will coordinate their standards-making efforts.

Roughly speaking, SDN pertains mainly to networks inside the firewall, while NFV (network functions virtualisation) is concerned mainly with wide area and carrier networks. Parallel to this, and being incorporated in the SDN ecosystem, is the OpenStack cloud computing initiative. But at a technical meeting in May, users complained that OpenStack's networking component, Neutron, doesn't work at scale. Smaller implementations appear unaffected, and it is only because more firms are basing their commercial and public cloud ecosystems on OpenStack that problems have occurred.

The software was originally contributed by SDN pioneer Nicira before it was acquired by VMware. According to some, Neutron now works at scale only if Nicira's NSX plug-in is used.

At the meeting, Red Hat also announced a beta version of its Linux *OpenStack platform 5.0*, which goes some way to address the Neutron issue with a new L2 plug-in. OpenStack enhancements include a new compute API and an updated OpenStack block storage backup API called *Cinder*. Red Hat claims the plug-in eases the addition of new L2 networking technologies and continues to support existing plug-ins, including Open vSwitch, an open source virtual switch that is part of the Linux kernel. It also enables single root I/O virtualisation PCI passthrough, enabling traffic to bypass the software switch layer to improve network performance.

"This is important for firms with heterogeneous network environments who want to mix plug-ins for networking systems," said Red Hat. It has also developed an OpenDaylight driver for the

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new L2 plug-in that enables communication between Neutron and OpenDaylight to create a solid foundation for coming NFV technologies.

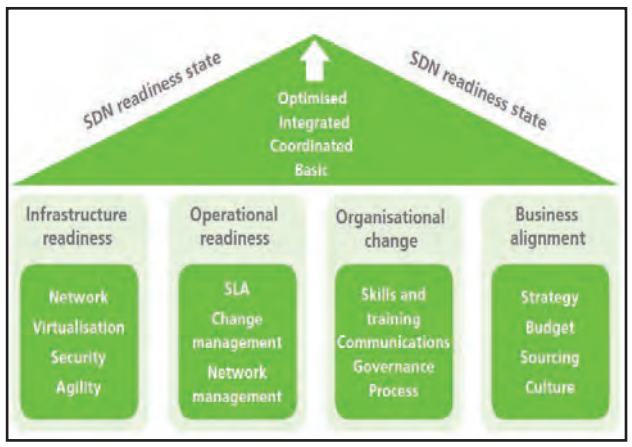
Why are we waiting?

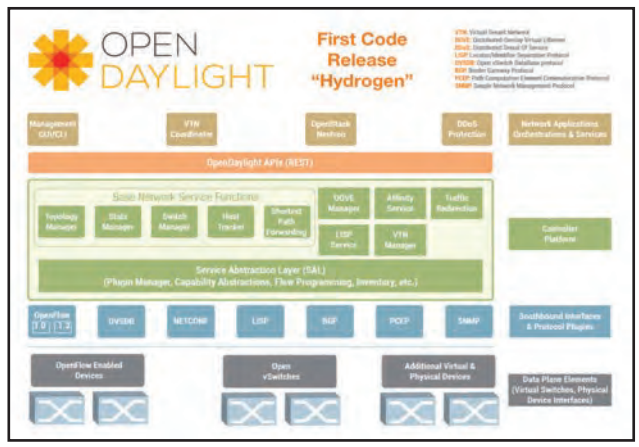
Standards are coming, but they are slower than expected because everyone involved is stressing that the code that emerges must be open source. ONF is already looking at conformance testing for v1.3 of its OpenFlow protocol for exchanging data between the controller and the network elements. ETSI published four group specifications in October 2013 to cover NFV use cases, requirements, the architectural framework, and terminology. It expects to publish more detailed specifications later this year.

OpenDaylight has published Hydrogen, its code for handling traffic above L3, in three 'editions': Base, for researchers and academics; Virtualised, for data centre operators; and Service Provider, for host data centre operators *(diagram top right)*.

The OpenDaylight controller exposes open northbound APIs which are used by applications. The platform itself contains a collection of dynamically pluggable modules to perform essential network tasks such as understanding what devices are contained within the network and the capabilities of each, statistics gathering, etc. In addition, other extensions can be inserted into the controller platform for extra SDN functionality.

But some aren't waiting. Colt has built its own 'orchestration' system to manage data centre assets, as Fahim Sabir, director of engineering for IT services, explains: "There are a number of orchestration platforms out there from various vendors,





Above left: Dimension Data's new SDN Development Model aims to map how to get clients from their "as-is" network state to their "wannabe" state as quickly and simply as possible with the available resources. Above right: OpenDaylight is providing a standard platform (shown in green) to handle 'northbound' network traffic in a virtual network controller.

but it is not a mature market and there is still a long way to go. For example, the platforms on the market lack robust reporting and analytics capabilities. Orchestration in the data centre is not just about managing virtual resources; physical assets need to be factored in as well.

"Also, most vendors' orchestration platforms tend to work best in conjunction with their own infrastructure technologies. They provide limited support for the infrastructure technologies from other vendors, especially those that compete in the same technology space. For companies that want to operate in a vendor-neutral environment it requires significant compromise to choose one of these solutions. As a result, Colt decided to build its own platform."

The firm chose modules based on whether they are orchestration-friendly, and expose well-documented and open APIs to be able to dial up and down according to capacity, performance and availability requirements. Sabir says this is key to an orchestration capability because it means Colt can perform operations without having to redeploy anything and simplifies the work the platform has to do.

"Our vision is to give internal teams and our customers the same slick experience for deploying infrastructure. The orchestration engine is a cornerstone in that. The platform is in production today and we have set up a team responsible for developing the platform further, as well as building the orchestrations that execute on it."

Practicalities

Given how immature SDN technology is, and how radical an effect it is going to have on networks in data centres and WANs, a lot of learning needs to happen.

Systems integrator Dimension Data (DD) says it has invested some $30bn in building and managing more than 9,000 private IP networks worldwide, enabling over 13 million users to connect to their organisations' networks. It has also built nine data centres and is adding two more.

"SDN offers us additional choices when architecting our clients' networks," says group executive for networking Rob Lopez. "More importantly, SDN creates opportunities for cost savings through more efficient operations, as well as a more effective delivery of network services."

Business development manager Gary Middleton adds that DD's own data centre operation was the prototype for a structured way of assessing the applicability and viability of SDN to an organisation that launched in late May. "Our CIO was our pilot client for the SDN Development Model. He saw some benefits in certain areas, and that's resulted in a plan where we're looking at SDN in those areas."

The competitive position of DD's hosted cloud is said to be based on its networking capability. It is looking to SDN to sharpen its edge to gain better, faster service provision, and lower cost from reducing headcount could also factor. Middleton notes that DD's provisioning of virtual LANs and network services is already highly automated. "We're looking to improve that further by automating things like the provision of MPLS links. It's all about providing an elastic capability for networking up and down as needed."

But he reckons the jury is still out on capex savings due to white label switching boxes – Dimension Data's research into that sector threw up a "lot of names no-one has heard of", and deeper inspection found issues with their capacity to scale and support their products. But Middleton acknowledges this may be temporary.

In the meantime, it gives firms like Cisco, with whom DD has a long and deep relationship, time to get their SDN act together. Couple that with large businesses' innate conservatism, and Middleton expects incumbent network equipment suppliers to enjoy a period of grace.

"We think 60 or 70 per cent of our clients are going to wait until their incumbent suppliers get their SDN strategy right before deploying it. At the present time, I don't think anyone's SDN offer is compelling enough to persuade clients to change their hardware vendor. They'll implement brand name switches, but then automate a lot of the functionality on top of it, so the savings will come in the form of operational savings. Instead of having an engineer touch every device to configure a network, all that will be automated.

"We do see a space for software-based SDN like NSX from VMware. That'll be an important element for a sector of the client base. It will all come down to client choice and whether they buy into the software define data centre and the VMware approach, or whether they view hardware as a strong component."

In the interim

Most SDN solutions will disrupt IT and business operations because they require a complete revamp of network infrastructure and services, according to Alcatel-Lucent Enterprise. It has developed two online demos using its Application Fluent Network (AFN) with standards-based sFlow and OpenFlow initiatives plus InMon for enterprise scale SDN analytics. It claims they present a scalable solution that enables inherent, application intelligent SDN capabilities, keeping costs under control.

One demo deals with competition for network resources of different workloads. Large flows due to VM migrations, storage, backup, and replication can interfere with smaller flows such as web requests, database transactions, and social media actions that are sensitive to delay. Alcatel-Lucent says it shows how these large flows can be identified and controlled so that both types of traffic obtain optimal performance. The other demo shows how a DoS attack can be detected and enforced in a distributed fashion across the network in real-time.

Companies that prefer to wait for more clarity to emerge from the SDN fog might care to look at network automation specialists such as Infoblox. It has just refreshed its line of solutions for managing DNS, DHCP and IP addresses, known as *DDI*, running on BMC, CA, Cisco, ElasticBox, HP, Microsoft and VMware.

The vendor claims that by using *DDI*, VMs can be provisioned with IP addresses and DNS records in minutes instead of hours or days with addresses recovered and reused, and DNS records cleaned up automatically when VMs are retired. Marketing EVP David Gee says: "IT workloads are shifting to private clouds and these clouds require automation in the network layer to match the already heavily-automated compute and store functions."

Then there's load balancing. But here, you need to handle traffic and applications differently, says Lori MacVittie, cloud computing and application security expert at F5 Networks."Application load balancing arose because network load balancing was all based on inbound variables. It couldn't take into consideration how loaded the chosen server was, or whether its response time was failing, or whether it was at capacity or not. Those variables were all on the server side, and required visibility into the application, not the client.

"It also couldn't account for the fact that virtual servers were popping up everywhere, with multiple applications served from the same IP address and port, and forced the web server to become a load balancer itself. That was kind of crazy. If a single server couldn't scale well enough to meet demand, how is putting a single server in front of them going to help the situation?"

As a result, the hashing techniques used to distribute loads changed, with network variables used to balance traffic, and application variables used to balance apps. This allowed architectures to specialise, with requests for images and static content each routed to their respective dedicated servers. It also enabled persistence (sticky sessions) which greatly accelerated the ability to scale out stateful applications in a web format (i.e. to remember their last 'incarnation').

MacVittie argues that L3 switches can easily support network load balancing but not application balancing because they don't have access to the application variables and therefore cannot hash them in order to distribute them.

"Thus, while SDN principles are certainly applicable, the architecture used to implement SDN for lower order network layer services is not going to be the same one used to implement SDN for higher order network layer services," she says.

"When evaluating SDN solutions, it's important to consider how any two SDN network (core and application) architectures complement one another, integrate with one another, and collaborate to enable a complete software-defined network architecture that supports the unique needs of both layers 2-3 and layers 4-7." ■

off-the-shelf: cables and connectors

Taking the lead when it comes to connections

The latest cables and panels have their work cut out when it comes to meeting demands for high performance networking.

Axis claims to offer the first multi-channel solution for the analogue to digital migration of video surveillance systems with the launch of its *T8646 PoE+* over coaxial blade.

The company says its new blade allows users to keep their large-scale coaxial installations without re-cabling when migrating to IP cameras. This allows organisations that require 24/7 operation, such as hospitals or prisons for example, to upgrade without disruption as well as save money.

The *T8646 PoE+* over coax blade fits Axis' video encoder chassis. Any combination of encoder blades and *T8646*s can be used simultaneously, so customers can migrate to IP as fast as they like, says the firm.

To complement the solution, an Axis *T8642* Ethernet over Coax Device Unit PoE+ can be used on the camera side. Both the device unit and the network camera can receive power over the coax cable using the new rack-mountable Axis *T8082* and Axis *T8085* power supplies.

The *T8646* is available as a single unit or in a kit that combines one *T8646* blade with six *T8642* units. Axis says the *T8646* is expected to go on sale in Q2 2014.

Belden has introduced the *RailTuff BE43802*, a 10Gbps Cat7 Ethernet data cable designed specifically for the railway market in the EMEA region.

The firm claims the cable's maximum operating temperature of 90°C is unique and exceeds the 85°C short-term temperature requirement in Class TX of the EN 50155 railway standard.

Belden says the combination of braid and foil shielding provides high strength and immunity to electrical interference. It adds that the halogen-free, oil-resistant and flame-retardant cable jacket material and insulation emit less smoke in fires, thus enabling the cable's installation in the driver's cab or engine room, as well as in passenger compartments.

According to the firm, the 19-strand copper conductors provide added flexibility as well as flex life, and the resulting small bend radius allows for easy and risk-free installation within limited spaces and bulkheads with no

effect on signal transmission. A distinctive blue cable jacket provides ease of identification after installation.

RailTuff meets international railway standards EN 45545-2 and EN 50155, as well as the new IEC standards EN 61375 'Train Communication Network (TCN)' and EN 62580 'On-board Multimedia and Telematic Subsystems for Railways'.

The new cable completes Belden's range of data communication cables for railway environments that covers 100Mbps, 1Gbps and now 10 Gbps.

Bittree has introduced a new line of 24-position Cat6 feed-through panels. They're designed to provide a single location for broadcast, transmission, production, and post-production professionals to interconnect data and Ethernet systems neatly and efficiently.

The firm reckons the panel makes testing or changing signal routes in data centres or machine rooms easier. It claims users save time through fast and easy location of proper connections, and the panel is a completely passive device that requires no external power or converters.

Bittree says it developed the new panels in response to the rapid growth of IT infrastructures in broadcast and AV environments. They complement the vendor's line of professional audio, video, and data patching systems and are available in 1-RU 1 x 24 or 2-RU 2 x 24 configurations. They feature dual-fibre LC or ST connections as well as RJ45 shielded and unshielded variants. Designation strips are available as an option for any of the panels.

Bittree adds that the flush-front design provides a cleaner installation that prevents connections from catching and getting pulled out.

Datwyler has introduced 'dual-mode' cables and the new RJ45-IEC adapter. They aim to provide a high-performance copper data network for voice and data transmission, and supply power to remote end devices (even for digital cable television) all on the same cable.

The firm says its high-performance category 7A data cables, such as types *CU 7150 4P* and *CU 7120 4P*, allow two modes of transmission: 'differential' for symmetrical signal transmission, and 'common ' for coaxial signal transmission. It says these dual-mode cables are therefore suitable for transmitting speech, data at up to 10Gbps, broadcast signals for digital cable TV up to 862MHz, as well as PoE to end devices.

Datwyler says that with the addition of shielded modules of at least category 6A (RJ45 and PS-GG45) and its new RJ45-IEC adapter, users can build a single standard cabling system for every type of transmission and service, including cable television.

One of the adapters takes care of the supply of coaxial services to the data network at the patch panel, the other is plugged into the data socket to allow TV sets to be connected. The adapter transmits using common mode and provides an IEC connector as the usual physical interface.

Harting reckons it's come up with a robust pluggable feed-through connector housing to its *Han-Yellock* connector family that eases the laying of cable through different rooms in industrial environments. The new panel feed-through is said to facilitate handling and offers IP 67 rated protection in the plugged-in condition.

As well as being pluggable, the new feed-through system features a bulkhead-mounted housing complemented by a metal housing similar in shape to the upper part of the housing of the standard *Han-Yellock* connector.

The cable sets can be pre-assembled and installed with the flange at the point of penetration to make handling easier. Harting says the resulting robustness means the housings are impact-resistant on both sides of the connector and provide IP65 and 67 levels of protection for inserts when mated. The feed-through housing is suitable for use in modular production lines consisting of machines in multiple rooms, particularly in harsh environments where connections are exposed to fluids or dust.

Riello steps in to combat UPS 'rogue traders'

UPS specialist Riello has launched a new training programme to combat what it says is the growing number of 'rogue traders' providing unauthorised maintenance services to customers.

The Riello Certified Engineer initiative is designed to protect users who need third-party servicing and approved spares for their UPS by enabling them to check if their chosen engineers are fully trained and competent to carry out the work.

To achieve certified status, engineers from Riello resellers must successfully complete comprehensive training on the commissioning, maintenance and servicing of the vendor's UPS products. They will then be allocated an ID card with a unique identification number that customers can use to search a dedicated website to verify the individual's certification status and core competencies.

"Several other UPS manufacturers have chosen to tackle the problem of unauthorised maintenance by instigating 'closed protocol' systems," says Riello GM Leo Craig. "We chose not to take this approach because we felt that it would stifle competition in the market. Instead, we've created a comprehensive network of qualified service partners – all of whom are trained and certified to work on Riello UPS – which we hope will offer our customers the reassurance they need."

The vendor adds that companies with at least one engineer fully trained in commissioning, battery builds, maintenance and service can also benefit by becoming a Certified Riello Service Partner. Approved spares will only be supplied to accredited partners, and they will not be made available to individual Certified Engineers to prevent them carrying out unauthorised work for other companies.
www.riello-engineer.co.uk

Riello's general manager Leo Craig says customers will be "reassured" by the creation of a network of qualified service partners.

NEW COURSES

Information and cyber security – University of South Wales

The University of South Wales plans to open a centre in London's Docklands where it will deliver a range of professional level courses in information and cyber security.

The university says the new centre will be its first physical presence in the capital, and will provide access to its "recognised" information security specialists.

Speaking at this year's Infosecurity Europe event held at the end of last month, Professor Andrew Blyth, who undertakes confidential work for many government agencies, said: "Many of the courses we will be delivering at the centre will be short CPD courses which are currently not available elsewhere in the City. For example, we have one-day courses in 'Information Assurance Governance' and 'Malicious Software Analysis' which appeal to people working in many sectors who need awareness of information security issues."

One of the range of CPD courses to be offered at the London Centre will be the Tiger Scheme qualification, a commercial certification for technical security specialists. Endorsed by the National Technical Authority for Information Assurance (CESG) and backed by a university-based assessment, the three-day course includes both training and assessment elements and is described as "essential" for those seeking a clear path for career progression within the industry. MSc courses in Computer Systems Security and Cyber Security will also be run from the new centre.
www.southwales.ac.uk/london

IEC 61439 Compliant Switchgear and Controlgear Production – Rittal guide

IT infrastructure specialist Rittal has produced a guide book that offers an insight into the new IEC 61439 standard, and to help customers comply with it.

Relating to the building of control panels and electrical distribution systems, IEC 61439 comes into force as from November 2014. It will impact the design of the panel, selection of components and the testing methodology.

Under the new standard, Rittal says that the panel will basically become a system. As a result, the designer/panel builder will now have to consider the following: the enclosure; the effects of heat upon the components; cooling equipment; busbar system; mechanical properties; and the generation of test documentation (which is a requirement for standards conformance).

Rittal's guide complements the recent launch of its latest power engineering software. It has been developed to enable users to design motor control centres, electrical switchgear, control panels and generate bill of material, costs and designs that comply with the IEC 61439 switchgear standards.

Key features of the upgraded version, *RPE 6.2*, include: the generation of copper connection drawings; production of design verification documentation and the ability for users to generate their own documentation; calculation of an internal enclosure's temperature; application examples; an *Excel* configurator for temperature rise calculations up to 630A and up to 1600A according to IEC 61439 section 10.10.4.2 and new partial doors and front panels.
www.rittal.com/uk-en

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