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Europe's biggest DC
State-of-the-art facility to run on software defined network
News, p2

Here be monsters
The dangers lurking in the cloud.
PLUS: Metropolitan area networks
Features, pp10-17

Testing the network
Increasingly complex networks mean test gear needs to be simple yet effective
Off-the-shelf, p18

IPEXPO
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'Poor networkers' undermine Government's digital strategy

by Ian Grant

Government CIOs are investing in the wrong things, potentially undermining the government's *Digital by Default* strategy, according to a new study by Easynet.

Alan Fogden, head of managed cloud infrastructure for the operator's global Services public sector division, says the figures gave a "loud and clear message" to government on where to invest.

"There's no point in encouraging public sector organisations to create more and more citizen cloud services unless the underlying infrastructure is going to work well," he said. "If citizens can't access services because the network is performing slowly, they're going to give up and go back to paper-based communications, which totally defeats the object."

Fogden's comments are based on responses from more than 140 public sector officials interviewed for Easynet's *KillerApps 2013* study. Researchers found that just 44 per cent of public sector organisations knew how much bandwidth each of their applications consumes. This is below the cross-industry average of 60 per cent where financial services and manufacturing reach over 70 per cent.

Almost 80 per cent of public sector IT professionals reported that their data traffic had grown annually by at least 10 per cent, with a quarter seeing growth above 20 per cent. But only 37 per cent were increasing their network budgets, while 46 per cent were holding them steady and 13 per cent were cutting them.

The survey shows that 28 per cent of public sector users regularly max out their network. Three-quarters of public sector respondents said they had suffered network-based performance problems in the last year. Critical operational applications were hit in 35 per cent of cases, closely followed by unified communications.

Fogden claims public sector CIOs are not investing in "the right places" and that throwing more bandwidth at the problem isn't the answer. "Organisations need to look for the root cause and work out which applications are jamming things up."

Many local authorities have outsourced their networks to third parties who arguably have little or no incentive to sell less bandwidth. But Fogden believes that the outsource suppliers are not to blame, and that they could advise and guide if they were treated as "virtual partners".

"CIOs are more likely to have a firm understanding of their network, identify the bottlenecks, the slow-running apps, the badly timed backups, and network management is likely to be more efficient. That's what it comes down to."

Poor network management could shut the door on the government's Digital by Default strategy to deliver public services online.

The Cabinet Office, which is in charge of the *Digital by Default* strategy, and Socitm, the local authorities' IT consultancy, did not response to our repeated requests for comment. ■

Infinera and DANTE set a new network speed record on GÉANT

In August, Infinera and DANTE (Delivery of Advanced Network Technology to Europe) achieved a Guinness World Record for the fastest rate of provisioning multi-terabit optical capacity across GÉANT, the pan-European research and education network.

The record was set using Infinera's *DTN-X* packet optical transport networking platform. This was deployed on the GÉANT backbone across a long-distance link from the Vancis data centre in Amsterdam to GlobalConnect in Hamburg.

Infinera says its platform provides transmission capacity using 500Gbps super-channel line cards which require only two fibre connectors each. Sixteen such cards and 32 fibre connections were deployed at each end of the link, and once the super-channels were in operation a 100GbE service was provisioned over the link. The firm says that the total time from the insertion of the first super-channel line card to the activation of the 100GbE service was 19 minutes and one second. It resulted in a provisioning rate of 26.02Tbps per hour – enough capacity to simultaneously stream 1.6 million HD movies in each direction.

According to Infinera, *DTN-X* converges five terabits of non-blocking OTN switching into the same platform, resulting in much more efficient network utilisation compared to conventional WDM architectures. It says that intelligent software combined with this converged platform automates manual operations to reduce operational costs and enable faster service delivery.

The firm adds that its platform delivers the industry's only production ready long haul 500Gbps *FlexCoherent* super-channels based on 500Gbps Photonic Integrated Circuits. These are engineered to be upgradeable to one terabit super-channels in the future. ■

Europe's largest data centre runs on SDN

Portugal Telecom (PT) is hoping to become a global player in the network and data hosting market with its new €90m data centre in Covilhã – claimed to be the largest in Europe and the sixth largest in the world.

Due to open later this month, the 75,000 square metre facility is built to state-of-the art specifications and is also the testbed for a series of practical experiments by PT and Japanese equipment maker NEC. The two companies will look into the use of OpenFlow to assess the limits of software defined networking (SDN).

Portugal Telecom's state-of-the-art facility in Covilhã is Europe's biggest data centre to date.

The site, built in the mountains north-east of the Portuguese capital Lisbon, can accommodate up to 56,000 servers, and 33 petabytes of data with current technologies. It is connected to PT's 100Gbps optical backbone, which supports FTTH coverage to more than 1.6 million Portuguese homes, LTE mobile coverage of 92 per cent of the population, and backhaul for mobile traffic.

The centre uses free (adiabatic) cooling to cuts its energy consumption profile to 1.25 PUE – industry averages are around 2.5. The facility will also create 1,400 new jobs, a boon for Portugal's economy which is one of the hardest hit by the banking crisis.

PT CEO Zeinal Bava says half of his firm's domestic revenues are non-voice, which is pushing major changes in the B2C and B2B markets, and driving network virtualisation. He adds that the future for telcos lies in their response to market demand for an increase in the relevance and predictability of services.

In April, PT and NEC agreed to jointly evaluate network virtualisation based on SDN technology. The deal allows both to test and assess the commercial feasibility and benefits of SDN implementation for carrier data centres, and to identify the "most beneficial" SDN usage in PT's telecom infrastructure. ■

Amor to help Middlesbrough Council reduce its ICT bill

Middlesbrough Council has appointed Amor Group to provide support for its 'Change Programme' ICT strategy which aims to deliver £75m of savings over a five year period.

Amor says it is currently conducting a "comprehensive" options appraisal and business requirements assessment which will enable Middlesbrough Council to ensure its applications are being managed effectively. The firm will also create architecture to manage future developments and additions to the local authority's ICT application portfolio.

Amor says all this will lead to new, consolidated and integrated data, as well as technologies that exploit developments in ICT relevant to the public sector. It adds that this will ultimately benefit local citizens.

"In the face of unprecedented funding cuts, the council is seeking to transform itself to a much more efficient organisation, with services built around resident and community needs," says Steve Fletcher, corporate programme manager at Middlesbrough Council.

The council has earmarked savings to come through the delivery of core applications which includes a channel shift to providing services online.

"Procuring Amor to undertake an applications review is one of the first steps in a significant ICT programme which will see the council optimise technology across its services, becoming digital by default," says Fletcher.

Amor's support programme began in May and will run through until March 2014. ■

Consortium awarded £800,000 to develop 'Internet of School Things'

The Distance consortium has been awarded £800,000 by the Technology Strategy Board to develop the 'Internet of Things' (IoT) for schools.

Led by industry and academic experts, the consortium's aim is to have students and teachers measure and share data – using new technology on the IoT – in ways that help make learning fun, link directly to the curriculum, and ultimately inform the design of the next generation of schools.

Distance will initially work with at least eight schools to define how the IoT can enhance learning in science and other subjects such as technology and geography.

It will create an information hub in the cloud using *Cloud Services* from LogMeIn subsidiary Xively. This open platform is said to be "massively scalable" and purpose-built for the IoT. It will enable the consortium to identify the mix of incentives required to encourage educators, students and businesses to share certain types of data openly for the first time.

Distance says the key innovation is the provision of a platform and service layer to connect schools with third-party service and application providers. These firms can then supply internet-enabled measurement equipment and interpretation software.

The consortium began work with the schools on a pilot design at the end of the 2013 summer term. Following the trials, and as the project moves into its second year, it expects to develop comprehensive resources using the IoT that can be used in schools across the UK. ■

Connecting the campus – p9.

Bucks council shares IT and uses profits to cut taxpayers' costs

Buckinghamshire County Council (BCC) is taking its networked IT capabilities to market via its new public sector network (PSN) which is supplied and run by integration specialist Updata Infrastructure.

In September 2012, BCC awarded Updata a four-year framework contract to move services – including WAN, LAN, security and school services – to the new Bucks PSN. It will cut costs by making these available to neighbouring users such as district councils in Aylesbury Vale, Chiltern, South Bucks and Wycombe, as well as Buckinghamshire Fire and Rescue Service and more than 200 schools. It's claimed the economies of scale will save the local authorities linked into the PSN an estimated £12m over the next decade. BCC is now determined to make the network even more profitable by sharing it across more local authorities and schools.

"We are trying to be entrepreneurial on behalf of our public to reduce the cost of services that we as a council must provide," says BCC CIO Caroline Cooper. "If other public bodies join us, they further amortise the costs of the network and they also make money because they don't have to pay procurement charges – so it's a win-win situation. I believe we could save more than a million pounds over the next few years."

CIO Caroline Cooper says Bucks County Council is trying to be "entrepreneurial" on behalf of its citizens.

Cooper is looking beyond secure and reliable bandwidth. "If we can persuade authorities to share the PSN, then we may also be able sell other services to them as well, such as IT support, HR, legal and procurement," she says.

BCC's IT staff are now promoting a new contracts management system after the council did a deal with the software developers to take a share of sell-on profits.

Finance head Peter Hardy adds that the team cannot rest on their laurels: "Councils have to find new ways to raise and save money in this very difficult climate. That's why our staff have been tasked to go out and present its benefits to other organisations at every opportunity." ■

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First fully operational WAN to use OpenFlow from end-to-end

The world's first purpose-built network to test software defined networking (SDN) standards under real-world international carrier operating conditions is being built.

Canadian advanced communications researcher Canarie, US-based academic network operator Internet2, and StarLight, which links internal research and education networks, are building the WAN.

They will use Ciena's *OPn* network approach to create the industry's first fully operational end-to-end WAN that leverages OpenFlow across both the packet and transport layers. It uses all the key packet, optical and software building blocks required to demonstrate the benefits of software-defined, multi-layer WANs.

The network will build on Canarie's work on 100Gbps carrier networks. It will run Ciena's open architecture carrier-scale controller, 4Tbps core switches and intrinsic multi-layer operation. It also incorporates real-time analytics software applications.

The network currently spans 2,500km and is expected to grow in 2014. In what's claimed to be another industry first, it can cross-connect data flows from Ciena R&D labs to almost any national research network in the world.

Elsewhere, carrier networks are working on a related technology, network function virtualisation (NFV), to allow them to scale backbone networks under software control. This new network platform will speed up SDN development for carriers and enable Ciena and its partners to refine practical ways to adopt and benefit from SDN.

Software defined networking is seen as crucial to virtualising network operations, but this is the first test of the technologies in a WAN environment. ■

802 Event teams up with Huawei for stadium-wide Wi-Fi at Ibrox

802 Event WiFi has teamed-up with Chinese telecoms giant Huawei to deploy what's claimed to be one of football's first fully converged, stadium-wide Wi-Fi networks. The Lanarkshire-based firm has not disclosed the exact value of the deal, but says it negotiated a "seven-figure investment" with Huawei.

802 Event aims to give more than 50,000 Rangers' fans seated at the Ibrox Stadium full and instant access to content-rich media, such as post-match analytics, and allow them to participate in real-time interactions with the club. It reckons the new setup will "remove at a stroke" the connectivity problems of using 3G cellular networks in high-density areas.

Felix Gibson, 802 Event's chief executive, says Wi-Fi will also be available in the stadium's concourse, approach ways, restaurants and corporate areas. He explains that the network uses 802.11n dual radios with directional antennae.

"Both internal and external access points [APs] will be deployed and will extend beyond the immediate stadium perimeter. This is an end-to-end Huawei solution. There are 280 APs with chassis-based controllers, 48 switches, and an *eSeries* network management solution. We have installed a dual fibre ring around the stadium with Cat6 from switches to APs."

The deal represents Huawei's first project with a major football club in Europe. As part of the package, it will also connect its 160,000 worldwide employees to Rangers, bringing the club to a wider audience via the company's operations in Asia and China.

Earlier this year, Manchester City claimed to have become the first Premier League club to offer high density Wi-Fi for fans at its stadium. Its deployment uses a system from Cisco/O2 (*News, May*). ■

802 Event WiFi CEO Felix Gibson: "Game changing technology".

NATO deploys new comms force

Through a contract awarded to the Science Applications International Corporation (SAIC), Polycom has become the video collaboration platform of choice for NATO.

SAIC is installing the vendor's *RealPresence* system in all major NATO locations throughout Europe and North America. Polycom says its platform not only complies with NATO's strict security requirements, but also with the need to communicate with a wide variety of legacy systems from multiple vendors, including *Microsoft Lync* which is used widely throughout the organisation.

Network managers can use the same *RealPresence* server to accommodate both the highly secure *NATO Secret* classification for confidential comms, and *NATO Unclassified* for less sensitive meetings. Using Polycom's firewall traversal solutions, they can enable desktop or mobile video users to join meetings without putting NATO's network at risk.

A scheduling application built with myVRM, a Polycom/SAIC technology partner, allows authorised users to schedule video meetings based on the security classification of the rooms and endpoints available at a given time.

Polycom adds that *RealPresence*'s interoperability with Microsoft makes it easy for *Lync* users to launch or join a video meeting, and upgrade on the fly from a voice to a video call. ■

ON THE NETWORK

Rahiel Nasir, editorial director

Help us create the ultimate website for all networking professionals

Networking+ is currently working on developing a new website and we need your help. Whether you're a reader, an IT professional, or represent a firm or organisation involved in the business and technology of voice and data networks for enterprise, we want to hear from you.

Our aim is to create a website that supports and augments the existing magazine (not replace it). Users will be able to access breaking news stories, product reviews, industry white papers, case studies, training courses, our exclusive features archive, and much more. But what do you think?

So here's where you come in. We'd like to know which websites you currently use to get online IT industry information. Which ones do you use regularly and why? Tell us about the sites you rate (as well as the ones you slate), and what you think is missing out there.

For example, which sites do you visit when searching for jobs in IT networking? How do you find out about the latest products for building LANs and WANs? Have you ever found all the industry information you needed on a single site that you trust and respect?

Ultimately, we hope to build a website for *Networking+* that becomes the 'one-stop shop' for all things networking – and we can't achieve that without your help. So please feel free to send me your thoughts, in complete confidence, via the email address below. We look forward to hearing from you soon.

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KADIUM

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C4L deploys MPLS

Connections for London (C4L) has deployed a high-speed MPLS/VPLS Ethernet network across all its data centres in London and Manchester. The firm says it will now be able to introduce products and services to market much faster, potentially reducing network and data centre installations from a month to a day. All its connected sites will benefit from diverse fibre optic connectivity and DWDM technology deployed over a private dark fibre network. C4L adds that it expects to provide 100Gbps connections in the "near future". ■

Superfast schools

Metronet (UK) has teamed-up with One Education to roll out superfast connectivity to more than 100 schools in Manchester and beyond. Since forming the partnership, the company says it has successfully delivered to 30 primary schools and several high schools using its hybrid network which combines best of breed wired and wireless technologies. One Education works directly with schools, providing advice, learning structures and IT support. ■

Unravelling NHS cable complications

Sudlows has won a tender to join the North of England NHS Commercial Procurement Collaborative framework for the provision of cabling. Under the two-year framework, which gives NHS organisations a simple and direct procurement channel, Sudlows will design, install and maintain data cabling infra-structures for over 35 NHS organisations across England. They include foundation trusts, clinical commissioning groups, care partnerships and ambulance services. ■

Three more years

Unilever, the firm that put BT into the outsourcing business, has extended its relationship with the telco for a further three years. This is its third extension. The original contract signed in November 2002 became the foundation of BT's £1.9bn Global Services division. BT's managed services arm runs a fully integrated network that provides voice, data, video and mobility services to Unilever's 173,000 employees in nearly 100 countries. "We are becoming a more agile business and introducing more sustainable ways of working for our employees, customers and suppliers," says Paulo De Sa, Unilever's vice president for infrastructure services. ■

MDM automates tasks for OBU

Oxford Brookes University (OBU) will use Matrix42's *Workplace Management* suite for mobile device management (MDM), as well as for full software licence compliance and audit requirements.

According to the vendor, its suite can be hosted in the cloud and therefore eliminates reliance on in-house data centre resources, enabling users to benefit from rapid deployment timescales.

The platform will allow OBU to manage a mixed estate of *Apple Macs* with support for PCs available if required. "With one million software fingerprints and 330,000 SKUs, it will enable us to automate licence compliance whilst meeting audit requirements," says Gareth Brown, head of customer services at OBU Information Solutions. "Each of the *Workplace Management* solutions are future-proofed and we can connect them to any existing or future third-party systems that we use."

For example, he explains that integrating MDM with the suite's *ServiceNow* component will allow OBU's service desk team to automate repetitive tasks such as device enrolment. "[This] will free up our IT resources to spend time on more value-added activity. We will also ensure that we are fully compliant with our IT asset management obligations with the *Software License Compliance* module." ■

OBU will use Matrix42's Workplace Management.

KEMP deals with the traffic loads for Macmillan and TalkTalk Business

KEMP says its LoadMaster 2600 can be used to automatically re-route and reconnect users to other servers when necessary.

Macmillan Cancer Support and TalkTalk Business are keeping their network traffic flowing with the KEMP's load balancers.

Macmillan has an IT infrastructure that includes more than 400 servers spread across its main office in London and at sites in Andover, Edinburgh, Glasgow, Redditch and Shipley. Most of them are running VMware *ESXi 5*.

In July, it installed two *LM-2600 LoadMasters* to increase IT performance and ensure high availability of its new *Microsoft Exchange 2010* email servers. KEMP says the appliances ensure "a fast response and maximum network uptime" for 1,500+ *Exchange* users while removing congestion problems during peak times.

Staff are automatically connected to the best performing *Exchange* server, and if one becomes slow or inaccessible, the *LM-2600*s automatically re-route traffic and reconnect users to others that are functioning well.

Systems support manager James Byrne says that as well as being certified specifically for load balancing *MS Exchange 2010*, the appliances also offer an all-in-one solution with features such as SSL acceleration. This allows Macmillan to offload encryption processing from its servers.

"The KEMP appliances were very easy to install straight out of the box, and were practically configured for us upon arrival, with just an IP address change and HA setup required," he adds.

In a separate deployment, TalkTalk Business will use a *LoadMaster* to ensure high performance and availability of its unified communications systems. The balancer will enable it to share traffic across *Microsoft Lync* servers and, as with the Macmillan deployment, it will automatically re-route and reconnect users to other servers when necessary.

"Integrating business-critical voice and data communications services means that performance and availability can't be compromised," says Leigh Bradford, KEMP's UK and Ireland sales manager. "And as *Lync* has to support real-time VoIP traffic, it is vital that any jitter or latency is minimised. That is why hardware load balancing is now recommended by Microsoft as an important element in enterprise *Lync* deployments." ■

Lancaster University is "on the road to UC nirvana"

Working with Cisco and Logicalis, Lancaster University has deployed new communications infrastructure which includes a core telephony system, and a Cisco unified communications platform consisting of voicemail, unified messaging, and web-based video conferencing.

The university's previous telephony infrastructure consisted of three separate systems but had become increasingly difficult to manage. In addition, the aging hardware wasn't providing the 'always-on' communication it needed to operate as a world-class institution.

Ian Anderson, the university's networking group leader, says: "The *Cisco Jabber* application will be available to all staff and postgraduate students as a soft client on smart devices, to enable round the clock instant messaging and presence as well as voice and video telephony from anywhere, on any device."

Moving forward, he says IM will replace email to become the norm for quick questions, thus reducing inbox overload. He adds that video and desktop sharing will also reduce the need for travel.

The university is in the process of phasing-in the solution for its 16,000 students and 2,500 staff in more than 120 countries worldwide.

"We're fairly early on the road to UC nirvana at Lancaster, but believe that by taking the time to get the building blocks right, the benefits will follow smoothly," Anderson concludes. ■

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[1]Source: Intel® performance comparison using SPECfp®_rate_base2006 benchmark. Baseline score of 266 on prior generation 2S Intel® Xeon® processor x5690 (3.46GHz, 6 core, 12MB L3, 6.4 GT/s, 130W) based platform published at www.spec.org as of 6 Sept 2011. New score of 492 on 2S Intel® Xeon® processor E5-2690 (2.90GHz, 8 core, 20MB L3, 8.0 GT/s, 135W) published at www.spec.org as of 28 March 2012 using two Intel® Xeon® processor E5-2690, Turbo Enabled, EIST Enabled, Hyper-Threading Enabled, 128GB memory (16x8GB DDR3-1600), Red Hat® Enterprise Linux Server 6.1 for x86_64, Intel® Compiler 12.1.

[2]Results achieved by comparing recommended system to IBM System x3650 (with Xeon® E5205) using IBM Systems Consolidation Evaluation Tool (https://rolanalyst.alinean.com/sdgl/). The comparison is between IBM System x3650 M4 and x3650 (does not include x3650 M2 or x3650 M3).

[3]Pricing quoted is based on IBM's 0% System x Solution Finance offering (FMV lease). Terms and Conditions apply. Offering availability subject to credit approval, for more details and full Terms and Conditions please visit: http://www.ibm.com/financing/uk/lifecycle/acquire/xsolutionfinancing.html

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VIEW FROM THE TOP

James Walker, president, Cloud Ethernet Forum

Working together is the only way to address real business concerns

Let's face it: 'the cloud' risks becoming the victim of its own success. Cloud services have become immensely popular far faster than was predicted, and when it comes down to provisioning cloud resources a gap is growing between leading providers and the rest of the industry. Meanwhile, users are becoming more demanding and are beginning to expect greater levels of service.

Four years ago, Tata Communications migrated its Ethernet over SDH services to native Ethernet over PBB, and from day one it proved highly popular with its data centre customers – they loved Ethernet's simplicity and scalability, and wanted more. But then, user demand drove their networks to become larger and more sophisticated so rapidly that many unexpected challenges began to appear.

The CloudEthernet Forum (CEF) was set up to find solutions to these problems as well as to anticipate others that are only just beginning to emerge. These challenges are being faced right across the industry and no one company can be expected to solve such fast evolving issues.Collectively however, we can bring about changes that will help all our customers.

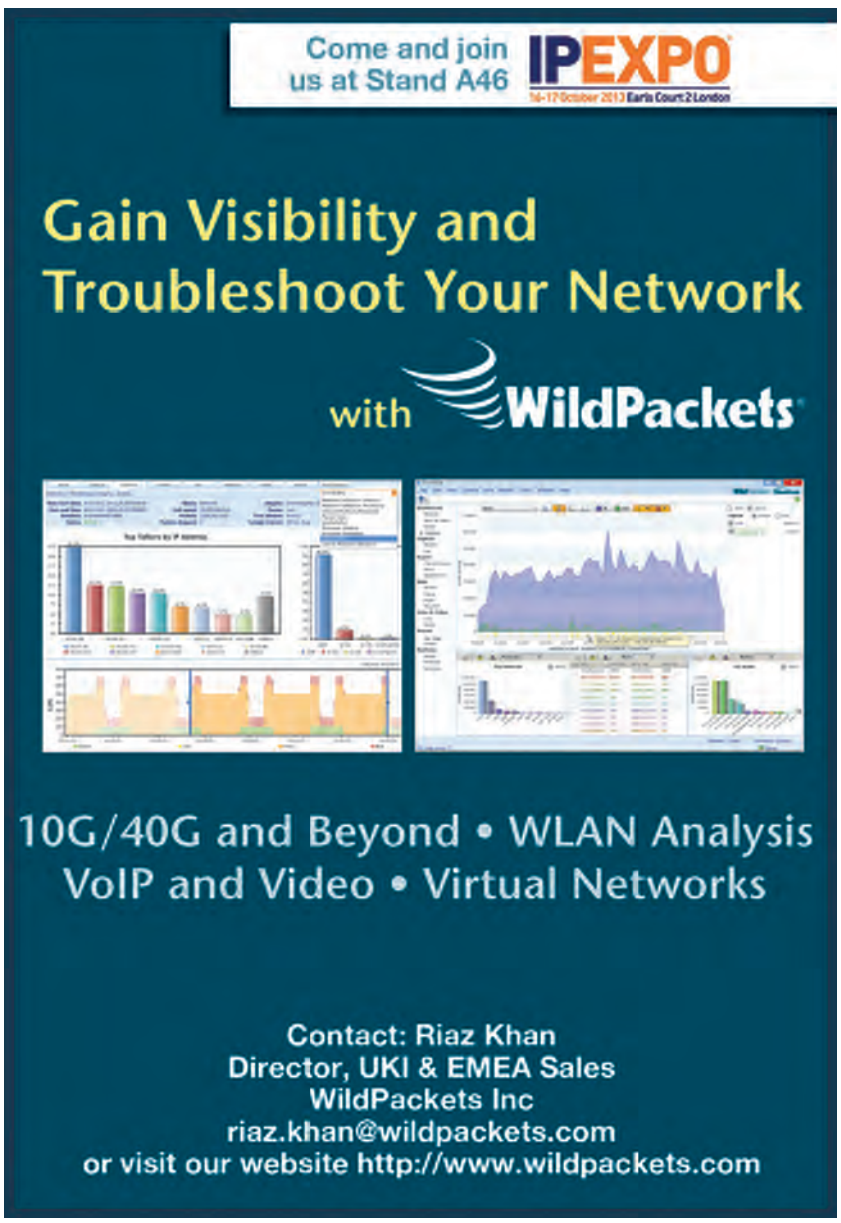
Among the initial issues that need resolving as a matter of urgency, the CEF has identified:

- Scalability of Ethernet to support millions of VLANs in a way that maximises the transparency of deployment, and minimises the configuration required for setup and operation
- End to end provisioning that is agnostic to the specific devices and technologies across the network, and requiring minimal or no human intervention for rapid deployment of services
- Deterministic traffic behaviour and performance to meet specified SLAs or legal/regulatory requirements – e.g. for keeping data within national boundaries

Globalised cloud services are powered by growing numbers of VMs and storage devices which need to be located and networked to optimise localised performance and cost effectiveness while meeting regulatory requirements.

By developing recommended standard implementations of existing technologies, the CEF will be able to collectively address these problems. It will enable the creation of highly scalable and adaptable cloud service infrastructures, optimised for performance, cost effectiveness and regulatory compliance – for all our customers.

James Walker is also VP of managed network services at Tata Communications.



PRISM could cost US cloud providers billions

US cloud providers could lose upwards of £20bn in future business following the revelations about the National Security Agency's PRISM data collection system *(see News, June 2013)*.

According to an Information Technology and Innovation Foundation survey, 10 per cent of companies from outside America have cancelled projects with US-based cloud providers. 36 per cent of US cloud providers admit that PRISM has made it 'more difficult' for them to find business outside the US.

As a result, survey author Daniel Castro concludes that it seems reasonable to assume these cloud providers would lose 10 or 20 per cent of their overseas business to companies based outside America.

By 2016 it is estimated that 50 per cent of cloud business will be operating from outside the US and that the total global cloud market will be worth $207bn.

ANS Group chairman Scott Fletcher says his customers don't want US clouds.

Scott Fletcher, founder and chairman of UK cloud infrastructure specialist ANS Group, claims UK firms were already wary about putting data into the US because the Patriot Act strengthens the White House's powers to gather intelligence.

He says the PRISM revelations mean his customers are now even more keen to have all their services based in the UK, rather than on Google or Amazon cloud platforms. "People talk to us and want their own private cloud service, because they know we don't have that sort of relationship with the government." ■

Avaya uses OpenStack system for rapid service orchestration

Avaya claims its *Software-Defined Data Centre (SDDC)* framework will break down traditional data centre silos that require weeks or months to turn up an application and replace it with a simple five-step process that takes minutes.

It says *SDDC* includes an orchestration process that combines, customises and commissions compute, storage and network components. Avaya says use of the OpenStack cloud computing platform will allow data centre administrators to deploy VMs, assign storage, and configure networks all via a single GUI.

The framework is based on a variety of components. These include: *Avaya Fabric Connect* technology as the virtual backbone to interconnect resource pools within and between DCs; Avaya's *Horizon*-based OpenStack Management Platform; and open APIs into the *Fabric Connect* architecture for ease of integration, and interoperability with other software defined networking (SDN) architectures. Avaya reckons *Fabric Connect* further enhances the OpenStack environment by removing restrictions in traditional Ethernet VLAN/Spanning Tree-based networks to enable a "more dynamic, flexible and scalable" network services model.

The *Horizon*-based *Management Platform* and open APIs are expected to become available next year. Avaya says future initiatives include the extension of *Fabric Connect* and orchestration to deliver end-to-end service creation and delivery from data centre to desktop.

Marc Randall, SVP and GM for Avaya Networking, believs that *SDDC* shows how enterprises can immediately realise the operational benefits of real-time orchestration and automation. "While some remain hung-up on definitions of SDN and what it might deliver in the future, Avaya is delivering tangible business benefits today," he claims. ■

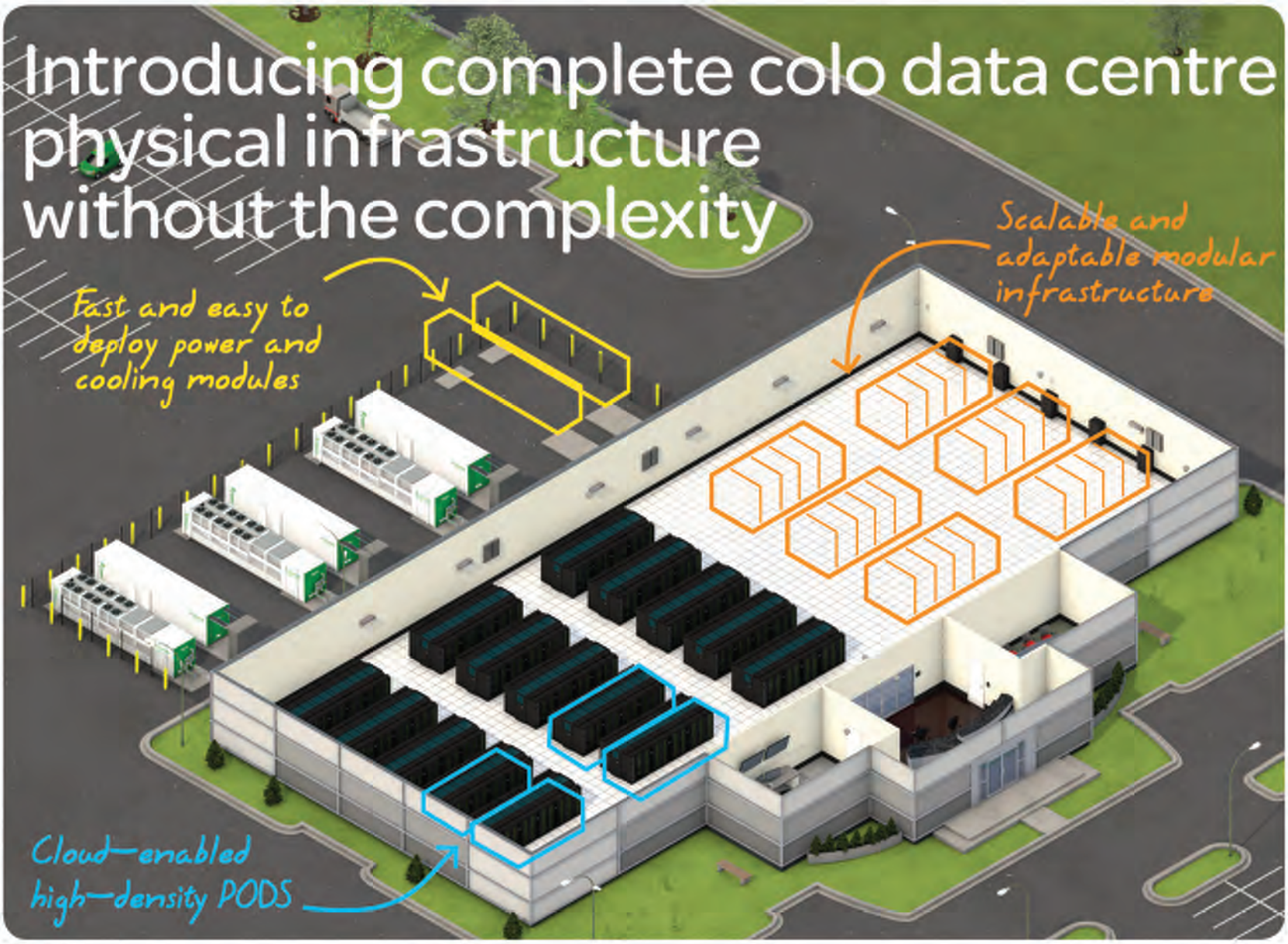
Aviation insurance broker takes off into the cloud

Boston Marks Insurance Brokers (BMIB) is migrating to the cloud with the help of Oncore IT. Under the agreement, Oncore will provide virtual server and application hosting, desktop support, online backup and disaster recovery, plus round the clock monitoring. It will also supply BMIB with SSL VPN remote access technology and 100Mb leased line connectivity.

BMIB provides a range of insurance services to the aviation sector and is the UK arm of New Zealand-based Boston Marks Group. It will move its key servers to Oncore's London data centre with the entire infrastructure managed on a virtualised enterprise-class platform. The virtualised servers will run business critical applications such as *Microsoft Office*, *Sun Accounts*, *Ceridian*, and an insurance broker system from GPM Development.

Location played a key part in BMIB's decision – Oncore IT's network operations centre in London (pictured) and engineers were close by, so onsite server support could be provided quickly.

Ralph Bull, BMIB's COO, says: "Totally shifting to the cloud solves a number of onsite server load balancing management issues we were having. We anticipate performance will increase with downtime guaranteed to be one per cent or less." ■



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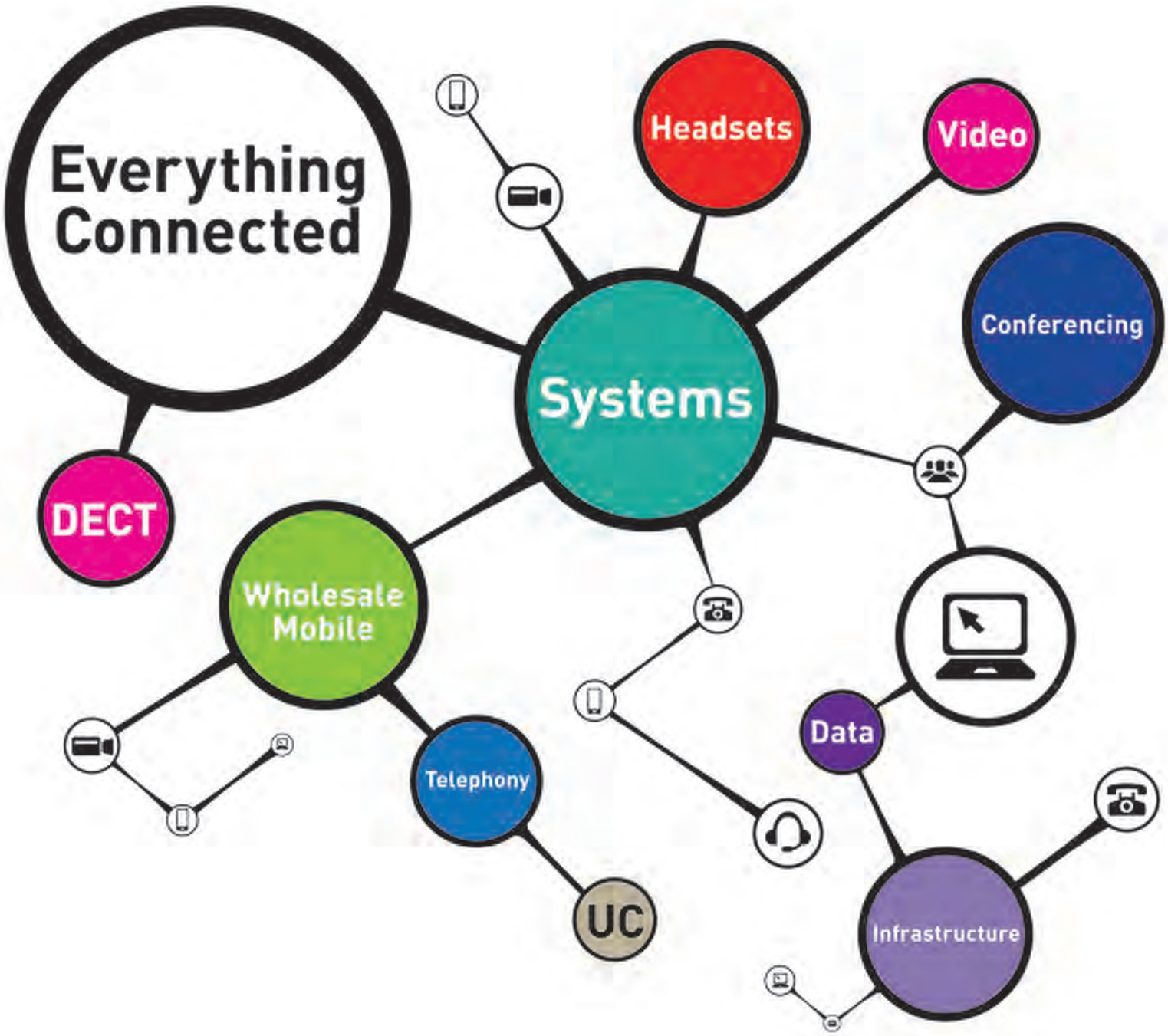

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Safe and secure backups

Founded in 2008, EasiPC Services' aim is to provide a flexible and cost-effective ICT technician service to schools across Northamptonshire. It currently supports just under 100 schools with an onsite package that includes technicians who provide ongoing maintenance.

Because of its responsibility of protecting vital data, it was essential for EasiPC to offer a secure and reliable backup solution. The firm found that the majority of its schools already had existing tape and disk backup solutions in place. However, due to the time and labour intensive nature of such systems, a lot of them were failing to perform critical backup related tasks such as swapping tapes or ensuring they were taken offsite.

"The backups simply weren't happening because it was left to the schools to implement them – the process of placing data on removable disks and transporting them was a major barrier," says EasiPC director Jezz Botterill. "This was causing us, as well as the schools, significant headaches when data went missing."

Botterill says his company also had to contend with the dated hardware and software that most of the schools used, much of which offered little (if any) encryption. "Of those that were backing up data and transporting offsite, most were not encrypting the data first – presenting various security pitfalls and legal issues."

As a result, EasiPC has now implemented the *Redstor Backup for Schools (RBUSS)* Service in 20 of its schools. This completely automates the backup process and ensures information is encrypted to the highest levels.

The firm can monitor the backups from a central location, and the system also enables restores to be performed at the click of a button. As an example, Botterill describes one instance where a bursar managed to delete the entire admin area on a school's server: "[This] could have been a disaster with the old backup system. With *RBUSS*, we were able to restore all their data within six minutes."

He adds that the automated nature of *RBUSS* has meant that his team spends less time on sorting out bad or broken tapes and trying to restore data that might not have been backed up in the first place.

Cool and green super-computing at Cardiff

In 2005, Cardiff University began ARCCA (Advanced Research Computing @ Cardiff) – a project to create a high performance computing facility. Codenamed *Merlin*, the supercomputer cluster was designed to facilitate the university's advanced research requirements, as well as

potentially the needs of third party users.In order to operate the infrastructure in line with the university's overall commitment to environmental sustainability, ARCCA specified that the supporting data centre environment should take the fullest advantage of available technologies to minimise energy consumption.

To meet these needs, the ARCCA team chose Schneider Electric and its 'Elite Partner' Comtec Enterprises, using components from APC's *InfraStruXure* architecture. Schneider says a key component of *InfraStruXure* is its close-coupled cooling design principle which locates cooling equipment close to the heat source. This ensures that heat removal is more efficient and predictable.

The data centre design coordinates power, cooling, rack, protection, management and services within a dense footprint, using APC's standardised and modular approach. It's claimed that the advantages of APC technology include the quick deployment of additional cooling, allowing the data centre's physical layer to adapt to change and expansion. Greater efficiency can therefore be achieved through 'right-sizing' cooling to the IT load, says Schneider.

The firm says Cardiff's new facility provides "scalability and total resilience" by utilising APC *Symmetra PX 160* UPSs, which can be continually right-sized to their evolving uninterrupted power requirements. It adds that the intelligent, contained design – which uses APC's hot aisle containment system and incorporates in-row RCs served by chilled water – is capable of supporting high density environments of around 20kW per cabinet.

The highly efficient cooling system includes Carbon Trust Energy Technology List compliant chillers situated outside the data centre. These are configured to provide chilled water 'free cooling' when the outside ambient temperature is sufficiently low. The use of sensors and management software enables ARCCA to remain in full control over the compute environment, and to adapt to change and capacity requirements rapidly.

Lightening the traffic load from Newcastle to Asia

Newcastle University has more than 1,400 networked PCs and 24-hour computer clusters. Between its UK and campuses in Malaysia and Singapore, the university maintains around 1,000 servers which deliver productivity, virtual learning and specialist applications.

In the past, the IT department had used Microsoft's *ISA* load balancing system to ensure availability and enhance the fault tolerance of service delivery. However, the discontinuation of *ISA* meant that the university needed an alternative solution.

It was also planning to upgrade to a new version of *Exchange*, and this potentially offered further benefits to enhance IT performance and support other initiatives.

The information systems and services team at Newcastle University looked at a number of solutions before opting for A10 Networks' Application Delivery Controller (ADC). Infrastructure systems specialist David Clark says: "[A10] took the time to run a proof of concept and understand both what we needed and where we are heading."

The university deployed two *AX 2500* ADCs in an active/passive failover scenario. A10 says the deployment offered a "seamless" migration from the existing Microsoft load balancing solution to one that could also load balance non-HTTP protocols such as Messaging Application Programming Interface traffic.

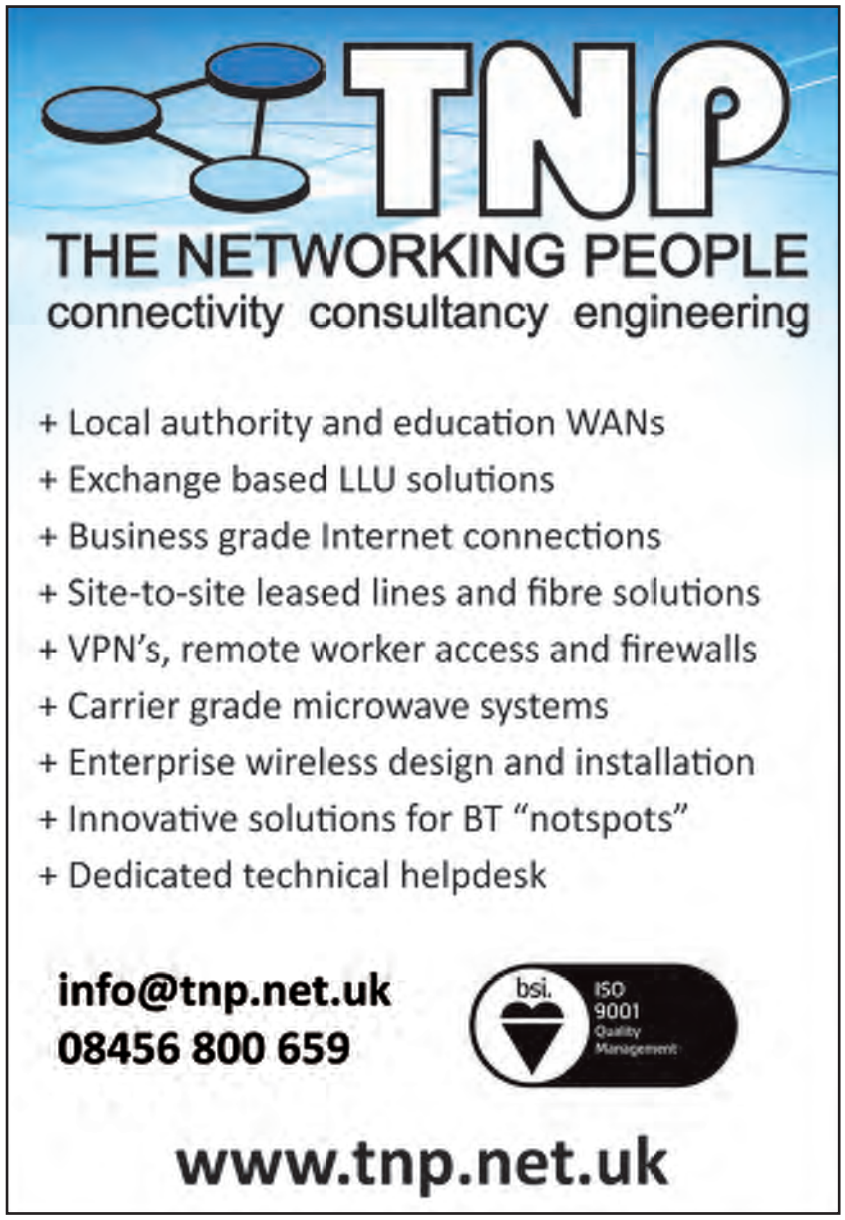
"The implementation was smooth and we were up and running within a few weeks of selecting A10," says Clark. He adds that the installation also allowed a more robust platform for load balancing the university's *Blackboard* virtual learning environment.

With the core load balancing requirement satisfied, Clark's team began to look at how the ADC's additional features could be utilised to improve application and service delivery. As a result, the *AX* appliances are also used to deliver additional web-based applications for the university, including its *Citrix XenApp* and SAP Supplier Portal. In addition, they provide SSL offload to reduce the processing workload on application servers. "

"We are also using the data compression features, which has reduced the bandwidth associated with certain tasks by around 50 per cent," says Clark. "However, what we appreciate most is that [the ADC] just sits there and does the job without requiring additional management; and during failover tests, it has proven transparent to users."

Since deploying the *AX 2500*s, the university has purchased A10's *SoftAX* – a software-based ADC that it is using for testing and development. Clark is now considering deploying this software to the Asian campuses in order to unify the delivery platform under a common management and technology standard.

PHOTO: JOHN DONOGHUE



City networks? We'll get back to you...

Manchester is home to a growing number of wireless metropolitan area networks.

Cities around the world regard reliable and affordable high-speed networks as a competitive edge in attracting and keeping businesses. IAN GRANT explores the UK's stuttering response.

Cities get big for a reason. Location, concentration of skills, money and other resources are fundamental and ongoing needs. But what do city fathers do when they find their people, businesses and investment leaching away to the 'Big Smoke'? They make their own luck.

That's the basic premise for non-capital cities to invest in fast networks with affordable connectivity. But incumbent network operators the world over are refusing to play ball, forcing cities to come up with their own plans *(also see Blackpool rocks MAN, below)*.

There are two aspects to metropolitan area networks (MANs). First, is the privately owned network that the city uses for its internal business, and which it often extends to related public sector bodies such as schools, police and health organisations.

For example, the Scottish government is in the final stages of negotiating with BT Global Services, Vodafone/Virgin Media, and Capita to supply and operate the £350m Scottish Wide Area Network *(see News, Dec 2012)*. "SWAN will deliver a single public services network for integrated service delivery, available for use by any and potentially all public sector organisations in Scotland," says a Scottish government spokesman. The contract is expected to be awarded in November, with the first services going live in April 2014.

The second aspect to MANs is the networks that local businesses and residents can access. Cities now regard these as a competitive advantage over their peers around the world. Our story is mainly about these networks.

Ignoring enterprise

European state aid rules prevent cities from using taxpayer money to fund public access networks that compete with commercially available ones. This makes it hard (and so far impossible) for UK cities to emulate Stockholm's Stokab, the city-owned network operator that sells dark fibre to Swedish service providers. The availability of fast, cheap connectivity in and around Stockholm has proved a magnet for high tech businesses. After a tiny amount of seed capital, Stokab has boosted the regional economy by some kr15bn (£1.5bn) in a decade, according to Crister Mattsson, senior adviser to Acreo Swedish ICT which reported on the value for money achieved in the project.

UK cities must rely on the offerings of the BT and Virgin Media (VM) duopoly, whose networks roughly overlap two-thirds of the population. According to Ofcom, BT has a virtual monopoly on network services at speeds above 1Gbps outside London. However, VM's Business unit (VMB) has just signed a deal to provide backhaul for Arqiva, the monopoly radio and TV signal distributor. VMB also provides the London schools network with fibre backhaul, and is a listed supplier for PSN contracts. This focus suggests that private sector businesses, especially SMEs, may not loom large in VMB's sights.

There are plenty of point-to-point or leased line network suppliers. These include Level 3, Cable&Wireless Worldwide (now owned by Vodafone), CityFibre, Colt, Geo, Vtesse, AT&T, among others. Ofcom lists 123 firms with "code powers" that give them the right to dig up roads to build their networks. In practice, most rent much of their networks from BT and/or other operators, and put their electronics into the others' exchanges, limiting any actual infrastructure installation as much as possible.

This gives operators with their own physical infrastructure an enormous advantage in that they can dictate access and pricing. As BT's network reaches almost every UK home and office, it reigns supreme. But as we reported last month *(News Jul/Aug)*, BT ignores enterprise needs in its latest broadband rollouts.

This is hugely problematic if your business depends on access to affordable high-speed networks. It also goes against government policy to build up the "creative sector" such as broadcasting, movie production, music and the visual arts. These enterprises are all increasingly dependent on high-speed networks both in their production processes and to get their products to market.

SuperConnected Cities

In response, the Department of Culture Media and Sport introduced its *SuperConnected Cities* project in late 2012. This aimed to spend £150m with 14 of the UK's largest cities, essentially to get more FTTP available to SMEs.

After Birmingham published its EC-approved *Digital District* plans *(see Superconnected Cities, Sep 2012)*, which had been drawn up in consultation with BT and Virgin Media, the two operators objected. They said that Birmingham would be using state aid illegally to overbuild their commercially-provided networks, a position denied by the city.

The government then hastily re-configured the *SuperConnected Cities* plan into a voucher scheme. Trials of the scheme to establish best practices began in August in five of the former 14 *SuperConnected Cities* – Belfast, Cardiff, Edinburgh, Manchester and Salford. The head of *Digital Birmingham*, Raj Mack, adds that BCC is also working with the government and suppliers on how to use the voucher scheme to best advantage. "FTTP is still our goal, but we accept fibre to the cabinet is an interim step," he says.

One of the ways BCC will help the network operators is by drumming up demand and acting as an information clearing house for would-be voucher users. It could also coordinate procurement, as this is likely to lower costs from bulk buying and a better deal for the taxpayers who are financing for the subsidy. But Mack says state aid rules make it very difficult for the city to offer procurement services, which effectively takes a Stokab-like approach out of the picture.

The voucher scheme allows end user firms to apply for up to £3,000 to subsidise the cost of connecting to a network that will give them a 'step change' in access speed. The end user still has to meet the ongoing cost of line rentals.

To get the upload and download speeds they need, many may have to go for lines leased for their exclusive use. However, many SMEs often look at the consumer broadband offers to see if they can take advantage of them. For example, VM starts at 30Mbps and goes up to 100Mbps, while BT promises peak rates of 'up to' 80Mbps (although a 330Mbps wholesale fibre product is available to ISPs).

The reality is sobering. The UK's public access broadband networks use shared copper-based ADSL technology for the final drop, which means that uploads may be only 10 per cent of the advertised download speeds. The overall quality of service depends mainly on the distance between the premises and the street cabinet, the quality of the copper or aluminium cabling (twisted pair, or coax in VM's case), and congestion on the line.

As a result, actual speeds are often far from the headline rates, as evidenced by Ofcom's research. It reported that by May 2013, 86 per cent of residential broadband users were on packages with advertised speeds above 'up to' 10Mbps. This had risen from 76 per cent six months previously and 68 per cent a year before. Most of the growth is due to VM's decision to double its base speed to 30Mbps, and to more people taking faster services. But, Ofcom found that while the national average broadband speed has quadrupled since 2008, it's currently just 14.7Mbps.

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In addition, there is a growing gap between broadband speeds in towns (where BT competes with VM) and rural areas (where BT rules). Ofcom said the gap between average download speeds in urban and rural areas widened from 9.5Mbps in May 2011 to 16.5Mbps in May 2013. But it expects this to narrow as BT connects more rural street cabinets to fibre under the £1.2bn Broadband Delivery UK (BDUK) next generation access scheme. However, the deadline for this, first set at 2015, now stretches beyond 2017.

SMEs are more likely to be saving or exchanging information to cloud servers, making upload speed at least as important as download speeds. "The average actual upload speed of a UK fixed broadband connection was 1.8Mbps in May 2013, 0.4Mbps (29 per cent) higher than the average recorded in November 2012," says Ofcom. In other words, uploading video takes a long time. This has prompted some enterprises to take matters into their own hands – in 1995 for example, a group of London-based audio-visual production houses banded together to set up SohoNet, a private specialist high-speed network.

Leased lines

Leased line rentals can be daunting, especially for a start-up with an uncertain cashflow. For example, we called Virgin Media and said we were an individual customer working from home in a London borough with a coax connection to a VM street cabinet 100m away. A quote for a 1Gbps symmetric service came in at £30,000 per year. This was the "standard price", but because we were already on the network, we were told the service could be offered for £21,000 per annum.Of course, there's nothing inherently wrong here – if you have deep pockets, that is. In contrast, the community-owned FTTP 'B4RN' (Broadband for Rural North) network in Lancashire is offering symmetrical 1Gbps connections for £30 per month and a £150 connection charge. The latter fee can be waived if the user buys shares in the tax-efficient holding company or contributes in kind to building the network.

But not everyone wants or needs an uncontended symmetric gig connection. As Metronet MD James McCall says: "While home users often want to download and stream media in various forms, the needs of a business are almost the exact opposite.

"With cloud applications finally coming of age and many companies using VoIP, all their communication is now dependent upon their pipe to the outside world. What these businesses want is resilience and reliability. They need to know that they can talk to someone without delay if they experience a problem; they want a solution that performs the same way, at all times of the day and night, that uploads and downloads at the same speed."

Metronet (UK) has built several private MANs in the northwest of England using fibre and wireless solutions. Customers include MediaCityUK, One Education, Lend Lease, West Midlands Police and Greater Manchester Police.

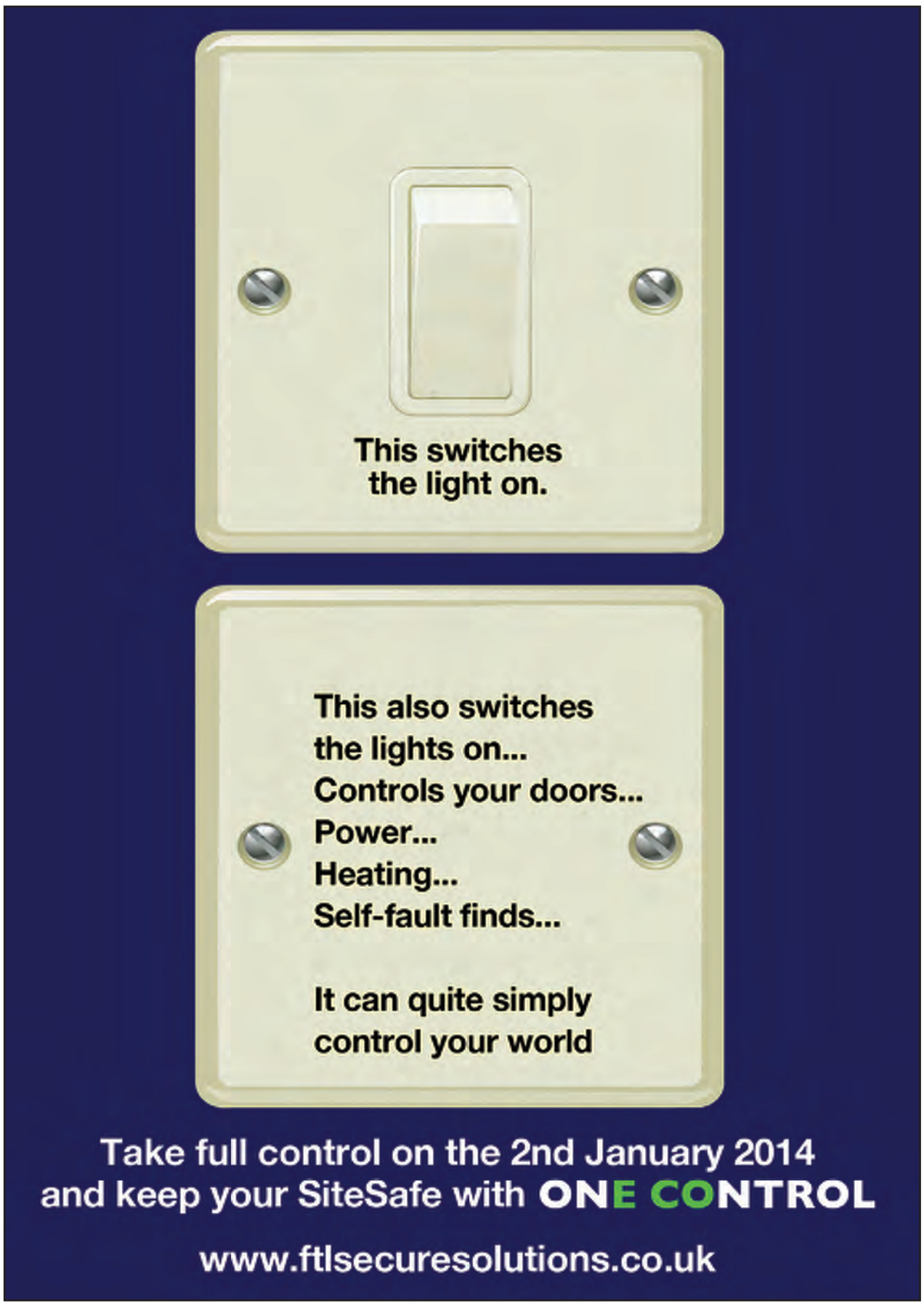
"Our strategy is simple: instead of ordering a fibre circuit to the end users' premises, we use it to enable a new point of presence and deliver the last mile to the customer using appropriate wireless technology," says McCall.

He says the firm was set up 10 years ago specifically to address the problems that exist in the sector, such as: "appalling" customer service and unwillingness to accept responsibility; slow and failed installations of circuits; "awful" technical support; and lack of scalability and flexibility.

Those conditions appear little changed. In August, Public Accounts Committee chairman Margaret Hodge accused BT of neglecting businesses in its next-generation broadband rollout to preserve its income from its leased line business. "That is just awful," she said *(see last month's news)*.

Metronet has turned that to its advantage. It has picked up more than a dozen customers using the voucher system, and the most recent win is a three-year contract worth almost £20,000 from Manchester-based sound recording school Spirit SSR Ltd. The school provides practical training and degree-level education for audio engineers for the music, film, TV, radio and games industries. As well as its Manchester campus, SSR also has offices in London and Jakarta, and plans to move into Singapore and Thailand.

"The voucher scheme came at a perfect time for SSR," says Metronet. "They were dealing with a slow connection of 8Mbps



Blackpool rocks MAN

Blackpool City Council's willingness to cut its own path has already led to better services at cheaper prices for users of the city's new and still incomplete metropolitan area network.

The £150,000 MAN commissioned from The Networking People (TNP) competes with commercial network operators, including One Connect, Lancashire County Council's joint venture with BT. And it's winning.

Blackpool Council's edge is its very high speed uncontended service dedicated to local government users, coupled with a complete service wrap, including filtering and protection. What's more, it offers services at very affordable prices.

The city owns all the assets on its WAN, and this provides it with huge cost savings, according TPN operations manager Paul Astle. "It gives Blackpool the ability to on-board new services and technologies for a fraction of the cost of a traditional leased model." He estimates the council will reduce its network operating costs by 40 per cent and break even after two years.

The network consists of four local exchanges along the 15km shore line. It uses unbundled BT Openreach copper and fibre which is terminated on council-owned racks and equipment

[from] BT Business ADSL, and were waiting to see if BT were going to upgrade their exchange cabinet to fibre. [But] Openreach recently confirmed that this is not financially viable. So SSR had no choice but to look at other providers."

Metronet says that the voucher scheme's financial incentive sped-up SSR's decision to make the jump to leased lines. The company adds that as it was the only provider in Manchester that could deliver in the required timescales, the school's decision was made easier still.

Going wireless

While Metronet is serving local businesses, other cities are looking to provide public access Wi-Fi to businesses, residents and visitors. City-sponsored public Wi-Fi has a dismal history starting with Norwich's aborted effort. However, the use of Wi-Fi to backhaul mobile data traffic from smartphones, tablets and laptops is accelerating and giving new life to public access Wi-Fi.

One of the most recent examples is York. Earlier this year, it called in Ruckus Wireless to supply a 'smart' high-speed Wi-Fi network to provide residents and visitors with internet access on top of its 200-node gigabit fibre network. This was supplied by CityFibre which is targeting the UK's smaller towns and cities, and has also announced the availability of business access to its new fibre network in Bournemouth.

In London, O2 has provided public Wi-Fi to Westminster and other parts of west London, while VMB is pushing connectivity to London Underground station platforms as part of mayor Boris Johnson's not-entirely-serious aim for the capital to become a Wi-Fi city.

Meanwhile, wireless broadband operator UK Broadband is offering high-speed wireless connectivity using 4G TD-LTE mobile technology under the *nowBroadband* brand. So far Swindon, Southwark and Reading have taken it up.

"With no long-term contracts or no phone line required, users have a flexible alternative to a fixed broadband connection," claims CEO Nicholas James.

The rise of the wireless alternative to expensive leased lines and unreliable ADSL-based broadband is likely to continue. What is less clear at present is how the UK's mobile network operators plan to address the business market in their 4G rollouts. So far, the marketing has all been aimed at consumers. But Vodafone has gone a little way to persuade its business-oriented *Red* users to upgrade by increasing airtime and data allowances. And as we went to press, VMB announced its "business-grade" 4G service which runs over EE's new LTE network. This follows renewal of Virgin's £300m MVNO contract with EE. VMB says its 3G service already offered mobile email services, the ability to connect desk and mobile phones "seamlessly", online portals for support and billing, and telephone support for users and customer administrators.

A single market

The status quo may be overthrown if Europe adopts proposals for a single market in electronic communications.

Speaking in mid-September, the EU's Digital Agenda commissioner Neelie Kroes said that under the proposals, internet access will be full, unrestricted and with guaranteed speed and quality for all. She added that network operators would not be allowed to discriminate against consumers and their choices.

"If they want to provide a faster service or a guaranteed quality to someone who needs it – like a company using high resolution medical imaging or video conferencing, or a person wanting high definition video on demand – they can. But not by taking away from the other customers. Consumers must get the package they pay for. They would have the right to check if they are receiving the internet speeds they pay for, and to walk away from their contract if those commitments are not met."

As the network transport systems converge towards Ethernet over IP, businesses will care less about how they get connectivity. What already matters most is whether the networks deliver an acceptable quality of service. Kroes' determination to let customers "walk away" from long-term fixed contracts that deliver poor results should make operators sharpen their game across the board. ■

inside the exchanges and backhauled via the council's own network.

The fixed network provides up to 15Mbps symmetric per line using Overture Networks' EFM (Ethernet in the First Mile) technology, along with Juniper *EX* series switches for the routing infrastructure.

The integrated wireless network is a mix of licensed and unlicensed band vendors and accessible to anyone with line of sight to the imposing landmark of Blackpool Tower.

Sites previously on leased 10Mbps circuits are now said to be benefiting from an average speed increase of 55 per cent at lower cost.

The new infrastructure has meant that the council can retain many local schools, a core user community, as customers. It is enabling the two organisations to plan migrations to cloud-based services such as *Google Apps* and *Microsoft 365*, as well as public and private access to high-speed Wi-Fi.

Head of Blackpool ICT services Tony Doyle says TNP's solution will modernise how the council delivers services. "It is an enabler for huge efficiencies we can channel into other key areas," he says.

The council is already looking into providing CCTV, traffic signals and local health authority services, further reducing its total cost of ownership.

The PowerPoint presentations made it look so simple: a black line connects your data centre to a fluffy bit of cotton wool labelled 'the cloud', and more black lines connect the cotton wool to the rest of the world. The cotton wool was mislabelled – it should have read...

Here be monsters

IAN GRANT charts the choppy waters of business continuity and disaster recovery in a cloud computing world.

Unless you've been marooned on a desert island for the last few years, you'll be well aware of all the hype surrounding 'the cloud' and how it can offer, amongst other things, enterprises a lifeline for business continuity (BC) and disaster recovery (DR). You'll also be familiar with all the security fears said to be hindering its wide-scale adoption amongst enterprises. And to make matters worse another, more sinister, security issue has recently come to light that could make businesses a tad more nervous about using cloud services.

In June, Edward Snowden, a Booz Allen systems administrator contracted to the US National Security Administration (NSA), revealed what many suspected: his client and allied agencies are examining every bit of electronic communications they can get their hands on anywhere in the world.

A fortnight later, the former head of the CIA and NSA, General Michael Hayden, told the *The Australian Financial Review*: "I fully admit we steal other country's secrets. And frankly we're quite good at it. The reason we steal these secrets is to keep our citizens free and safe. We don't steal secrets to make our citizens rich. Yet this is exactly what the Chinese do."

The last point is contestable. On 11 July 2001, the European Parliament reported it no longer doubted the existence of a global system codenamed 'ECHELON', run by Australia, Canada, New Zealand, UK and USA to intercept private and commercial electronic communications – not military or government communications (*also see News, June issue*). Its report said: "The US intelligence services do not merely gather general economic intelligence, but also intercept communications between firms, particularly where contracts are being awarded, and they justify this on the grounds of combating attempted bribery. Detailed interception poses the risk that information may be used as competitive intelligence, rather than combating corruption, even though the US and the United Kingdom state that they do not do so."

Following Snowden's revelations that ECHELON has been replaced by the NSA's PRISM and GCHQ's Tempora programmes, it quickly emerged that the NSA had asked AOL, Apple, Facebook, Google, Microsoft, Paltalk, Skype, Yahoo and YouTube (with Dropbox expected to be added), to provide information secretly. Most claimed they only gave information that they were legally obliged to supply.

The Communications Management Association (CMA) took all this news in its stride. According to spokesman David Harrington, members had always believed it was happening, and most had taken precautions to preserve the integrity of their data and to protect it from prying eyes.

EuroCIO, which represents European CIOs, remains equally unmoved, and says the PRISM/Tempora revelations haven't changed its members' views on cloud. "We believe this isn't a cloud-specific issue," says secretary general Peter Hagedoorn. "Other channels (telecoms, IP transit) can also be affected. It is worrying that national states are using the internet and other digital means to conduct industrial espionage, but we've known about it since ECHELON was revealed. As a result, we didn't feel the need to offer members advice on this topic."

Data: the "money of the Digital Age"

So when it comes to a business continuity (BC) and disaster recovery (DR) plan, can companies trust their intimate information to the cloud? The Centre for the Protection of National Infrastructure says directors need to answer five key questions: (1) Who would want access to corporate data and how could they acquire it? (2) How could they benefit from its use? (3) Can they sell it, amend it, or even prevent staff or customers from accessing it? (4) How damaging would the loss of data be? (5) What would be the effect on operations?

This risk assessment will lead naturally to an exploration of how the cloud matches up to what an organisation needs to do to protect its data and business capability. Cloud and IT service provider InTechnology points out that putting a BC or DR plan in place should not be a one-off task. "Businesses must regularly update their plans in line with changing business objectives, ensuring all staff are well-trained, and practise it regularly," advises product director Stefan Haase.

He goes on to say that European CIOs have so far been reluctant to jump into cloud computing. Some have experimented with it but in a safe private environment or in the public cloud with non-sensitive data. "The main reason is indeed data protection. But other key issues (reversibility, reciprocity, transparency, SLAs, standards) are not solved properly today," he says.

Hagedoorn describes data as "the money of the Digital Age" and it is increasingly becoming key to the existence of EuroCIO's members. "The right safeguards for cloud computing must be in place, as with your money in a bank, before we as the CIO community perceive it as a trusted environment."

InTechnology says the law is unlikely to help in the event of a breach by government spying. Besides, how would you prove it? Client account manager Gary Thomas reckons you sign away most rights when you subscribe to public cloud providers. "If [a security breach] was to happen between your average SME and a private cloud provider in the UK, then certainly, in the event of a direct, demonstrable breach of contract, the SME would have a much stronger footing. Understanding the cloud provider's contractual requirements, its security accreditations, and policies before hosting sensitive information is a must."

The European Commission has responded to the CIOs' scepticism by kicking off the three-year *CloudforEurope* project *(see Cloud hides €250bn, below)*. This aims to develop formal standards applicable across Europe for government cloud computing. Hagedoorn endorses the move. "Some

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minimal regulations on data protection etc must be in place, preferably agreed upon at global, but at least at European level."

'Cloud First' policy

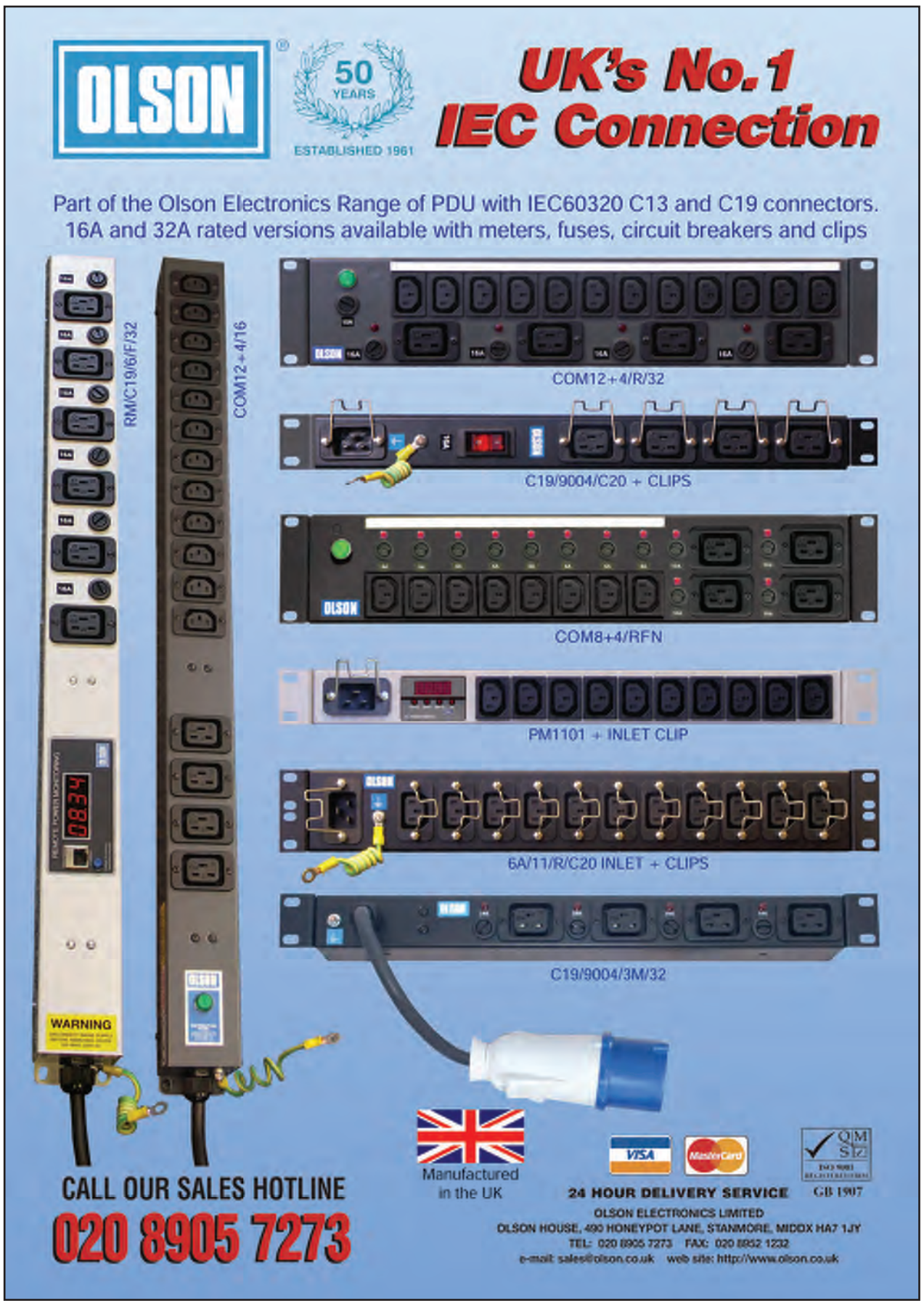
The UK's Cabinet Office is already well down the path with a 'Cloud First' policy that hopes to make the government's *CloudStore* the first port of call for all public sector IT procurements. In less than three months, civil service departments spent £25.3m with the 708 suppliers listed so far, of which 80 per cent are SMEs and half are new to the government. A new call for suppliers went out at the end of July.

By aggregating demand and standardising contracts, the *CloudStore* hopes to save public sector firms up to 30 per cent on street prices. For example, under the Infrastructure as a Service banner, SunGard Availability Services offers an Intel-based DR service for £100 per month. Memset offers cloud storage secured to comply with standards for Business Impact Level 3 (BIL3 is defined as "a diplomatic embarrassment and/or minor loss of confidence in the government which poses a safety risk to individuals or the disadvantaging of a large UK company") on a pay-as-you-go basis for £0.083 per Gb per month for the first terabyte, and £0.045/Gb/month for 5,000Tb. Uploads are free and retrievals cost £0.50/Gb.

The government intends to make *G-Cloud* an example of its wider strategy to rebase national economic growth on information and connectivity. In June it published its Information Economy strategy document in which it said: "The cross-cutting and pervasive nature of software, IT services, communications and data management, which define the information economy, represent more of an ecosystem than a discrete sector." *(See News, June issue.)*

To enable this ecosystem to develop, it promised to ensure that new large concepts such as cloud computing, 5G mobile and the 'Internet of Things' are better defined to enable ideas to be easily incorporated into standards and services.

The Confederation of British Industries welcomed the move. Rhian Kelly, its director for business environment, says: "Technologies like cloud computing and 5G help keep all businesses a step ahead in the global race, so it is right to get behind our hi-tech firms as part of a coherent industrial strategy. Success will depend upon the UK developing world-leading digital infrastructure and government departments working together to drive the strategy forward."



An ESG survey for Amazon Web Services found that more than 80 per cent of firms are exploring cloud-based computing. "The cost, agility, and flexibility benefits are too obvious to deny, particularly for tasks such as disaster recovery," it said. 74 per cent of respondents said they could withstand three hours or less of downtime for business-critical data before they started hurting, and 53 per cent could tolerate only one hour or less of downtime.

But UK SMEs remain sceptical. For instance, fewer than a third now transact online. Some reasons include having to reorganise business processes and systems, a lack of specialist knowledge or capability, concerns about security and a lack of trust in available advice.

Some might not call using *Office365*, *Google Docs* and *Dropbox* cloud computing. Most firms are reluctant to put their production systems into the cloud, but cloud dramatically changes the economics of storing backups for DR purposes, not just for production systems but for support apps such as human resources, too.

So what are the options?

Stephen Scott, MD of data centre operator Sentrum Colo, says a BC/DR policy is part of directors' responsibilities to shareholders, clients and suppliers. "At its most basic level, a paper copy of every contract and transaction stored offsite is a BC/DR solution. However, an entry-level electronic solution is probably more affordable than most small companies imagine," he says.

Scott believes that the cloud offers almost "infinite flexibility" in terms of being private, public or a mix of the two, as well as a range of BC/DR options.

These include Disaster recovery-as-a-service (DRaaS) where the client uses a cloud service provider (CSP) to replicate its data and critical applications to a recovery site. This cuts costs by outsourcing their replication needs, but it also puts all the eggs in one basket.

Cloud hides €250bn

Widespread adoption of cloud computing could boost the European economy by €250bn per year, according to the EU's Digital Agenda champion Neelie Kroes. But only if it's done right. That's the job of the three-year *CloudforEurope* project, which kicks off officially in November.

The EU-funded initiative aims to build credibility by working up, with industry, a pre-commercial tender for cloud services for the public sector. Project coordinator, Linda Strick of the Fraunhofer Fokus, says that among the issues are security, privacy, and credibility. She aims to have *CloudforEurope* in place by August 2014, and to have the first concrete responses from industry about a year later. "These will hopefully meet the requirements of the public sector and demonstrate interoperable and secure cloud services. It will be very important that industry participates in the pre-commercial procurement tender," says Strick.

The project stems from the fact that the main cloud players like Amazon, Google, Microsoft, Rackspace, Salesforce.com, etc, are all US-based. Not only does European data flow out into the world, but so too does the money for processing and storing the data. As Kroes notes, keeping that money in local hands means extra billions to support European economic development. It also reduces the chance of data falling into unauthorised hands via state surveillance schemes like PRISM

Another option is in-cloud BC/DR. Here, a client's data and applications are hosted and protected by the CSP in a public cloud. This cuts costs by sharing compute, storage and other resources. If you are running mission-critical applications, make sure the setup is robust and replicated across two or more data centres, each with multiple power and network links.

Organisations could also choose co-location and cloud. This is a hybrid approach and can offer the best of both worlds. But it requires more management as well as clear definition and allocation of responsibilities before things go wrong.

While all that might take care of the logistics of assuring BC and DR, you've only just begun. James Carnie, head of solutions architecture at managed services provider Adapt, says: "The greatest threat to any organisation is users with privileged access doing something they shouldn't, whether accidental or done with intent."

He notes that most outages are due to mismanagement rather than malice. A simple misconfiguration during an upgrade can cause the entire system to shut down – something mobile network operator O2 knows well. Last year, it scrapped a new centralised customer database from Ericsson after it crashed twice in four months leaving millions of subscribers without a connection for days.

"The continuity of business-critical information must therefore be effectively managed," says Carnie. He advises organisations to adopt an information security management system like IS27001, and a set of robust change management processes such as those laid out by ITIL.

InTechnology's Haase adds that CIOs should consider encryption before the data leaves the company for the cloud, and two-factor authentication to retrieve it. "End-user errors account for around a third of all incidents, and deliberate actions for the most harmful. Getting the right staff and training and motivating them properly is possibly your best defence – cloud or no cloud." ■

Skyscrapers in the cloud

When data volumes trebled in a year, Arup chose to hire managed backup specialist Data Continuity Group (DCG) for continuity and recovery.

Arup offers design, planning engineering service and has worked on some of the world's most iconic buildings. They include London's Olympic Park, the 'Gherkin' and King's Cross station; Beijing's 'Bird's Nest' Olympic and aquatic stadiums, the Sydney Opera House, the Pompidou Centre in Paris, and many others.

Its two data centres serve 90 offices and 11,000 global employees. The network uses 1GB Ethernet connections, iSCSI storage, Cisco switches and routers, with standard HP front-end servers.

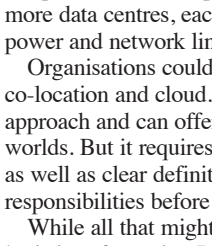
"With technology increasingly critical to our projects, we have seen data grow quickly in importance and volume," says David Ovenden, Arup's infrastructure manager for EMEA. "Our backup data footprint has tripled to 6TB in 12 months."

A montage of some of the buildings whose plans Arup now backs up in a private managed cloud.

As internal IT staff's daily focus was on supporting business needs, Arup decided that a dedicated external resource was the best way to ensure that all its data was backed up securely and continually.

DCG is a Symantec *NetBackup* specialist data protection master partner and holds premium alliances with Dell, EVault, HP, Microsoft, NetApp and VMware. Its back-up regime for Arup's data consists of incremental updates with a full weekly backup to disk. Each month, the disks are backed up to tape which is kept for six months.

"Replication is automatic and immediate. There are some variables around restores such as how much data needs to be restored, but generally we restore the same day," says Ovenden.

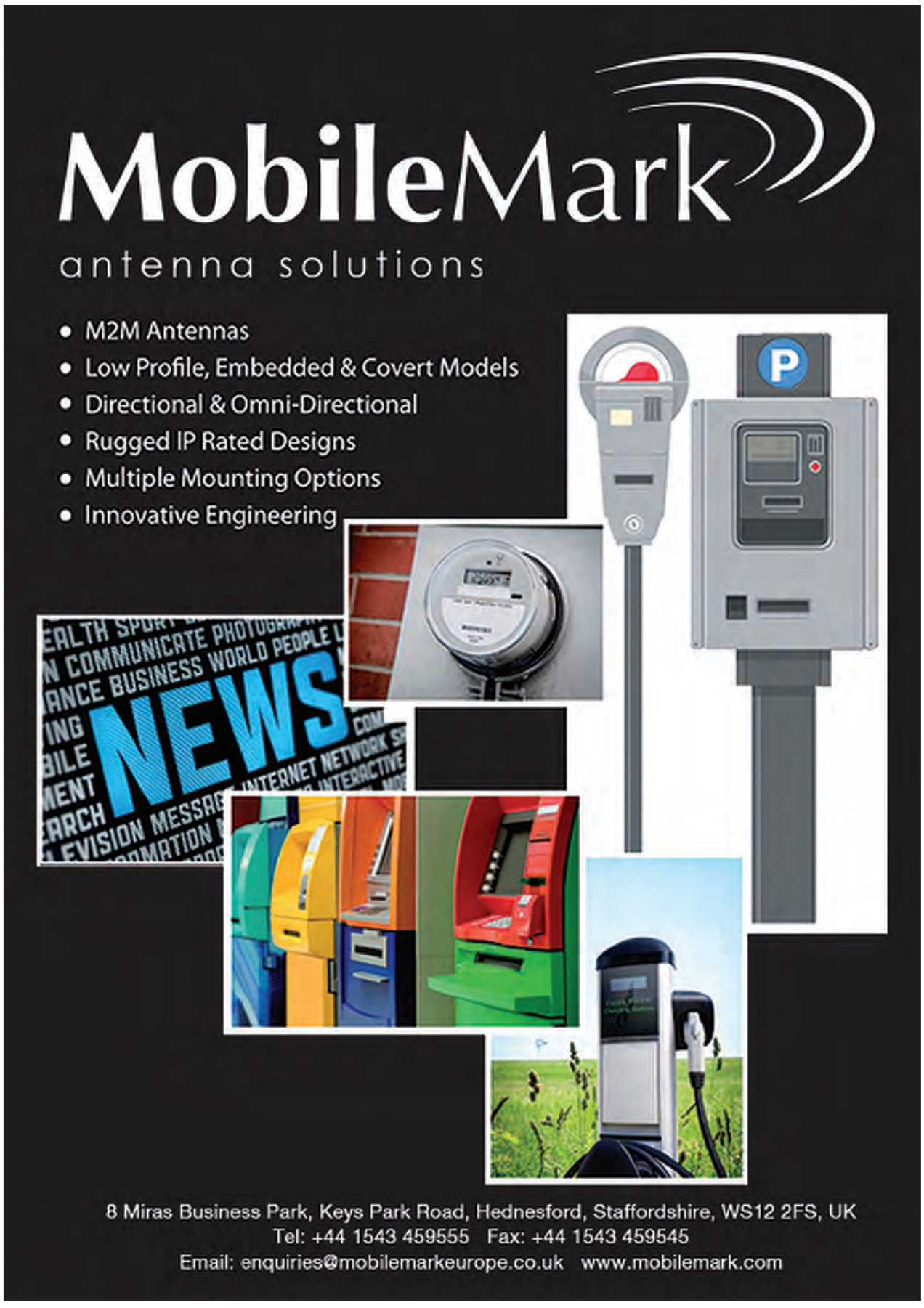

Project coordinator Linda Strick says CloudforEurope will meet the requirements of the public sector and demonstrate "interoperable and secure cloud services".

and Tempora, or the thousands of daily hacking attempts by state, corporate, criminal, activist and unaligned hackers.

Strick says the cloud community has known about these risks for some time, so there are actually no changes needed in the objectives of the *CloudforEurope* project.

She also points out that current data protection legislation is implemented differently in each EU member state. The main goal of upcoming data protection regulation from the EC (due next year) is to harmonise the dissimilarities. "Not only does the public sector have the obligation to protect and control the execution of personal data, it is also an obligation for the private sector," says Strick.

The EC expects *CloudforEurope* to deliver a public e-government cloud platform applicable across the union, and to use its purchasing clout to drive down costs and improve quality of service, including security and contractual terms. By providing a best of breed example and standard, it hopes to get the private sector to adopt or improve its terms and conditions, reducing purchasing and operational costs across the board.



off-the-shelf: test equipment

Testing the network

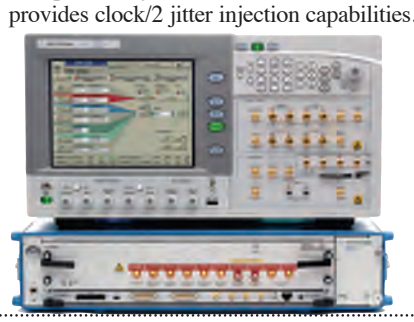
As networks become more complex, the tools to test them need to remain simple while still offering versatility and high performance.

Agilent Technologies' *M8061A* is a 28.4Gbps multiplexer aimed at test engineers who need to characterise receivers for next-generation servers, storage systems and data centre networks. It allows engineers to characterise next-gen computing buses operating above 14Gbps and data centre I/Os.

The *M8061A* can be used to test multiple-gigabit test applications such as: PCIe; USB; SATA; QPI; HyperTransport; *Thunderbolt*; DisplayPort; SD UHS-II; MIPI M-PHY; backplanes; 10GbE and 100GbE; SFP+; and CFP2 interfaces.

The vendor says that when the *M8061A* is used with its *J-BERT N4903B* bit error ratio tester, engineers can generate loopback training sequences. It says the tester's DC-coupled output enables users to generate unbalanced bit patterns without level drift, and it can be switched to an electrical idle state for computer bus receiver tests such as those required for PCIe.

Agilent claims the *M8061A* delivers the "most accurate and repeatable" receiver characterisation results because of its built-in and unique eight-tap de-emphasis. This allows users to emulate transmitter de-emphasis and channels, and compensate losses in the test setup. The unit is said to be transparent to jitter from *J-BERT* and also provides clock/2 jitter injection capabilities.



Fujikura claims its *FLX 380 FlexTester* is the world's smallest, lightest, most complete single-mode fibre optic tester. The firm says it combines high-performance, PON-optimised, multi-wavelength OTDR/PON OTDR, OLS, OPM, VFL and PON Power Meter in a rugged, handheld package.

The device's interface has been designed to provide modes suitable for both novice and expert users. It features a top-down menu structure which Fujikura says supports more than a dozen languages.

The *FLX 380* can save more than 1,000 OTDR test results using the industry-standard .SOR file format. Stored OTDR and OPM results can be transferred to PC via a USB port for viewing, analysis, and professional report generation using the supplied *Windows* compatible *Test Results Manager* software.

The tester comes with a Li-on battery pack, AC charger, SC and FC adapter for the OTDR/OLS port, 2.5mm universal adapters for the OPM and VFL ports.

The *FLX380* is available in three models. The *103* is said to be the most complete high-performance test set for verifying both in-service (live) and out-of-service FTTx PONs.

It includes ServiceSafe live PON detection, integrated PON power meter, and 1625nm filtered live PON OTDR.

The *102* features 1310/1490/1550nm OTDR, OLS, OPM and VFL for out-of-service testing at all FTTx PON wavelengths.

The *100* is said to offer high-performance at the lowest cost. It features all-in-one 1310/1550nm OTDR, OLS, OPM and VFL for out-of-service installation testing both FTTx PON and point-to-point fibre networks.

The *UniPRO MGig1* handheld Ethernet tester from **Ideal Industries Networks** is designed for all engineers involved in carrier and metro Ethernet service turn-up, mobile Ethernet backhaul, microwave and wireless-link Ethernet setup. It's also aimed at enterprise users who want to check up on supplier SLA performance.

The tester boasts IPv6 as well as IPv4, and also includes the latest Y.1564 NetSAM multiple concurrent service test capability. Ideal says this enables testing of up to eight services concurrently including: colour-aware and non-colour-aware networks with Q-in-Q; VLANs nested up to eight-deep; and three levels of Label, Class, and TLL on MPLS networks. The firm adds that Layer 3 QoS tags, ToS and DSCP are also included.

The *UniPRO MGig1* is available in copper-only or copper plus fibre formats and can perform single ended testing, pass through testing and long distance loopback testing (in combination with the *UniPRO SEL1* remote control active loopback unit or a second *UniPRO MGig1*). For Bi-Directional testing, two *UniPRO MGig1*s are used but the far end unit can be remote controlled removing the need for a second engineer, says Ideal.

The 'Autotest' button can be used to run a sequence of tests without further intervention. The firm says this saves even more time by allowing the engineer to conduct other work without having to 'babysit' the tester.

With its *SEL1* companion, it can test copper Ethernet, with the fibre-enabled models also testing GbE over a choice of 850nm multimode, 1310nm or 1550nm single mode fibres using interchangeable SFP modules.

As network traffic grows, aggregating 10Gbps links to handle increased bandwidth is no longer sufficient, according to **Ixia**. As a result, it has developed the *Xcellon-Multis* product range which is claimed to give enterprises and service providers the flexibility to test scenarios involving high-capacity 10GbE, 40GbE or 100GbE networking products at higher speeds.

Ixia says the series can scale up to hundreds of 40GbE and 100GbE ports. It believes this is especially important in the data centre where accelerated growth in density and greater traffic demands continue to stress the network elements.

The firm says the *Xcellon-Multis* will enable users to meet the demand for testing two times higher density devices with test beds that are smaller and more efficient relative to current tools. It says the solution expands bandwidth and resiliency validation in high-performance network fabrics and offers a variety of benefits.

For instance, it's claimed that the range comprises the industry's highest density 40G and 100G higher speed Ethernet test equipment, providing more flexible test coverage and 4 x 100GbE, 12 x 40GbE, or dual-rate 40GbE/100GbE, all in a single-slot load module. The *Xcellon-Multis* uniquely employ fan-out technology which allows a higher speed port to fan-out to several ports of a lower speed. This ultra-dense load module is said to bring a higher ROI by reducing overall costs associated with product licensing, power, and cooling.

The *Xgig 1000 16 G* is described as the industry's most comprehensive solution for pinpointing and resolving problems across multiple protocols in converged data centres. According **JDSU**, it gives cloud service providers the tools that cover new and fast-growing DC technologies such as Ethernet, iSCSI, Fibre Channel and FCoE.

JDSU says it is the only product that addresses 10GbE and 4/8/16G Fibre Channel in an integrated portable platform with reconfigurable ports. With its uniquely portable chassis, it claims the device enables detailed protocol testing in manufacturer R&D labs and helps field installers deploy and troubleshoot SANs.

The firm adds that it is the only platform to perform inline, non-intrusive capture and analysis, inline jamming, and end-node emulation with generation and load testing at 16G. It says the *Xgig* includes industry-standard capture format and a unique ability to correlate between Fibre Channel and Ethernet networks with "expert analysis" based on 800+ metrics and rules.

The *1000 16 G* has been designed to offer: automated testing for faster SAN and NAS installation and deployment; optimised diagnostic efficiency in a single compact, portable, stand-alone platform that integrates 10GbE and 4, 8, 16 G FC; reduced downtime and lower SLA-management with reliable, analysis and troubleshooting solution; and improved storage and network services management with comprehensive IO-performance statistics.

Partnership to tackle DC sector skills shortage

The Data Centre Alliance (DCA), CNet Training, TelecityGroup and Telehouse are working alongside the universities of East London and Leeds to devise a free data centre 'boot camp'.Both universities offer specialist courses for the DC and IT sectors, and the first camp is already being delivered at The University of East London. It comprises data centre training and suitability assessment which aims to give graduates the additional knowledge they need to successfully apply for data centre related jobs today.

CNet Training says it has played a key part in scoping the programme, and believes that guarding against outages should become a part of "every data centre professionals' DNA".

"Once the candidates understand the place of data centres in the world economy, we introduce them to a new discipline of 'critical thinking' – similar to that taught in the nuclear and airline industries," says CEO Andrew Stevens. "Because if they can't do the joined-up thinking necessary to avoid major data centre outages, like we've seen in recent years, then they don't belong in our industry."

Rob Coupland, UK MD of TelecityGroup, adds that because of the specialised nature of the skills required in the industry, there is a limited pool of "exceptional workers" available in the market. He says that until now there have been no suitable graduate programmes to address this issue.

"Only through the on-going development of skills will we be able to continue to deliver the level of service our customers expect. This reflects the critical importance of the role of the data centre manager and engineer in today's industry," he says.

Data centre professionals who can't prevent outages "don't belong in our industry" – Andrew Stevens, CEO, CNet Training.

Going down under could help your career move up

The Emigration Group says that major cities in Australia are seeking out IT professionals with the necessary qualifications to boost the country's industry. It is urging IT workers in the UK to consider migrating down under to embark upon upcoming projects in Sydney, Melbourne and Brisbane.

The Emigration Group aims to offer expert advice and assistance to those wishing to relocate to Australia.It says the country has some major new digital projects in the pipeline, and now is the time for workers to move overseas to get the best value for their skills.

It adds that while experienced workers are in high demand, there is a need for recruits at all skill levels, from the newly qualified to those with years of experience.

"Australia is desperate for skilled IT professionals to take part in new projects across the country, " says Paul Arthur, director of The Emigration Group. "This is a huge opportunity for workers in the UK who may be struggling to get work here. If you are a skilled IT worker you have a good chance of qualifying for permanent residence down under." He adds that aside from the job opportunities, IT salaries in Australia are often higher compared to the UK.

NEW COURSES

Administering Cisco UCM 8.0 v8 – Global Knowledge

This entry-level course begins with the basic concepts of IPT and then quickly moves onto understanding concepts such as clustering, route plans, digit manipulation, media resource, etc, that underpin Cisco's *Unified Communication Manager*:

It is designed for individuals that will be using and managing the Cisco system and performing administration at level 1 and level 2 support. Level 1 supports phone users, makes moves, adds, and changes to the desktop phone environment. Level 2 supports changes in the organisation, such as opening or relocating offices.

It is recommended that delegates have a basic knowledge of IP and networking although this is not a pre-requisite. They should also have a basic knowledge of the *Windows* desktop environment.

The next dates for the course are 16-18 October at Global Knowledge's training centre in Wokingham, or 11-13 December in London. *www.globalknowledge.co.uk*

On-demand training videos – Network Faculty

Network Faculty has launched a website which offers IT training videos on-demand.

The Spanish firm claims its training sessions are packed with insight, practical tips, and delivered by trainers "clued up" on the latest in IT and networking needs. It says its site is based around core industry certification curricula such as CCNP SP/CCNP/JNCIA/JNCIS/JNCIP. It features a growing library of videos that can be consulted by anyone studying for these exams, or whenever there is a need to refresh understanding of particular topics.

Network Faculty reckons that those who are pushed for time will find the bite size videos "easy to digest". It claims no topic is overlooked. "With an intuitive category followed by theme structure, finding the answer to a question or locating a specific topic is the work of no more than a few clicks," says the firm.

Areas under discussion include Cisco/Juniper configuration basics and verification, routing protocols and security, as well as fundamentals of networking and services.

Users can choose from study 11 courses, each related to a specific certification. *http://networkfaculty.com*

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