

# Networking

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# Bank of England launches new cyber security testing scheme

by Rahiel Nasir

The Bank of England (BoE) has launched CBEST, its new cyber security testing framework. It will run the scheme together with CESG (GCHQ's information security arm) and the Financial Conduct Authority.

CBEST uses cyber intelligence from the government and accredited commercial providers to identify potential threats to a particular financial institution. Accredited cyber security analysts then replicate the techniques used by potential attackers to test, in a controlled environment, the impact an attack could have on the institution.

Speaking at the British Bankers' Association Cyber Conference held in London in early June, the BoE's executive director for resolution, Andrew Gracie, said: "This is the first time commercial intelligence providers will be subject to

accreditation standards which are bound by enforceable codes of conduct."

Gracie said CBEST is part of a broader effort to strengthen information sharing on cyber security within the financial sector. He said that while other security and penetration tests currently exist in the market, there is still an overall view that information sharing may not be proportionate relative to the need.

"Part of this may be coordination, a matter of joining up across different networks within and across firms; [or] it may be overcoming any unwillingness to share. But it is increasingly recognised that managing cyber threats should be a space in which industry should collaborate not compete. Indeed, given the prevalence of threats, silence on cyber

risks would be a cause not for comfort but for concern."

Gracie pointed out that CBEST is different because it is bespoke, adapts to the reality of changing threats, and is also safe: "We have worked with CREST (Council for Registered Ethical Security Testers) to develop the new accreditation standards, as well as with Digital Shadows on standards for threat intelligence."

CBEST was launched with industry in May. MWR InfoSecurity is one of the firms that is now an accredited supplier. Its director, Alex Fidgen, says MWR has been conducting penetration assessments in isolation over the last four years for specific financial clients, and he welcomed the formalisation of the new scheme.

"It is a major step forward which couples highly realistic assessment techniques with real threat intelligence to help the UK's financial industry better protect itself for the future. The CBEST scheme is a step change in data security collaboration."



**Andrew Gracie, the Bank of England's executive director for resolution, said that when it comes to managing cyber threats, industry should "collaborate, not compete".**

MWR has been involved in the scheme's development alongside other firms within the industry. BAE Systems Applied Intelligence, Dell SecureWorks, Intelliag, Mandiant, and Verisign are among other suppliers that have also been accredited. ■

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## Workers on vacation could be a security threat to networks

UK employees are potentially putting their companies at risk of cyber attack when using mobile devices for work purposes while on holiday, according to new research.

The Beach to Breach study by security specialist Sourcefire (now part of Cisco) surveyed 500 UK individuals in companies with 500+ staff who can access their work systems whilst on leave.

It found that more than three quarters usually take their work devices away with them, with 72 per cent choosing to spend up to two hours per day staying in touch with the office.

Despite 69 per cent confirming that their employer had informed them about the risks associated with using devices remotely for work purposes, 60 per cent admitted they did not check the security of a Wi-Fi network before connecting to it.

According to Sourcefire, trainees were the worst offenders at 75 per cent, but

around 60 per cent of directors and mid-managers also admitted guilt here.

Sean Newman, field product manager at Cisco, says: "While employees generally do not set out to deliberately pose a security risk to their employer, our study shows the majority of workers are likely to be more concerned about getting online than strictly following the IT security policy."

He says that in the era of increased staff mobility, organisations need to ensure they have full visibility across their extended network in order to spot unusual behaviour.

Newman goes on to point out that cyber criminals are well resourced and professional, and know that employees are often a company's weakest link. They therefore target them to gain access to the corporate network. "Businesses must realise that it's not a matter of if they get attacked but when, and need to focus on setting their security accordingly." ■



(L-R) Mike Keenan, director at Real Wireless, Philip Brown, Gowex CEO for North Europe, Newcastle Council leader Nick Forbes and Gateshead Council leader Mick Henry.

## Public Wi-Fi for Tyneside

Newcastle and Gateshead have struck a deal with US-based wireless network operator Gowex to turn Tyneside into a major public Wi-Fi hotspot in the UK.

The project is part of the £9m *Go Digital Newcastle* initiative which aims to bring superfast broadband to 97 per cent of the city by summer 2015 (see *News*, March).

Newcastle City Council leader Nick Forbes says superfast broadband will make a big difference to businesses and residents who sign up for it. "But these days, it's important for people to have access to broadband while they're on the move too. This investment will put Newcastle and Gateshead in the forefront of UK areas for public Wi-Fi availability."

Gowex aims to finish installing wireless access points by the end of this year. Forbes says the two cities insisted on the company using local labour.

"We're pleased to say Gowex is paying for the work and maintenance to be carried out by council staff in Gateshead and by our current streetlight contractors in Newcastle. This means our installation is being done by local workers who know the area and have the knowledge, equipment and training to do the work to a high standard."

Residents and visitors registering with Gowex will be able to connect to free Wi-Fi on both sides of the Tyne. Gowex CEO for North Europe Philip Brown adds that they will also be able to connect free in other cities where the firm operates.

Gowex has already signed up 600 metros worldwide under its urban Wi-Fi programme, including Dublin, Edinburgh, New York, Paris and San Francisco. ■

*SuperConnected Cities update – pp15-17*

# Ofcom dismisses TalkTalk's BT margin squeeze complaint

Ofcom has dismissed TalkTalk's complaint that BT is conducting an illegal margin squeeze in its prices for wholesale and retail broadband access. But the regulator has opened a consultation on the same issue with respect to BT's Virtual Unbundled Local Access (VULA) product which provides other ISPs with access to its next-generation broadband network. Ofcom's conclusions will determine whether UK customers enjoy a competitive market for BT's broadband and services.

Welcoming the consultation, TalkTalk said in a statement: "We have long maintained that the time has come for fibre to be more robustly regulated, starting with a margin squeeze test. This leads naturally towards full price regulation in 2017."

"What matters most is ensuring a level playing field and competition for fibre in the future... these new rules will make British consumers and businesses better off."

Ofcom has already said it believes BT has "significant market power", i.e. an effective monopoly, in wholesale local access throughout the country (except in Hull where KCom rules) as well as in very high speed (>1Gbps) point-to-point links; only in some parts of London does it face competition for lines with speeds <1Gbps.

The regulator has proposed new rules that mean BT has to maintain a "sufficient margin" between its wholesale and retail superfast broadband charges to allow other operators to profitably match its prices. A TalkTalk official declined to say what BT's margin is, adding it is based on confidential information provided to Ofcom.

Ofcom has published details and its reasons for the proposed calculation of BT's allowed margin in a heavily redacted consultation document. The preamble to the document appears to open the way for a discussion about the much-debated

business rates tax on lit fibre, which BT's competitors claim gives the telco an advantage.

Ofcom told *Networking+*: "Fibre rate tax is not relevant to our [VULA] margin proposals and assessment. This is because our proposed assessment takes the wholesale GEA [Generic Ethernet Access] price as it is and looks at the retail margin that is available on top of that price. BT and other providers pay the same wholesale GEA price; i.e. this is not a difference between BT and its rivals."

Vtesse Networks CEO Aidan Paul, who has campaigned vigorously against the fibre tax, says: "Ofcom is right as this is about the difference between the GEA pricing, which includes rates, and BT's retail price. Regrettably, if BT gets a low bill for the rates as part of the GEA price it protects other operators' margins. Therein lies the whole problem." ■

## BAE Submarines in £70m IT deal with Capita

Systems integrator Capita has signed a five-year contract with BAE Systems Maritime–Submarines (BAE Subs) worth £60-70m for "transformed" IT services for its submarine building business in Barrow-in-Furness, Cumbria.

BAE Subs is designing and building the Royal Navy's latest *Astute* class nuclear powered attack submarines. It is also leading the design for a replacement for the *Vanguard*-class *Trident* ballistic missile submarines.

The new enhanced IT service model for the vessel building business will be aligned with the wider BAE Systems group IT

framework. It will cut costs but deliver higher service levels by using specialist teams for end user computing, collaborative services and applications management, Capita claimed in a statement.

Capita IT Services has provided BAE Subs with implementation of servers, WANs, and LANs since 2008. It has also provided technical consultancy and application development while managing a dedicated on-site service desk. ■

*HMS Astute, the first of the Royal Navy's seven Astute class nuclear-powered attack submarines, prepares for patrol.*



## InTechnology becomes NHS network aggregator

The Health and Social Care Information Centre (HSCIC) has granted aggregator status to InTechnology Managed Services. The firm will now be responsible for assessing and approving applications from third-party bodies wanting to connect to N3, the NHS' internal network.

As well as meeting HSCIC's strict data governance standards, InTechnology says it also met additional standards that specifically focused on connectivity provision.

Compliance with these standards now means it can aggregate the connections to the N3 network on behalf of approved software providers, as well as commercial and third-party providers of health and social care services.

"Obtaining access to N3 requires detailed and extensive due diligence on the part of the supplier to ensure that it is able to match or exceed specific security and information governance standards

required by the Department of Health and managed by HSCIC," states the firm. "InTechnology will be able to advise, help and support companies through the strict process of application and connection."

InTechnology, which is part of cloud-based services specialist and MPLS network operator Redcentric, says its experience includes over a decade of providing more than 10,000 connections into the N3 network. ■

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# Lasering in on future storage technology

The University of Glasgow, Queen's University of Belfast, and 12 industry partners have backed a new centre that will carry out research into how laser technology can be used for data storage and information processing.

The Centre for Doctoral Training (CDT) in Photonic Integration for Advanced Data Storage aims to address skills shortages in nanofabrication and photonic integration. This involves combining many different types of optical components – such as lasers, modulators, detectors, multiplexers and amplifiers – on a common platform.

The ability to store digital information has become a growing concern as the memory capacity of even the smallest of devices, such as smartphones, has grown exponentially. Prof. John Marsh, head of the School of Engineering at the University of Glasgow, says: "In 2010, the 'cloud' accounted for 25 per cent of storage use and by 2020 it will account for more than 60 per cent. This growth is driven by the use of mobile systems. For example, a server is needed for every 600 smartphones or 120 tablets – which means that HDDs of increasing capacity are required."

Experts believe new technology such as heat-assisted magnetic recording (HAMR) will be able to address these capacity issues. HAMR uses electromagnetic energy to locally heat the disk to ease the process of writing data on to it, allowing

recording densities to continue to increase. But the technology will require the integration of photonic components into the recording head.

The key challenge for CDT researchers will be to make HAMR deployable as a low-cost manufacturable technology. It's hoped this will then drive affordable photonic integration and plasmonic technology into other areas. ■

The CDT's £8.1m funding includes £3m from the Engineering and Physical Sciences Research Council, with the rest coming from the two universities, the Department for Employment and Learning in Northern Ireland, and industry partners. The latter currently includes: AHS; Cirdan Imaging; CST Global; FEI; IQE; JEOL; Kelvin Nanotechnology; Knowledge Transfer Network; Oclaro; Renishaw; Seagate; and Xytartex.

*Storage options – feature pp10-13.*



*The CDT aims to address the skills shortages in nanofabrication and photonic integration.*

## IT managers increasingly made responsible for telecoms

IT managers are increasingly responsible for telecoms and voice communications, according to research carried out by Timico.

Earlier this year, the managed services provider surveyed 150 IT managers from a broad mix of UK-based industries. Its aim was to gain an insight into how the role of the IT manager has changed and how it is perceived. It found that 52 per cent are now responsible for telecoms in their firms.

"In times gone by, telecoms was a responsibility which needed the dedicated support of specific staff members," says Charlie Whelpton, director of unified communications at Timico. "Now the line between IT and telecoms has become so blurred that telecoms management is often falling to IT managers, especially in SMBs."

Whelpton goes on to warn that adding telecoms is an added strain on resources, as in many cases IT managers are already facing demanding and complex workloads. "This means IT managers could be missing out on the best deals – like migrating to SIP instead of relying on ISDN lines."

He says "savvy businesses" should recognise the importance of telecoms and provide the resources for their IT managers to explore new trends such as SIP which he describes as the next "big shift" in telecoms technology. "As well as offering greater resilience, flexibility and cost savings, SIP models can now incorporate the use of business smartphones by re-routing personal extension numbers directly to mobile devices, for example."



## ON THE NETWORK

Rahiel Nasir, editorial director

### If the future is all about SDN, where do the storage specialists fit in?

Storage is perhaps the unsung hero of the IT industry. With all the talk of the pressing need for ever-faster networks to carry ever-increasing amounts of traffic, where that data deluge actually ends up seems to take a back seat.

At a conference about software defined networking held in London in June, there was much talk about how SDN is the future of networking. But not much was spoken about how storage will fit into that environment. Of course, SDN is actually all about separating the control and data planes in the network. Storage is just one of the functions that it will need to orchestrate. But are the storage vendors actually thinking about this?

In fact, it is generally agreed that there seems to be some confusion about what SDN actually is. At one recent product launch, the vendor made a great deal of how its new line up of storage equipment offered enterprises a 'scalable and future-proof' solution. If SDN is the future, this naturally begged the question about how the firm's kit will play into that market. The vendor replied by saying that because its products could be managed via software, they would have no problem working in the SDN era.

Furthermore, while SDN is being hailed

as the 'next great disruptor' in IT, the storage industry is pushing its own disruptor in the form of flash. While some of the latest storage technologies are not quite ready to be seen as the "HDD killer" (to quote Toshiba in this month's feature – see pp10-13), it is widely accepted that hybrid solutions that combine hard disks and flash or solid state drives are the way forward in the storage market.

So in the interests of adhering to agreed standards and interoperability, shouldn't the dedicated storage vendors play a more prominent role in SDN's further development? Look at the member lists of the two industry groups that are promoting software defined networking (the Open Networking Foundation and OpenDaylight) and you'll be hard pushed to find any names of companies who specialise purely in enterprise class storage hardware.

Of course there is VMware, which is owned by data storage and management expert EMC, and other big name firms who include storage as part of their wider portfolios. But unless the 'little guys' step up, it's the industry heavyweights that are likely to muscle in on all the action and define a different storage future.

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become exposed to the risk of costly phone calls made by illegal hackers. Its survey revealed that 54 per cent of the IT managers surveyed were unaware that PBX phone fraud existed.

It adds that a "shocking" 35 per cent of respondents answered 'don't know' when asked whether their company used a single network for voice and data. ■

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## Fusion to offer IaaS on G-Cloud

Fusion Media Networks has been appointed to the *G-Cloud 5* framework. The connectivity and business communication specialist's agreement is for the provision of IaaS. The firm believes its on demand *Virtual Data Centre* will enable public sector bodies to quickly and efficiently deploy hosted cloud services. *G-Cloud 5* is the latest iteration of the Government's public sector ICT procurement initiative designed to streamline the purchase of services from accredited suppliers. There are more than 400 vendors on this framework and over 1,500 on the *CloudStore* where sales have now passed the £175m mark. ■

## C4L adds cloud storage to portfolio

C4L Group has acquired CloudSpec for an undisclosed sum. The deal will enable the cloud specialist to cut costs and improve efficiency by gaining inside access to C4L's national MPLS *coreTX* network. In turn, C4L claims it can now offer the UK's "fastest" on demand backup, storage and archive service. CloudSpec's service delivery director Archie Maddocks has been made C4L's operations director as part of the merger. CloudSpec will continue to trade independently as part of the C4L Group. ■



PHOTO: ©NASA/JPL-CALTECH/MALIN SPACE SCIENCE SYSTEMS

**This 'selfie' of NASA's Curiosity rover was made possible with the help of cabling specialist Nexas.** The company has been working with NASA's Jet Propulsion Laboratory for around 10 years, and has equipped the agency's Mars exploration rovers with control, signal and power cables. For previous expeditions, such as the Spirit and Opportunity missions in 2004, Nexas says it manufactured more than 90 per cent of the wire and cable used on the twin rovers. The cables use fluoropolymer and polyimide-based insulation materials to protect them from Mars' extreme environment where temperatures can drop to -105°Celsius.

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# Huawei to open Bristol R&D centre as part of £650m UK investment

Huawei, said to be the world's biggest telecoms network equipment company, plans to open a new multimillion pound R&D centre in Bristol.

Researchers at the facility will focus on the development of ICT chips, microprocessor design, software and related technology. It is due to open by the end of the year and will initially employ 30 people.

Huawei also runs an R&D centre in Ipswich that was opened in 2011 after it acquired the Centre for Integrated Photonics. The firm aims to employ 300 people by 2017 across its various R&D sites in the UK.

Regional investment agency Invest Bristol and Bath (IBB) is driving forward a recruitment drive in the wider technology sector on behalf of the Chinese company. IBB chair Joe McGeehan says: "Huawei's decision to set up a multimillion pound



In April 2013, Huawei opened the doors to its new UK headquarters in Green Park, Reading.

R&D centre in Bristol can be seen as another major vote of confidence in the city as a hub for global business.

"The region's combination of strengths in silicon design, microelectronics system design, embedded software, and enterprise software and apps makes it uniquely placed

to capitalise on global technology markets worth trillions of dollars."

IBB says the southwest region is home to around 700 technology firms and offers more than 18,000 high tech jobs. It adds that Bath and Bristol have over 200 companies focusing on silicon and microelectronics, and claims the region has seen £4bn worth of investment over the last decade.

Huawei is reportedly China's largest investor into the UK and first set up premises here in 2001. It currently employs 890 people across 15 sites and aims to have 1,500 staff on its local payroll by 2017.

Over the next three years, the firm plans to invest a further £650m in the UK despite some governments – including Westminster – suspecting it of having links to the Chinese military and intelligence agencies (see News, Oct 2012). ■

## Onyx improves energy efficiency with Utilitywise

Onyx Group has called in energy management consultants Utilitywise to help it improve energy efficiency at the five large data centres it runs in the UK.

It will use the *Utility Insight* digital platform that is claimed to offer "unprecedented insight and clarity" into the way companies use energy and water. Utilitywise says its system converts data from utility meters, sub-meters and monitoring systems into easy-to-understand information that can be viewed on any computer with web access.

Onyx says its data centres use around 15MW of power each year. Group CEO Neil Stephenson says: "We're in an industry that uses a lot of energy, so it made sense to bring

in energy consultants to advise on how we can reduce our energy consumption."

Utilitywise will also provide Onyx with retrospective and ongoing bill checking, flexible energy procurement, and fixed price energy deals that are secured at the right time to achieve the best energy tariffs available.

The South Shields-based consultancy firm works with clients in the UK, Ireland, France and Germany, ranging from single high street shops to multinationals with thousands of sites. "Those who control their energy use can become more competitive than their rivals," says CEO Geoff Thompson. "This is especially true in today's economic climate where energy remains a major cost." ■



Utilitywise CEO Geoff Thompson (right) with Onyx Group CEO Neil Stephenson. Thompson says those who control their energy use can become stronger competitors.

## TalkTalk upgrades network with new Zayo deal

Quad-play operator TalkTalk has refreshed its networking deal with global bandwidth infrastructure provider Zayo to offer enhanced services to its four million UK customers.

Under the new contract, which will be delivered by September, TalkTalk will have access to 10Gbps wavelengths in the UK and Europe, boost IP transit speeds from 30Gbps to 50Gbps, and benefit from 10Gbps transatlantic services from London

to New York. The agreement will also give TalkTalk access to seven new dark fibre circuits on an individual fibre basis as demand requires over the next few months. The operator adds that the deal will allow it to expand the choice of services it offers while keeping costs stable.

Zayo recently enlarged its European footprint by acquiring the UK's Geo Networks (see News, May) and France's Neo Telecoms. It claims to now offer

connectivity in more than 300 markets in the US and Europe on a 79,000 route mile network. The firm says its long-term plan is to roll out more dark fibre.

Alastair Kane, Zayo's VP for Europe, says: "Having the ability to deliver the capacity that TalkTalk requires on demand is further validation of our strategy of continuing to invest heavily in dark fibre capacity." ■

*SuperConnected Cities update – pp15-17.*

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# Pigs pilot IoT animal health scheme

General Alert (GA) is working with Internet of Things (IoT) specialist 1248 to improve the welfare of pigs, poultry and other livestock to provide early warning of transmitted diseases.

GA, which is said to be a pioneer in the use of sensors and monitoring technology on farms, is using 1248's new *Geras* IoT database and publishing solution to collect data from multiple sensors. Data include temperature, drinking water flow and animal feed rate, humidity, CO<sub>2</sub> concentration, and pH. GA even uses RFID and temperature tags implanted in pigs, effectively turning the animals into endpoints on the IoT.

The *Geras* system uses sensors that collect thousands or millions of readings via the mobile phone network or internet.

These are stored and queried to provide meaningful and useful information. For example, a change in drinking behaviour could indicate illness or a source of animal stress that can be resolved quickly.

*Geras* is a generic, scalable IoT service based on open standards. It accepts data trickling in from many devices, stores it, and then allows applications to answer high-level questions quickly. The project is funded by the UK government's Technology Strategy Board.

This is the first time farms and animal behaviour have been measured on this scale in such detail to manage productivity, health and well-being, and improve operational efficiency. By monitoring on a national and international level, the

technology will be able to provide early warning of diseases such as foot-and-mouth which can have devastating effects on livestock and cause financial loss.

GA's IT director Chris Dodge says that a rising global population is increasing the pressure on food-animal production which leads to an increased need to manage animal productivity, health and well-being. "Sensors, electronics and communications technologies have reached a price point that is making it possible to deploy IoT systems that deliver real commercial benefit.

"*Geras* is a core building block of our solution. We are already working closely with veterinary, agricultural research and farm management companies, and looking to expand the range of applications." ■



Pigs have been implanted with RFID and temperature tags which effectively turns them into an endpoint on the IoT.

## Endsleigh Insurance saves £1.3m with optimised contact centre

A workforce optimisation module is said to have saved Endsleigh Insurance £1.3m through better resource allocation in its contact centre. Based on the Avaya *Workforce Management* platform, it allowed the firm to automate staff scheduling and holiday bookings, provide real-time monitoring of service levels and agent performance, and better align resources as and when they are needed.

The module is part of the new *Icon Contact* cloud-based contact management centre from system integrator Azzurri Communications. It says the virtual contact centre integrates email, web chat, SMS and social media, and is designed to ensure that

organisations connect to the "right people at the right time in the right way".

Azzurri claims the deployment has paved the way for Endsleigh to become a multi-channel organisation, boosted its revenues, convinced management to make further changes, and has led to improvements in staff retention, morale and compliance.

Aimed mainly at contact centres with 50 to 200 concurrent agents, *Icon Contact* is said to be scalable and is charged on a per-user-per-month model. It aims to deliver enterprise-class functionality in a hosted environment, including integrated multi-channel support, workforce optimisation

**Adding new functionality in a contact centre is costly and risky, according to Azzurri Communications' CTO Rufus Grig.**

and seamless integration with an organisation's existing communications infrastructure. Azzurri says customers can pick and choose the services they require from a catalogue of pre-tested and pre-configured modules, and tailor them to meet their own specific needs. ■

CTO Rufus Grig says the rate of change in contact centres is not slowing but warns that adding any form of new functionality to an on-premise contact centre solution is a costly and high-risk exercise. "By taking their contact centre into the cloud, organisations can eliminate this risk entirely and ensure they remain one step ahead of their competitors."

*Icon Contact* was launched earlier this year and is the latest in a series of new cloud and managed services from Azzurri. The company says the platform was developed based on its experience of building and managing more than 300 contact centres across the UK. ■

## Attix5 aims to make cloud recovery affordable to SMEs

Data protection software developer Attix5 has introduced a cloud-based disaster recovery solution. *DynamicRestore* is designed to provide end-users with immediate recoverability in the event of a loss of critical servers and data without breaking the bank, claims the firm.

The offering is part of the *Attix5 Dynamic* platform which incorporates features and benefits of the company's current *Attix5 Pro* solution with the new *DynamicRestore* technology.

According to Attix5, its patent-pending business continuity and recovery technology gives service providers the ability to offer a managed, multi-tenant,

cloud-based recovery solution that gets end-users back up and running within minutes rather than days, reducing recovery time and saving them from economic failure.

"[*DynamicRestore*] is flexible, time efficient and cost effective, no additional hardware or storage is required, and backed-up data can be accessed from any location," says Attix5 GM for sales Luv Duggal.

"What we have created is a means of helping small and medium enterprises around the world employ world-class security at the SME price point without sacrificing quality for the end-user, or profitability for the service provider." ■

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## Xstream support for OpenStack

Virtustream reckons its new *xStream 3.0* cloud management platform (CMP) allows users to provision, run and manage VMware and OpenStack workloads within the same *xStream* user interface.

According to the firm, the CMP should make it easier for organisations to switch mission-critical production applications to cloud processing. It claims the platform can boost SLA support and adds enterprise risk management to cloud services through advanced features such as chip-level geo-fencing, continuous compliance and vulnerability monitoring.

*xStream 3.0*'s new support for OpenStack and VMware is said to add a continuous compliance assurance service via ERM integration. Virtustream says this enables customers to maintain the "highest level" of data security while provisioning and running workloads on top of OpenStack. ■

"Hybrid cloud environments are the future of enterprise computing, but moving to the cloud is a complex transition," says Virtustream CIO and chief of product engineering Van Williams. "The *xStream* CMP software allows enterprises to manage and run any mix of legacy applications and new open source applications without re-engineering and optimally combine on-site and cloud-based operations."

*xStream 3.0*'s new support for OpenStack and VMware is said to add a continuous compliance assurance service via ERM integration. Virtustream says this enables customers to maintain the "highest level" of data security while provisioning and running workloads on top of OpenStack. ■

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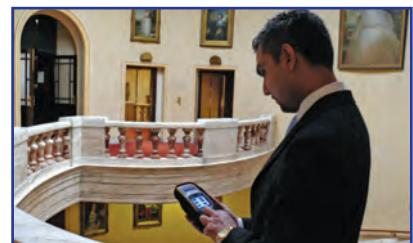
# Downtime is money

**Even when we're enjoying our leisure time or taking a well-earned break, we all still expect constant connectivity from hotels, sports venues and entertainment service providers.**

## Free Wi-Fi – the ‘killer app’ for hotel guests

GLH runs 36 hotels in the UK and its brands include Amba, Clermont, Guoman and Thistle. The company also claims to be the largest hotel owner-operator in London with five luxury properties such as The Royal Horseguards, Charing Cross and The Cumberland.

GLH believes that quick and reliable Wi-Fi connectivity is essential for its guests, and cites research which says this is now a decisive feature when it comes to choosing a hotel. As a result, the company has upgraded its wireless network across its hotels which now offer free, fast and unlimited Wi-Fi in all bedrooms, lobby areas and meeting rooms. It's available to all guests and visitors and there's no need to register to gain access.



The company is working with BT which manages the network and is now the telco's biggest user of free Wi-Fi.

GLH had already done some network upgrades for the 2012 Olympics but knew that offering free Wi-Fi across all its UK hotels would require higher performance and greater increases in capacity.

Previously, the hotels were running Cisco access points (APs) that supported 2.4GHz and these were upgraded to Cisco's Aironet 1042 802.11n dual band APs that also offer 2.5GHz. On top of that, the internet backhaul was also upgraded using gigabit circuits and Cisco's Catalyst 2960 Series PoE switches together with Cat6 cabling from Connectix. Around 2,900 APs, including Cisco's latest Aironet 3702 Series that support 802.11ac, have since been deployed as part of an ongoing network upgrade to gigabit capacity.

GLH says that providing free and easily available Wi-Fi access to all guests and visitors has not led to any issues with network congestion. It says that thanks to gigabit capacity, the network is nowhere near reaching its capacity.

More significantly, the company works with BT to proactively monitor network usage at each of its hotels. It can identify where and when traffic spikes occur, and which of its thousands of APs are seeing

the most throughput. Staff at each hotel, such as the manager at The Royal Horseguards (*below left*), have been trained to monitor the networks daily using Fluke's AirCheck meters. These can instantly show network performance indicators such as the signal strength of each AP, and therefore provide real evidence that can be presented to BT. Any negative feedback from users about the Wi-Fi is instantly acted upon.

GLH is now working with the telco to implement separate SSIDs to cover its back office systems. For example, later this year it plans to run housekeeping apps over the network that allow staff to centrally report when rooms have been cleaned and are ready for their next occupants.

## Film storage

With more than two million subscribers, LoveFilm claims to be the leading online DVD rental and streaming service in the UK and Europe. Following a series of mergers, its infrastructure needed an upgrade. In 2011, the firm was bought by Amazon and the IT team then began integrating all the disparate IT solutions.

Their first step was to virtualise and this was completed in 2012. LoveFilm now has more than a hundred virtual servers, several vSQL databases, and eight physical servers. Most of the infrastructure is based in two data centres with a disaster recovery (DR) site located at a remote site. The existing backup system had evolved with a variety of solutions but had become harder to manage and more expensive.

LoveFilm's IT infrastructure analyst Paul Houghton says the company had already looked at a virtual system but discovered it was unable to protect the physical servers. The solution came in the shape of Unitrends' Recovery-943 appliance (*below*) and *Enterprise Backup* software. This created the platform LoveFilm needed to protect both its virtual and physical infrastructure.

The '943 is said to be the industry's first tiered storage high-density enterprise class backup appliance with 36TB drives configured in a RAID-60 to optimise redundancy and performance. Unitrends says it is specifically designed to allow parallel commit of metadata and backup streams. It was installed at LoveFilm's primary data centre in London's Docklands to underpin its IT environment and SAN. *Enterprise Backup* was deployed to a VM at the DR site in Islington, giving the company 40TB of backup capacity.

Unitrends says the system was up and running in less than four weeks despite LoveFilm expecting it to take three months to complete. It has since proven to be easy to use. On the occasions when LoveFilm has suffered issues with VMs and its SAN,

the restore has been quick and simple. Unitrends says its appliances' ability to take snapshots and protect virtual servers once a day is a valuable feature, as is the capability to backup incremental changes to the vSQL machines on an hourly basis.



## Boston connects Glasgow

Boston Networks is the official cabling services integrator for the Glasgow 2014 Commonwealth Games that are due to open on 23 July.

The locally based firm is responsible for the design and deployment of a multi-faceted cabling infrastructure, enabling the delivery of various technology services throughout all the venues being used for the games. These include Celtic Park (*pictured above*), the SSE Hydro, the athletes village, the organisers' HQ based in Glasgow's Merchant City, and others.

Boston says its aim is to create a "truly resilient" solution using best of breed technology and expert design. It's estimated that the ongoing deployment will involve the installation of more than 3,000 outlets and over 100km of fibre and cabling which includes products supplied by Brand-Rex. Boston says the highly scalable, structured and fibre optic solution will support voice, data and video comms. The critical infrastructure will be used by event officials, athletes, press and broadcasters, as well as a range of other operational personnel for the duration of the games.

In addition to the Glasgow 2014 organising committee, Boston has worked with a wide range of key stakeholders who will also heavily rely on the various cabling systems. They include: the technology systems integrator; official timekeeper; large video display contractor; host broadcaster, and the venue overlay contractors.

As part of its remit, the company will also deliver support from the Technology Operations Centre with the establishment of a dedicated service desk to fully manage the operational integrity of the solution. It says this will guarantee the prompt resolution of any incidents and provide centralised monitoring across all venues.

Key competition and non-competition venues will also require dedicated onsite support, during and leading up to the operational period of each site. Boston says it will manage fully qualified venue support teams as well as roaming support personnel to ensure "omnipresent" help and maintenance services.

All the cabling for the games is being installed on a temporary basis. It will be removed after the event and recycled in accordance with industry standards, although Boston says that individual venues may be able to retain any cabling should they wish to do so.

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# Welcome to the new store age

*An array of choices: vendors such as Toshiba advocate a tiered approach to storage architectures using a range of HDD and SSD technologies.*

**When it comes to storing data, enterprise users can choose from a variety of well-established options. But with newer technologies now set to disrupt the marketplace, RAHIEL NASIR finds out if they are ready for business.**

From corporations to consumers, the good ol' hard disk drive (HDD) has remained a staple when it comes to storing data. But with all of us now creating mountains of the digital stuff each day, can it still be relied upon for looking after all our precious bits and bytes, especially for enterprise users where data, as well as time, is now money?

Data recovery specialist Kroll Ontrack recently pushed out a stat that said HDD crashes remain the leading cause of data loss around the globe. It surveyed 1,066 business and consumer users across Europe, North America and Asia Pacific, and found that 72 per cent of them had experienced their most recent data loss from a desktop or laptop HDD. That was followed by 15 per cent who blamed a solid state drive (SSD) failure and 13 per cent who used RAID/virtual services.

That's perhaps no big surprise given the sheer number of HDDs being used around the world today. But Paul le Messurier, Kroll's programme and operations manager, says storage media fails regardless of type – it is just a matter of when. "Beyond good health practices, businesses and home users should have working redundancies, such as a backup device or service in place, and continuity plan that is current and accessible in the event of a loss."

That's certainly sound advice when it comes to 'Plan B'. But with data losses impacting every type of storage, is there a 'Plan A' solution for enterprise users where the risks of data loss due to bad hardware are minimised or even eliminated?

## Flash – will it save everyone of us?

While Kroll's survey notes that SSDs are also prone to failure, many storage vendors seem to be moving in this direction. At the same time, there is now much talk about flash storage. So what are the pros and cons of using these

technologies in the enterprise space?

Martin Bruce, storage sales manager at IBM UK, says that many organisations are considering migrating whole workloads to flash or all-flash arrays, and believes the performance of storing corporate data on any platform, from mainframe to open or virtualised workloads, may be improved with even a small percentage of SSD or flash capability. He says some customers who have done this report exceptional performance and business benefits, such as 95–98 per cent reductions in processing times, physical footprint and power consumption, as well as 50 per cent lower TCO.

Many of the vendors we spoke to agreed that flash is creating big disruption in the storage market with its promise of greater performance and speed compared to the traditional spinning disk. For instance, Pure Storage claims the preference for mature, legacy, mechanical disk vendors that have been the gold standard for 20 years will tip towards all flash arrays over the course of the next refresh cycle (four to five years).

Matt Kixmoeller, the company's VP of products, says: "\$15 billion will be spent this year alone on 'performance' mechanical disk arrays. Such disk-centric arrays (which typically have flash caches) are going to consume five to 10 times the power and rack space of the all-flash alternatives, and perform an order of magnitude more slowly. For database and virtualised applications, performance disk arrays are now a waste of money."

But many industry experts point out that flash has significant limitations. Dan Leary, VP of marketing at

Nimble Storage, says: "On average, it tends to be between eight and 20 times more expensive than conventional hard disk, has lower capacity, and can only withstand a finite number of write/erase cycles before it becomes invalid."

It's the same with SSDs. While these also offer compelling advantages such as lower energy consumption and faster data access times, they come with high price tags and low lifespans, according to Toshiba Electronics Europe (the company credited with introducing flash memory in 1984). Nick Spittle, GM of product management, says: "SSDs should not be viewed as the 'HDD killer', but rather as a complementary technology to enhance existing storage infrastructure. The NAND chips in SSDs do have a finite lifetime and can resist up to 10,000 write/erase cycles."

Spittle adds that to protect against data loss, wear levelling and error correction mechanisms are implemented in SSDs. And unlike HDDs, they do not have mechanical parts that can wear out or be damaged by shock. Furthermore, he believes that as NAND prices become more competitive, their application potential will broaden.

Rob Clark, group technical enablement director at IT distributor Zycko, is also optimistic about SSD's future: "Whilst there are finite write capabilities (and initially we saw a lot of issues with hardware reliability) the latest generations of SSD, especially in the enterprise class platforms, do not really suffer from those reliability concerns."

Clark says that the performance differentials on flash/SSD are huge – more than hundreds of times faster

in some instances – and costs are falling quickly due to wider market adoption. "It's also important to note the speed of development within SSD/flash technologies. It has taken us over 50 years to get to an HDD capable of storing 6TB of data, whereas there are already 6.4TB flash media drives available from certain vendors in a 2.5-inch disk size format. General SSDs are already 800GB after just a couple of years of mainstream availability."

## Any need for self-storage?

Should enterprises bother investing in local hardware when they can outsource the problems of data storage to a cloud service provider? If only it were that simple.

Aside from all the usual 'FUD' associated with using the cloud, Craig Parker, head of product marketing at Fujitsu UK and Ireland, says that locally deployed hardware solutions are always going to be needed because enterprises are not going to transfer all their data to the cloud. "This may be due to regulatory reasons, access requirements, and data ownership. In terms of the latter, an enterprise needs to be aware in which country its data is going to reside and the data access laws within that country."

Pure's Kixmoeller agrees. He says that while cloud is increasingly an integral part of any company's IT strategy, business and/or security compliance requirements is one factor that can dictate the need for on-premise infrastructure. "Of course, speed, resiliency and cost factor into this equation as well, and can tip the balance in one direction or the other, depending on the specific needs and capabilities of an organisation."

Cloud is often viewed as a cure to storage problems but according to Nimble's Leary, when you look at the TCO within the service providers, it can be pricier and more complex than it first seems. He says that while a cloud service can provide a good storage solution for applications that are not frequently

*Zycko says appliances like Tintri shown here represent the 'new ideal' in storage. They are designed from the ground up to leverage technologies such as flash, SSD, 10GbE, etc, whilst addressing the applications, architectural and technical needs of businesses.*



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accessed, it quickly becomes expensive for enterprises running transactional applications, such as databases that require high and frequent access to data.

Edouard Doutriaux, LaCie's Northern Europe sales director, says the key to the "perfect" storage solution is to define what you are looking to achieve in the day-to-day running of your business. "We are currently seeing a lot of interest in a hybrid approach whereby data is stored both locally on the hard drive and also in the cloud. This gives organisations control and security that their data is protected, but also the agility to access that information whenever and wherever it is required."

Doutriaux claims that LaCie is the only external storage company that owns its cloud storage. As a result, he believes his firm is "uniquely" positioned to deliver a "seamless hybrid cloud solution".

Ultimately, the decision to stay local or go cloud depends on an individual organisation's data storage needs. Zycko's Clark says that each business function deserves careful review, and reckons that currently available cloud services are best for disaster recovery (DR) and long-term storage of cold data.

"If you can leverage the economics of cloud provisioning and pay-as-you-use commercial models, DR costs in the cloud versus the traditional 'build a second data centre' option can be significantly reduced. Looking at backup, archiving and longer term storage requirements for compliance, if you can encrypt and deduplicate your data before it's uploaded, some truly fantastic savings can be achieved."

Clark goes on to say that one main trend affecting the tape and backup markets in general is the ability to tier data of a certain age or type via the REST API

into either a public or private cloud storage offering.

## 'Old school' storage

Where does all that leave traditional storage options such as the SAN, NAS, and of course tape – are these now destined for the WEEE bin? "Due to the explosion of Big Data, existing storage technology will soon hit a wall, becoming a bottleneck for business productivity," warns IBM's Bruce.

Having said that, many vendors support the view that traditional systems are not defunct and are instead leading the way in the next chapter of the evolution of data storage. As a result, new systems are being introduced that are significantly more efficient than their predecessors.

"Tape is certainly not dead," says Bruce. "IBM continues to develop and invest in this area. Clipper Group has stated that tape storage is 26 times cheaper than disk when viewed over a nine-year TCO."

He goes on to claim technologies such as the Linear Tape File System, combined with IBM's *Elastic Storage* cloud/virtualised platform, can drive down the cost of both conventional SAN and NAS workloads, as well as ease the management of the overall solution. "IBM's recently announced *Elastic Storage* can move petabytes of data and billions of files in microseconds versus days, providing faster access to both unstructured and structured data that would conventionally be stored on SAN and NAS."

Despite its cost advantage, tape is becoming less prevalent in enterprises as users move to disk-based backup solutions. However, some experts such as Clark say that extremely large data requirements for cold data are still, economically at least, best placed on tape infrastructure.



**LaCie says its five-bay 5big NAS Pro enables workers to collaborate easily using a single interface for both network/cloud storage and remote access.**

processor, features an improved file system, and is said to deliver speeds of up to 100MBps. "Network storage is growing in excess of 40 per cent annually, increasing the demands placed on network storage devices," says Doutriaux. "The 2big was developed to scale with the needs of SoHo users, delivering fast file sharing and data security, the two most critical factors for a small business."

Fujitsu has recently announced its new *ETERNUS S3* platform which Parker says gives customers the ability to have both SAN and NAS in a single unified controller. "This saves customers in both opex and capex as it means that they do not need to run two disparate storage islands and train their storage teams on different storage technologies from different vendors."

The company also offers an all-flash array in the shape of the *ETERNUS DX200 S3* which can be integrated with its existing infrastructure. Parker says Fujitsu's software stack provides the ability to automatically position data on the right tier at the right time, and includes QoS to determine system performance for applications during peak periods.

Toshiba also advocates a tiered approach to storage architectures and says a range of HDD and SSD technologies should be used. According to Spittle, by combining SSD's fast random access read capability and the high capacity of the HDDs, organi-

When it comes to network attached storage, LaCie's Doutriaux enthusiastically proclaims it is far from dead and is in fact evolving to meet the increasing demand for very high-performance solutions. As a result, the company has developed and launched a five-bay NAS device.

"Thanks to hybrid cloud technology, the LaCie 5big NAS Pro lets employees collaborate easily using a single interface for both network/cloud storage and remote access. Wherever the user is or whatever the device (computer or mobile), they can access data quickly from one convenient interface. Administrators can also easily manage users and groups in two mouse clicks. Plus, data stays secure thanks to novice-friendly SimplyRAID and client-side cloud encryption."

## New in store

Other new NAS products from LaCie include a 2-bay unit that has been designed to deliver a combination of speed and security for small businesses. The 2big NAS is powered by a 2GHz



# Tintri

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**The FlashArray 450 from Pure Storage offers up to 250TB of usable space in a 2U controller footprint, and also introduces support for 16Gbps Fibre Channel connectivity.**

provisioning, under-utilisation, and increased costs.

Not to be outdone by its fellow Silicon Valley rival, Pure Storage recently unveiled two new models in its flagship *FA-400 Series*. They include the *FlashArray 450* which is said to be suitable for replacing racks of Tier 1 disk storage for consolidated, virtualised workloads.

Pure says it offers up to 250TB of usable space in a 2U controller footprint, and is powered by two 2.7GHz 12-core Intel processors and 512GB RAM per controller. It also introduces support for 16Gbps Fibre Channel connectivity. The other model is the entry-level *FlashArray 405* which

sations can easily optimise the handling of business critical data and large media files.

"HDDs provide the base with high capacity data storage and SSDs sit on the top providing fast access to mission critical data. Automated algorithms ensure the most suitable drives are used to store data, minimising power consumption and heat dissipation – both of which are critical issues for enterprise storage and data centres."

He adds that Toshiba offers a full range of storage hardware that includes nearline HDDs, enterprise performance HDDs, and enterprise SSDs, as well as HDDs, SSDs and NAND memory for tablets, phones, laptops and PCs.

Earlier this year, the company launched its highest capacity external HDD, the *5TB STORE Canvio*. A 4TB model is also available. The new device features *NTI Backup Now EZ* software to streamline and speed-up the backup process. It scans the user's system and recommends the best coverage for the computer. Toshiba adds that if the worst happens, users can click the restore button and instantly recover a file or folder. "What's more, if you boot directly from your *STORE Canvio* hard drive, it will restore all the files saved on your computer. It even includes the ability to burn a boot CD/DVD."

But away from the traditional solutions, it is clear the flash wars are now on as the technology continues to hog the headlines.

In June, Nimble Storage launched its latest flash products but adds a twist to the tale. The new *CS700 Series* arrays and *All-Flash Shelf* leverage the firm's unique *Adaptive Flash* platform which is said to provide the performance of flash-only arrays and the capacity of hybrid arrays.

The *CS700 Series* has been designed to handle a variety of performance-intensive enterprise workloads such as large-scale VDI deployments, high transaction-volume databases, *Microsoft Exchange*, etc. The *All-Flash Shelf* is said to provide the flexibility to scale flash gradually up to 16TB per node, or 64TB in a four-node scale-out cluster.

*Adaptive Flash* is based on Nimble's patented *Cache Accelerated Sequential Layout (CASL)* architecture and *InfoSight*, its automated cloud-based management and support system. Delivering up to 500,000 IOPS, 64TB of flash and a petabyte of capacity, it's claimed the platform minimises performance and capacity trade-offs, enables the consolidation of all workloads, and eliminates storage silos.

"Organisations are forced to over-provision flash for performance-centric applications, incurring significant costs and other overheads," states the firm. "Though performance-intensive applications benefit from residing on flash, enterprises are burdened with overheads associated with maintaining the entire working sets within a flash-only environment."

According to Nimble, the *Adaptive Flash* platform uses *InfoSight* to recommend the exact amount of resources required as application demands change within an enterprise. It says this "scale-to-fit" approach allows the non-disruptive addition of resources, thus avoiding over

offers up to 40TB of usable space in a 1U controller form factor.

Kixmoeller makes some bold claims about his firm's all-flash arrays. He reckons they're 10x faster, more space and power efficient, more reliable, and typically cost less than traditional performance disk arrays.

"[They] deliver greater than 99.999 per cent uptime, as measured across our installed base, and do so without performance impact. They remove on average one million hours of latency per year between a business' applications and the underlying storage, and save enough in power,

cooling and operating overhead in the first four years of deployment to pay back customers for the initial purchase price."

A few weeks ago, Pure announced that it had acquired more than 100 storage and related technology patents from IBM following the signing of a cross-licence deal. The firm says the agreement will enable it to focus more on advancing storage innovation. Clearly, the future of its technology in the enterprise storage market will be no flash in the pan. ■



**Nimble Storage says that its CS-Series arrays are the building blocks of the Adaptive Flash platform. They can handle various large-scale enterprise workloads such as virtualisation deployments, high transaction-volume databases, Microsoft Exchange, amongst others.**



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# R&M CONNECTIVITY

## Making a difference where it counts

# Hello caller – we're trying to connect you



*London's once futuristic looking cityscape is still largely bereft of fibre connectivity.*

We last covered the government's SuperConnected Cities programme in September under the headline: "City networks? We'll get back to you". Well, a couple of folks have now returned the call. IAN GRANT lends an ear.

**B**ritain is spending almost £5bn a year to accelerate 'next-generation access' (NGA) to high speed networks. But so far, politicians and regulators have largely ignored the needs of enterprise. That changed slightly with the launch of the government's £150m SuperConnected Cities (SCC) programme in March 2013.

After a controversial start that saw BT and Virgin Media object to cities buying fixed lines on behalf of local businesses, things settled down. The Department of Culture Media and Sport (DCMS) picked 22 cities for a voucher programme. Under the scheme, firms may apply to their city council for a grant of up to £3,000 to defray the cost of connecting to a high speed network service that provides a "step

change" in the speeds they enjoy. Running costs are for the businesses' accounts.

That figure of £3,000 needs to be seen in context. Broadband Delivery UK (BDUK), the DCMS agency charged with delivering high speed broadband across the country, has mooted an urban benchmark price of £150 connection plus £50 per month for a 30Mbps (copper) line. Independent telecoms consultant Mike Kiely says this needs to be seen in the light of the emerging average European wholesale line price of €15 to €20 for a fibre connection capable of 1Gbps and €50 for the connection.

Analysys Mason principal analyst Rupert Wood notes fibre connections are much more freely available in Europe than the UK. His figures suggest connection fees

of under €50, and monthly costs of around €30 for a >30Mbps consumer-grade line, or just over €100 for a business-quality service. He adds that these products are all aimed at the low-end Ethernet market and may not include backhaul costs.

## Has the voucher scheme worked?

The cities in the SCC programme include: Aberdeen; Belfast; Birmingham; Bradford; Brighton and Hove; Bristol; Cambridge; Cardiff; Coventry; Derby; Derry City; Edinburgh; Leeds; London; Manchester; Newcastle; Newport; Oxford; Perth; Portsmouth; Salford; and York. So far, 422

suppliers have registered to service the scheme. DCMS says some 149 have provided quotes, and 90 have won business.

By the end of May, these cities had issued 1,008 vouchers. The fixed/wireless connectivity split was 77/23 per cent, and the average speed per connection went from 11.2Mbps to 70.3Mbps for downloads. DCMS says it will provide a city-by-city breakdown later this summer, but refused to say how much money has been paid out so far (*Networking+* estimates the figure to be around £3m) or to whom it has gone. However, Virgin Media tops a DCMS table of suppliers that have been issued vouchers.

BT – which Ofcom says has an effective monopoly on wholesale fixed line access despite Virgin Media's efforts – declined to say how many vouchers it has won. Nonetheless, its Openreach division is likely to be a big winner. This is because smaller operators like Hyperoptic and TalkTalk rent ducts and lines from Openreach, even as BT's Business division competes with them at a retail level.

So does 1,008 vouchers issued in 14 months represent success or failure? To be fair it's probably too soon to tell. But there's not much time left – DCMS says the money dries up in March 2015.

The network operators remain optimistic. For instance, Mike Smith, business director of SME propositions at Virgin Media Business (VMB), says: "The future of the scheme is looking good and is continuing to gain momentum, with the number of applications on the rise."

Kate Rennicks, who is responsible for running the voucher scheme at fixed/wireless operator Metronet UK, says her firm has connected 200 firms so far, and has a backlog of 1,000.

For Hyperoptic, getting into the scheme meant starting its business division almost from scratch. Its standard offer addresses residential consumers who live in "multi-

## Copper to rule fixed last mile access

Sources ranging from the National Audit Office to former BT CTO Peter Cochrane have questioned whether the billions spent on the UK's physical infrastructure for communications will produce a network that's fit for purpose in an age of global competitiveness.

Like most incumbent telcos worldwide, BT has opted for copper-based VDSL2 technology. This means running fibre from one of 15,000-odd exchanges or aggregation points to street cabinets, and completing the link to the customer with copper local loops. Later, the company is expected to extend the fibre to street distribution points and to upgrade its VDSL technology with vectoring (a noise cancellation technology) to increase speeds over the final copper drop to 1Gbps.

Meanwhile another new technology, G.fast, is an extension of VDSL that

proposes to give 1Gbps over short (<250m) copper loops. But Openreach spokesperson Gemma Thomas says BT is "unlikely" to introduce this any time soon because the ITU has not yet finalised the specification. Thomas says that while tests using early prototype kit have gone well, BT will wait for the formal standard and for equipment makers to reduce it to silicon before adopting it at scale.

She estimates that this will take three years, and also points out that BT will not try to gain first mover advantage and go it alone because its network "had to be used by other network operators".

While Virgin Media has installed a lot of fibre for backhaul, its last mile still uses copper coax cable. With DOCSIS 3.0, this combination can provide customers with >150Mbps downloads. And while mobile operators promote

**A Cat5e cable can deliver 1Gbps Ethernet. So is this really the future for UK connectivity?**

PHOTO: ©RICHARD WHEELER. RELEASED UNDER CC BY-SA 3.

LTE-based high speed mobile broadband, the fact is that it will remain rare, costly and contended, and therefore unsuitable for many businesses. Furthermore, it will increasingly need fibre for backhaul.

Britain has lots of fibre – but not much of it is available to retail broadband customers or even to wholesale broadband customers on agreeable terms. So for the moment, optical cables remain too rare and costly. But they are inching closer to widespread commercial viability as competition emerges downtown.



tenant dwelling units”, i.e. blocks of 60 flats or more. To date, it has connected more than 150 buildings in London, Reading, Cardiff, Bristol, Manchester and Liverpool, and is looking at other SCC cities. Commercial director Darren Shenkin won’t disclose how many subscribers Hyperoptic has but adds that its fibre passes more than 35,000 homes. Now the company wants to extend that connectivity to business users. “We’re taking the business market very, very seriously,” says Shenkin. “We’ve only just built and are still adding to our business sales team. There’s been a lot of money and focus on bringing consumers into the 21st century, and we want to do that for SoHo firms and SMEs.”

He goes on to say that Hyperoptic is collaborating with the 22 SCC city councils to boost demand: “We’re working with them to pull marketing collateral together to go after SMEs in those cities.” Hyperoptic’s first approach was to 7,000 businesses in London’s Covent Garden in mid-June, and it is also talking to some SCCs in which it does not yet have a residential presence.

Rennicks believes that a lot of service providers registered as SCC suppliers on a “just in case” basis without seeing the voucher scheme as a big opportunity. Metronet UK grabbed it with both hands. If the company’s claims are accurate, it has taken a fifth of all the vouchers issued so far and most, if not all, the wireless business.

But she points out that it wasn’t easy: “This scheme required us to change the way we deliver service. Effectively, we had to re-engineer our back-end processes. You’ve got a different type of sales cycle where you have to get a customer to fill in an application form, then help them with the paperwork afterwards. I guess not all suppliers are necessarily willing to do that. With a turnover of around £12m, we’re a fairly nimble company. Compare us with BT, which has very entrenched processes, and we’re able to do that quite quickly.”

## Flexible pricing for fixed lines?

For Hyperoptic, the voucher scheme has helped to overcome another barrier: the cost of connection to a leased line. Openreach’s prices for General Ethernet Access (GEA) – which is what Hyperoptic resells extensively – are £92 for connection, £436 per year rental for 100/30Mbps down/up links, plus £2,000 for GEA Cablelink which connects the service provider’s backhaul and servers to the BT NGA network.

Controversially, in May BT increased prices for its wholesale Fibre On Demand (FOD) product which provides 330/30Mbps, blaming unexpected costs. The FOD

## The ‘Final Five per cent’

A fifth of the UK’s population lives outside of towns and cities, and almost all are desperate for better broadband connectivity. To close the ‘digital divide’, the government is spending 10 times more on rural broadband compared to its SuperConnected Cities programme. The investment is being made almost exclusively through BT, but there is growing suspicion that the firm might not deliver what residents expect from the £1.2bn Broadband Delivery UK scheme.

Earlier in June, the government announced plans to spend up to £10m on a set of “innovative” pilot projects that, if scaled up, might ensure the ‘Final Five per cent’ gets the same broadband speeds at the same price as urban users (for a list of the projects see [networkingplus.co.uk](http://networkingplus.co.uk)).

David Cameron has acknowledged that access to high speed broadband is no longer a luxury but a “necessity” for rural areas. Starting a small business is how people survive in such areas. According to the Office of National Statistics, in January this year there were 486,000 rural businesses employing 3.1 million people. It says the number of registered business per 10,000 people was 655 (in urban areas the figure was less than half that). But they were almost all tiny – 93 per cent in a “sparse rural setting” had fewer than 10 workers.

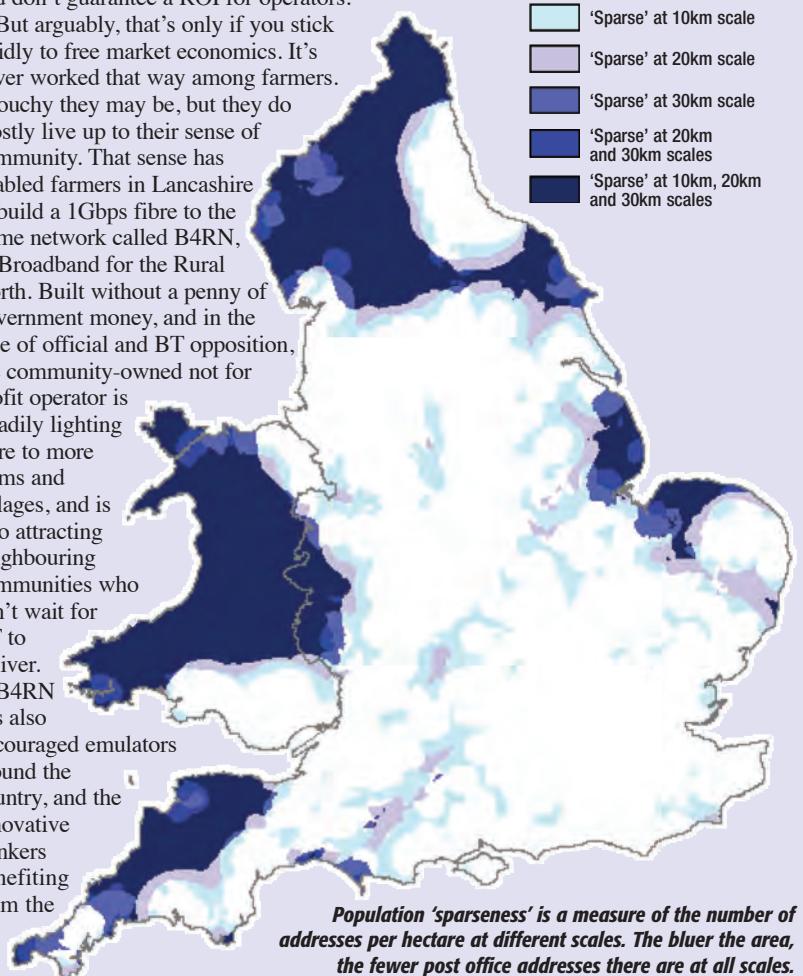
On average, sparsely populated urban businesses’ gross turnover is £93,000 more than their country cousins, but productivity in rural areas is higher: Average turnover in sparse villages was £76,000 per employee; in sparse towns it was £63,000. Even so, total sales of rural businesses were less than 10 per cent of that of urban businesses.

Therein lies the network builders’ quandary. The demand for high speed communications is unquestionable, as is the impact it could have on rural productivity and economic growth. But rural communities are more expensive to reach and don’t guarantee a ROI for operators.

But arguably, that’s only if you stick rigidly to free market economics. It’s never worked that way among farmers. Grouchy they may be, but they do mostly live up to their sense of community. That sense has enabled farmers in Lancashire to build a 1Gbps fibre to the home network called B4RN, or Broadband for the Rural North. Built without a penny of government money, and in the face of official and BT opposition, the community-owned not for profit operator is steadily lighting fibre to more farms and villages, and is also attracting neighbouring communities who can’t wait for BT to deliver.

B4RN has also encouraged emulators around the country, and the innovative thinkers benefiting from the

new government money. But it takes brave people to invest knowing that they might end up competing with BT, especially when they find the official dice, by fortune or design, still loaded against them.



*Population ‘sparseness’ is a measure of the number of addresses per hectare at different scales. The bluer the area, the fewer post office addresses there are at all scales.*

SOURCE: PETER BIBBY, DEPARTMENT OF TOWN AND REGIONAL PLANNING, UNIVERSITY OF SHEFFIELD

connection fee is now £750, line rental is £1,188 per year, and there is also a “distance charge” to cover the link between premises and the nearest aggregation point that ranges from £350 up to 200m to £6,125 for 2km. Prices for longer runs are on application, but BT says 96 per cent of premises are within 2km of an aggregation point.

Some critics accuse BT of raising the price to eat up the money from the SCC voucher scheme. But Analysys Mason’s Wood reckons it’s more likely due to the telco trying different things to see where the demand lies. He says possible large traffic clients include business parks and new residential developments.

BT’s dominance of the fixed infrastructure provides both a base and a pricing umbrella for other network operators.

VMB’s Smith says: “The UK market is one of the most competitive in the world offering great value; as such [SCC has had] minimal impact on the price for internet connectivity. Within the bounds of the scheme, bespoke tariffs are being created by suppliers to allow SMEs to really make the most of the voucher scheme.”

Shenkin adds that Hyperoptic has been able to connect some voucher customers for as little as £300. “We’re not looking to take advantage of the scheme. So we pass back to the business costs that are true and accurate, and reflect the costs we would incur for bringing that connection to them.”

The SCC voucher scheme is allowing Hyperoptic and others to think in wider terms. Shenkin says the firm is targeting business parks as well as smaller, mixed

use dwelling/business units. For instance, Hyperoptic now offers a company located in a business park or a mixed use building a 100Mbps service for £350 per month. If customers are prepared to share their bandwidth with others on the site, their monthly rental comes down substantially. But Shenkin points out that the decrease is not proportional to the number of sharers because Hyperoptic incurs extra management costs.

CityFibre is also thinking laterally. The dark fibre network builder has just added Coventry to its footprint of Bournemouth, York and Peterborough. Commercial director Mark Collins says a joint venture with ISPs TalkTalk and Sky in York and other cities aims to explore the viability of alternatives to Openreach for fibre

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infrastructure for homes and businesses. TalkTalk also has a carrier deal with fast-growing US-based wholesale network operator Zayo (*News*, p2) which recently bought dark fibre specialist Geo Networks (*News*, May 2014). Through Zayo, TalkTalk will have access to FibreLink, the Welsh government's £30m network that serves business parks in North Wales, and which is threatened by BT's part taxpayer-funded Superfast Cymru rollout. The issue is presently the subject of a complaint to the European competition authorities.

CityFibre has just raised £30m on top of its initial £16.5m from its January IPO to fund its Gigabit Cities programme. Collins says the firm is now "fully-funded" to build fibre backbones in more than 20 cities, and pass more than one million homes, business and public sector sites by 2016.

Key to CityFibre's plans is to first get city councils on board and then large users such as ISPs and mobile network operators. It should be easy: the mobile operators are keen to roll out small cell technology (which use LTE and Wi-Fi) to offload and backhaul mobile phone traffic. Vodafone has already complained about the cost of renting BT's lines and the growing shortage of microwave spectrum. It bought Cable&Wireless for £1bn to acquire its own fibre capacity and avoid a squeeze from BT.

Collins says these candidate customers don't see BT's FTTC network delivering what they or their customers want. "VULA (virtual unbundled local access) effectively re-monopolises [local] access. Customers don't have as much control as they do over local loop unbundling. With GEA or VULA they are much more under the control of BT. There is also a concern that they can be price-squeezed – TalkTalk has been vocal about that."

In fact, Ofcom has now dismissed a TalkTalk complaint against BT, but agreed to consult on BT's margin pricing activities to ensure it does not abuse its monopoly in local access (*News*, p2).

Another operator exploiting wireless for metro networking is UK Broadband. Ofcom is presently consulting on giving the PCCW subsidiary a permanent licence for its 124MHz holding of 3.4GHz spectrum, on which it has built its new TD-LTE-based high speed connectivity product, *Relish*.

UKB chief executive Nicholas James says the request for an extension of its licence is a normal part of his long-term planning. "Our 4G licence is now the only one that has not been extended indefinitely by Ofcom. We are pleased the regulator has now recommended bringing UK Broadband's licence into line with the rest of the market and recognised that doing so will promote competition and encourage investment and innovation in the UK."

UKB has registered as an SSC supplier, so for now central London SMEs can get vouchers for a dedicated wireless connection at speeds ranging from 20Mbps to 1Gbps with a 4:1 down:up speed ratio. Mobile users can access the network via a pocket hub. UKB promises next day delivery to home and SME users, and a dedicated link within 10 days.

James claims that *Relish* offers a real alternative for customers that have suffered slow speeds, setup delays and are forced to buy landlines they do not want. He is referring to research UKB commissioned prior to launching *Relish* that revealed London SMEs resent having to rent a voice service in order to access broadband, and that most residents and SMEs could live without one. James reckons this "landline tax" costs residents and SMEs £156m and £37m a year respectively, adding landline charges had risen almost 70 per cent in 10 years – far quicker than inflation.

## The need for speed

Collins, Rennicks and Shenkin note the need to cultivate demand. All agree that DCMS has proved more flexible than one might have thought. Originally, the SCC scheme required two quotations from ISPs. This was a barrier for SMEs. Following talks, the government relented, breaking the logjam. VMB's Smith says: "It's encouraging to see the pragmatic response from DCMS who have constantly listened to the market and responded through the early stages of the scheme. There have been some important changes since the scheme launched, all geared to making the process smoother for those businesses applying."

Smith claims VMB has been at the forefront of the scheme, working with all participating cities to help SMEs benefit

from the money on offer. But what's in it for such firms? True, they get £3,000 towards connection costs, but usage costs can dwarf that. Smith says the connection contribution can make a "tangible difference" to how a company operates. "Many local businesses have already reported stronger growth and smoother day-to-day operations following a successful application."

One such firm is Croydon-based DMC Business Machines which sells printers, copiers, scanners and consumables nationwide. It was one of the first applicants and used its voucher to upgrade from a 10Mbps ADSL broadband line to a 30Mbps symmetrical connection from VMB. DMC IT manager Kevin Streatfield says the firm had maxed out its 10-meg line: "On average we're using 25-30 per cent of the new pipe throughout the day,

but it's early days. I sleep better at night knowing we are not bumping up against a capacity ceiling."

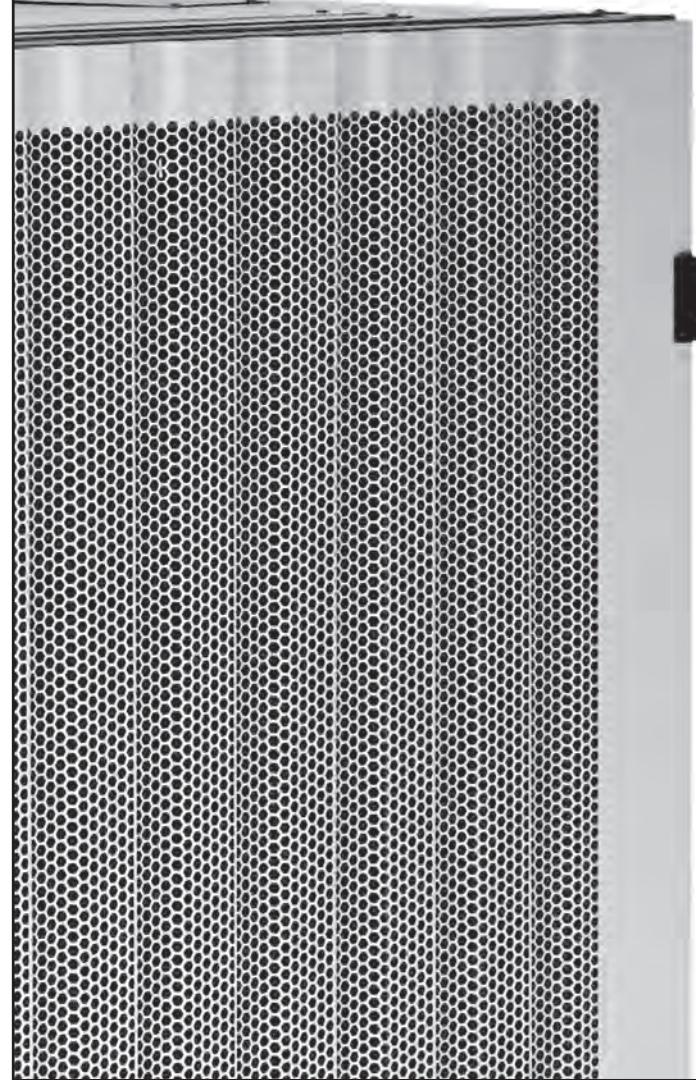
"What's more, we are at the cutting edge of the Internet of Things. The business machines we install on client premises increasingly tell us about whether they need a service, have a fault or simply need some new toner. The DMC mothership needed more bandwidth to cope with the smarter business machines on client premises."

Streatfield adds that for his firm, it's all about the uploads: "The marketing guys might view videos online and upload ours to YouTube, but mostly it's about our engineers, sales people and customer service reps uploading data to our enterprise systems. Having a symmetrical connection makes all the difference rather than an old ADSL one." ■

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## off-the-shelf: voice systems

# Calling all businesses

**Phones are essential in any organisation. Here are some of the latest enterprise class devices designed to help improve productivity.**

**Alcatel-Lucent** says its latest range of desk phones offer high quality audio and practical features to give employees a "high quality communications experience".

Available with IP or digital technologies, the *Premium DeskPhones* feature improved wideband audio quality that is claimed to make the calling parties sound as if they are seated in the same room, with no compromise in voice clarity in either direction.

The *IP Premium DeskPhone* models include the 8068 (*pictured*), 8038 and 8028. Each is said to offer rich IP communications, and have two GbE Energy Efficient ports, one of which supports PoE. The two models in the *Digital Premium* series are the 8029 and 8039.

All five have an integrated alphabetic keyboard, backlit display, dedicated function keys, and a navigator that is said to enable users to reach out faster to contacts and efficiently control comms.



The *C3 VoIP-150* from **Cambium Networks** is designed to connect analogue telephones to a digital VoIP system. The adaptor has two voice ports that support separate phone lines, thereby connecting legacy telephones to IP-based networks. Cambium says that secure and automated

provisioning using HTTP/HTTPS/TFTP allows flexible configuration and provisioning options.

The *C3* is equipped with dynamic network monitoring which is said to cut jitter artefacts such as packet loss and therefore results in clear and interference-

free voice quality. Other features include three-way conferencing, call hold and call forwarding.

Cambium says that the adaptor's "comprehensive" voice codecs support G.711, G.722, G.723 and G.729A/B, enabling compatibility with different VoIP platforms.

It also claims that the *C3* ensures the highest priority for voice transmission, ensuring "excellent" audio quality for service providers, enterprises, operators and WISPs deploying the turnkey solution.



In addition, Cambium says that the adaptor "easily and economically" bridges the gap between its existing equipment and standard telephones, and connects via a PoE interface.

**Revolabs** has unveiled its *LX UC 1000* IP conference phone with SIP call and USB audio support. The company reckons it provides UC users with a complete collaboration solution for conference calls, desktop audio, and PC communication tools all within a single audio device.

It's claimed that the *LX UC 1000* ensures "astounding" audio capture and delivery via premium tweeter and midrange speakers, four microphones, an ultra-wide frequency response, and full-duplex technology.

To push audio quality even further, the device is said to have an increased frequency range up to 20,000Hz, and its four mics and integrated echo cancellation aim for best-in-class audio pickup.

The *FLX UC 500* features a dialler with a 3.5-inch colour display, while USB support allows connection to a laptop, PC,



etc, for use with applications such as *Lync*, *Sametime*, *WebEx*, amongst others. It also functions as a bridge for joining IP phone calls with USB audio applications.

Also available is Revolabs' *FLX UC 500* which has the same aesthetics and audio quality but without SIP support for users requiring only desktop audio functionality.

interaction for both speaker and listener, enhancing efficiency and the quality of collaboration in and between organisations.

Other features include dual talk function for natural conversation flow, echo cancellation for cleaner sound, and even a dedicated music setting for "relaxing between calls". A protective carrying pouch is also supplied.

The *SP 20 ML* has a battery that can be recharged via USB in around 2.5 hours to give a talk time of up to 20 hours. An LED indicator as well as voice prompts warning about low battery levels mean users can always ensure that they have sufficient time to talk.



**Snom Technology** says its *Lync* qualified phones can now be provisioned directly from *Lync Server*.

According to the German-based IP handset specialist, until now mass provisioning of *Lync* qualified phones has been "time consuming and expensive". It says that other IP phone developers require additional infrastructure elements such as DHCP servers or third-party equipment to provision such devices.

The firm claims its solution overcomes a major configuration and customisation challenge for customers deploying *Lync* with voice. Snom UC edition phones such as the 720 (*pictured*) can be managed natively via *Lync Server* without the need for additional servers or provisioning tools.

The firm's UC devices leverage an integrated *Lync*



Find out more: [gbr@rdm.com](mailto:gbr@rdm.com)

\* Source: Watson & Fulton

\*\* Source: Frost & Sullivan

**R&M**

# Skills shortage hits three in four IT departments

Almost three-quarters of IT leaders can't get staff with the necessary skills and experience they need, according to new research commissioned by Reconix, the open source and cloud service provider.

Only 12 per cent of those responsible for filling technology-related positions believed that there were sufficient candidates skilled enough for the jobs on offer. This view is in stark contrast to that of 82 per cent of current technology students and graduates who remain positive with regard to employment prospects.

Reconnix's Gap Years study surveyed 100 UK-based IT leaders and compared their answers with those from 200 technology students and graduates. The aim was to aggregate their thoughts on the issues affecting the current IT job market.

The government has spent millions to promote the uptake of STEM (science, technology, engineering and mathematics) subjects at second and third level, but the report identified a number of key technical areas that face a skills drought. Web application development (38 per cent), internet and networking (36 per cent), and data analysis (34 per cent), were all highlighted as talent blackspots for employers.

Service desk roles proved more alluring to students and graduates with server support (38 per cent) and desktop support (34 per cent) being the two most popular preferences. In contrast, only 18 per cent of students were considering careers in either data analysis or networking. Employers find these the hardest areas to fill, and also suggests there needs to be more emphasis on nurturing skills with the potential for higher value creation such as development.

"The technology sector is currently facing a massive challenge in finding the properly qualified staff it needs to grow," says Reconix CEO Pat Nice. "The UK tech sector has been one of the darlings of the economic recovery, but its full potential will not be reached as long as companies face difficulty in filling key technical positions."

Nice adds that the optimism shown by current students and graduates was encouraging after years of uncertainty, but warns that in reality many are not at the level employers expect: "Graduates are leaving university with a broad understanding of technology but lacking critical skills that employers actually require. Employers need to take a more hands-on approach to help develop talent in the industry, whether this is working more closely with education establishments or directly training through apprenticeship programmes."

Among the reports other findings, bosses and students agreed that remuneration is the main motivator for careers in technology. Fifty four per cent of employers highlighted salary as the biggest factor in career choice, while 43 per cent of students and graduates admitted to being motivated by money. But a passion



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for technology and innovation was a close second at 41 per cent.

Many of those surveyed also said that the standardisation of technology-related qualifications can benefit the industry. More than half (56 per cent) of employers want to see professional training standards developed further, while two-thirds of IT students and graduates believe standardised awards will make it easier to find work. Fifty-four per cent of employers also believe businesses should foot at least a part of the training bill.

## NEW COURSES

### Intensive wireless training plus IEEE WCET exam – ComSoc

The IEEE Communications Society (ComSoc) is offering a two-for-one package that combines its five-day intensive wireless

training course with the 2014 autumn IEEE wireless communication engineering technologies (IEEE WCET) certification exam.

Led by ComSoc consultant Alan Bensky, the five-day course has been developed to provide a comprehensive overview of wireless network designs, services and operations. It covers all seven areas of testing in the WCET exam, including: RF engineering; access technologies; network and service architecture; network management and security; facilities infrastructure; agreements, standards and policies regulations; and basic knowledge.

ComSoc's offer includes the five-day course and the IEEE WCET exam which runs from 6 October to 1 November 2014 at testing centres worldwide. The courses are taught online via *WebEx* from 14-18 July and then again from 22-26 September. [www.comsoc.org/training](http://www.comsoc.org/training)

### Autumn-Winter 2014 telecoms courses – Telecoms Academy

Informa's Telecoms Academy has published details of its vendor-neutral courses to be held from August to December 2014.

The extensive portfolio includes a variety of programmes including university accredited and distance learning courses.

For example, its Faculty of Telecoms Business offers the *Postgraduate Certificate in Telecoms Management, Commercial Aspects of Telecoms and Telecoms Business Skills*, amongst others. The Faculty of Technology and Engineering offers more in-depth study as part of its Telecoms Foundation Programmes. Among the courses here are *Technologies Explained* and *LTE and Advanced Communications*.

More details at [www.telecomsacademy.com/form-complete-telecoms-training-catalogue/](http://www.telecomsacademy.com/form-complete-telecoms-training-catalogue/) (registration required).



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