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# **VIEWPOINT** By Phil Alsop, Editor

DEI- time to make a difference

OF ALL THE NEWS items to have arrived in my inbox in recent times, I think the story which came in under the headline 'Do men in tech recognise gender inequality yet?' is the most interesting. The news story covered a survey in which, asked if they agreed that men and women are treated equally within their own organisation, the men surveyed overwhelmingly (80%) said 'Yes'.

Responding to this finding, the Chairman and CEO of the company which carried out the survey, James Lloyd-Townshend observes: "I have to say, the results are startling. I'd love to know what percentage of the men who feel there's no gender inequality in their organization have reached that conclusion through actual conversations with the women in their workplace. It's common for those who don't experience inequality to ignore or deny its prevalence. What we need is more engagement, observation, listening – and ultimately allyship, from men in tech."

Over the past couple of years, I have conducted quite a series of video interviews with women working in the IT industry and I think it's safe to say that, without exception, they all find that, in various ways, equality has yet to become the norm – although they pretty much all agree that the workplace has improved significantly when it comes to DEI as a whole.

The disjoint between what men think and what women actually feel and experience explains why there's still a way to go when it comes to workplace equality. And this matters for a number of reasons.

Firstly, in the 21<sup>st</sup> century, it is simply unacceptable to have different groups of people treated differently within the workplace based on their race and/or gender. Secondly, at a time of a growing skills crisis within the IT industry, it makes no business sense whatsoever to



discourage (however unconsciously) half the potential workforce from joining and/or developing a career within a tech organisation.

Thirdly, if an organisation's workforce is not truly representative of its customer base (assuming the company wants to sell to as wide an audience as possible), then there's every chance that the products and services it develops will not appeal to significant groups of potential customers.

As with sustainability, it may well be that, as the younger generation brings its more enlightened attitudes (to most things) into and up the workplace hierarchy, the DEI situation will naturally improve over time. But it would be great to think that more and more of the mature 'leopards' working in the industry can be persuaded to

change their spots in the mean-time, even if only because of the extra commercial advantage it will bring the organisation.

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Global UCaaS market to reach over 131m users by 2028





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MSP-Channel Insights is published six times a year on a controlled circulation basis in Europe, Middle East and Africa only. Subscription rates on request. All information herein is believed to be correct at time of going to press. The publisher does not accept responsibility for any errors and omissions. The views expressed in this publication are not necessarily those of the publisher. Every effort has been made to obtain copyright permission for the material contained in this publication. Angel Business Communications Ltd will be happy to acknowledge any copyright oversights in a subsequent issue of the publication. Angel Business Communications Ltd. © Copyright 2024. All rights reserved. Contents may not be reproduced in whole or part without the written consent of the publishers. ISSN 2396-9016 (Online)

Angel 🐼

#### **NEWS IN FOCUS**

# AI, security, and sustainability - major drivers for IT modernisation

CIOs increasingly prioritising hybrid IT strategies to manage complexity of running applications and data across clouds.

NUTANIX has released the findings of its sixth global Enterprise Cloud Index (ECI) survey and research report, which measures enterprise progress with cloud adoption. This year's ECI report revealed the use of hybrid multicloud models is forecasted to double over the next one to three years as IT decision makers are facing new pressures to modernise IT infrastructures because of drivers like AI, security, and sustainability.

As organisations continue to grapple with the complexities of moving applications and data across environments, the ECI report highlighted the growing importance of hybrid multicloud infrastructure. The report found that security and innovation were the top drivers for moving applications from one environment to another over the past year. As AI takes centre stage for businesses, ECI respondents identified increasing investments to support AI strategy as their #1 priority, followed closely by investment in IT modernisation.

"Whether it be because of AI, sustainability, or security imperatives, IT organisations are facing ever-increasing pressure to modernise their IT infrastructure quickly," said Lee Caswell, SVP, Product and Solutions Marketing at Nutanix. "80% of ECI respondents are planning to invest in IT modernisation, with 85% planning to increase their investments specifically to support AI.

What this year's ECI reveals is that organisations need to support the technologies of tomorrow by future proofing their IT infrastructure today. Hybrid multicloud continues to emerge as the infrastructure standard of choice because of the flexibility it provides to support traditional VM and modern containerised applications



and movement between clouds and on-prem."

### Key findings from this year's report include:

Hybrid multicloud infrastructure deployments will become an infrastructure standard. 90% of ECI respondents are taking a "cloud smart" approach to their infrastructure strategy - leveraging the best environment (e.g., data centre, public cloud, edge) for each of their applications. Given the pervasiveness of this approach, it is no wonder that hybrid and multicloud environments have become the de facto infrastructure standard. Furthermore, over 80% of organisations believe hybrid IT environments are most beneficial to their ability to manage applications and data. Most importantly, this is now becoming an executive priority, with nearly half of respondents noting that implementing hybrid IT is a top priority for their CIO.

Ransomware protection is top of mind for both CXOs and practitioners but most organisations continue to struggle in the wake of attacks. Ransomware and malware attacks will remain existential threats to modern enterprises, with the cat-and-mouse game between malicious actors and enterprise security professionals set to continue throughout 2024. Yet, data protection and recovery remain a challenge, as 71% of ECI respondents who experienced a ransomware attack reported taking days or even weeks to restore full operations. To help address this, 78% of organisations say they plan to increase investments in ransomware protection solutions throughout this year.

As organisations seek equilibrium driven by security and innovation, application and data movement remains a complex challenge. Enterprise workloads – including their applications and data – often find their way into the IT environment which best suits their needs, whether that environment is an on-premises data centre, the public cloud, a smaller edge location, or a mix of all three. This diversity of application placement is part of the reason why 95% of ECI respondents say they moved applications from one environment to another over the past year, with security and innovation as the top drivers for this movement. Enterprises should expect application and data movement to remain constant, and plan infrastructure choices accordingly – emphasising flexibility and visibility. Today, organisations face significant roadblocks when it comes to executing complex application migrations, with 35% of ECI respondents saying workload and application migration is a significant challenge given their current IT infrastructure.

IT teams aren't just planning their sustainability programs, they are actively implementing them starting with IT modernisation. 88% of ECI respondents agree that sustainability is a priority for their organisation. However, unlike in the previous report where action was limited, many organisations indicate they are already taking active steps to implement sustainability initiatives, with the most common being modernising IT infrastructure. This is a fascinating result, and one that shows the direct impact of IT infrastructure on sustainability.

### Critical operations at risk

War room style incident management is driving IT teams in nearly 50% of organisations to experience burnout.

DYNATRACE has warned that organisations are putting their critical operations at risk by enabling the widespread continuation of a "blame game" culture between their IT teams and third-party service providers. A new survey found that 91% of organisations are still playing the "blame game" with IT service providers when problems occur. This increases the reliance on war-room-style meetings to identify and resolve the cause of problems, which extends the duration of incidents and creates tense workplace environments that heighten the risk of losing skilled talent.

Nearly half (49%) of IT teams have been left feeling burned out by war rooms, 46% have missed personal time during evenings and weekends, and one in five (21%) have considered a change in job role or career due to added stress. If these trends continue, organisations could be putting their critical operations at risk, as they find themselves with a shortage of skilled developers and operations professionals to deliver digital services and accelerate innovation.

"War rooms are an extremely negative approach to resolving problems, and against the backdrop of continued skills shortages, can significantly deepen resourcing challenges for many organisations," said Rob Van Lubek, Vice President, EMEA at Dynatrace. "What looked like 'business as usual' five years ago is no longer acceptable for many IT professionals, who reassessed their work-life balance during the shift to hybrid working.

The high-stress environment of war rooms and the looming threat of emergency conference calls at any hour of the day can lead to a disenfranchised and disengaged workforce that is constantly on the lookout for their next employer."



Reliance on siloed monitoring tools and manual processes within many organisations amplifies the challenges inherent to war rooms. Less than a third (29%) of organisations say teams use a single platform and the same data to monitor and manage digital services. This means everyone is working from their version of the truth, which fuels the cycle of blame between teams. As a result, these teams are more reluctant to take ownership of problems, which increases the risk that incidents take longer to resolve or, worse, are ignored entirely.

"Organisations need to transform the way their teams work and collaborate, both internally as well as with third parties," continued Van Lubek. "The best way of enabling a culture of collaboration across IT, business, development, and security teams is to adopt a unified observability strategy that provides a single source of truth that teams can use to make decisions and work cross-functionally. This approach helps teams become more proactive in their incident response. In addition, embracing advanced Al and automation as part of this approach helps streamline processes by eliminating manual triaging and equipping teams with solutions to diagnose and resolve problems before they become crises. This significantly reduces stress, eliminates wasted spending, and boosts productivity, allowing teams to spend less time in war rooms and more time innovating."

The high-stress environment of war rooms and the looming threat of emergency conference calls at any hour of the day can lead to a disenfranchised and disengaged workforce that is constantly on the lookout for their next employer

#### **NEWS IN FOCUS**

### 82% of firms pressing ahead with investment in Al

A lack of organisational expertise and lagging regulation could hamper AI adoption, according to workforce transformation experts, Orgvue.

RESEARCH from Orgvue shows that businesses continue to ramp up investment in AI despite being unclear on its business impact or how to implement it. 82% of organisations have already invested, with another 33% saying they will increase this by more than 50% in the coming year.

Based on an international survey of 1,000 C-suite and senior decision makers at medium and large organisations, the report, Human-first, machine enhanced: the role of Al in workforce transformation, highlights contradictions in the business community concerning technology investment and Al's impact on the workforce.

On the one hand, 61% of respondents said they expect AI to replace people in their organisation, with 41% saying they think AI will completely disrupt their industry. A further 69% said that AI will be the main driver of workforce transformation over the next three years. On the other hand, 48% are unsure how they will manage developments in AI to optimise the use of the technology.

Oliver Shaw, CEO of Orgvue, commented: "Organisations are beginning to realise that the practicalities of embedding AI into core business operations is far from simple.

There's a dichotomy between the need for business leaders to prepare for AI entering the workforce, their desire for



change, and the organisation's ability to make this transformation a reality.

"This gap in thinking perhaps stems from a lack of clarity on exactly how AI will impact both businesses and their workforces – indeed the research indicates spending so far is more of a gold rush than a carefully plotted journey. This will also make managing the transformation all the harder."

"Business leaders are excited about Al's potential for growth and productivity (79%), but 70% said they have a responsibility to protect the workforce from redundancies before adopting Al and 78% think human intervention is critical to preventing negative outcomes from Al. For this reason, 80% plan to reskill employees to use Al in the workplace. "Similarly, 78% want the government to introduce stricter rules and regulations, while 54% believe regulation has not kept up with the pace of investment in AI and 70% think AI should be regulated immediately."

Shaw added: "Whether it's optimism or naivety, CEOs are confident AI will solve their business challenges. But the data shows that divisional leaders are less convinced on the impact of AI - with a pronounced scepticism at this level over the value AI can bring and how quickly it can realistically be embedded into everyday business operations.

"This is a dangerous position for organisations to find themselves in. A disconnect in perspective – between those at the top, and those responsible for delivery – will ultimately derail any long term plans for business change. "To achieve their AI ambitions, CEOs should arm themselves with a better understanding of how AI will truly impact the work their people do today and the skills their organisation has as well as how this may change over time."

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### Time to take positive action

New research released by Agilitas IT Solutions reveals that confidence in the future of the Technology Channel has reached its peak amongst UK industry decision-makers, with the overall confidence score reaching 7.9 out of a possible 10.

WITH OPTIMISM the highest it's been in five years, Channel leaders are focusing on the areas that matter, including embracing innovation, enhancing the customer experience, and attracting and retaining the right talent. It's promising to see that these factors remain top of mind, in line with the introduction of a Total Experience strategy to achieve consistency across their organisation and create a better experience for stakeholders.

Like many industries, AI is transforming the ways that Channel companies improve their operational efficiencies, with 82% of respondents stating that AI would positively impact their business. However, when it comes to leveraging AI, it fell much lower down the priority list as only 74% stated that they were already adopting AI in their own business strategies.

With this in mind, Agilitas asked respondents how confident they were in their organisation's ability to balance company culture with emerging technologies. Despite the inevitable nervousness within the workforce, Channel leaders ranked their confidence at 7.8 out of a possible 10. Interestingly, 96% of CEOs surveyed were confident, with 48% scoring a maximum of 10 out of 10.

However, this fell significantly at other employee levels, with only 46% of junior managers sharing the same level of optimism.

Disconnects between CEOs and their workforce were noted across a number of factors, including delivering a superior customer experience and Channel companies' ability to achieve a positive workplace culture. This disconnect can stem from communication gaps, differing perspectives on company goals and lack of transparency, which reemphasises the importance of having a clear company strategy and values that employees can relate to.

The Channel has been focusing on driving its sustainability efforts for many years, but the question remains, is progress going fast enough to meet changing consumer expectations and ambitious Net Zero goals? Whilst over 77% of companies stated that sustainability will be a focus for the next 12 months, less than 1 in 5 are calculating their full carbon footprint across scopes 1,2 and 3.

"It is becoming increasingly difficult for Channel companies to prioritise their efforts, with increasing pressures related to emerging technologies, resilient company cultures, sustainability initiatives and the customer experience.

Despite this, it's promising to see many Channel leaders starting to put their strategies into action, and keep pace with the market changes. Our 2024 Channel Trends report aims to help businesses identify the biggest gains, what strategies are being prioritised, and most importantly, whether enough is being done to prosper," commented John Hayes-Warren, CEO of Agilitas.

In partnership with leading research firm, Censuswide, Agilitas surveyed 250 respondents working in UKheadquartered Channel businesses, with an annual turnover of over £5 million. The report is designed to give Channel leaders insights into the current market trends, to aid their decision-making and strategies.



#### **NEWS IN FOCUS**

### Rapid tech expansion creates 'chaos'

86% of organisations have significantly grown their tech landscape but 76% say it's more challenging.

SOFTWARE AG has identified a common challenge caused by the rapid expansion of technology in today's businesses. A new study reveals that 89% of organisations have rapidly expanded their technology in the past few years and three quarters (76%) say it's brought with it increased 'chaos' that they have to manage. This situation makes governance efforts more complex, organisations less agile and can harm core activities including service delivery and productivity.

Dr Stefan Sigg, Chief Product Officer at Software AG. commented: "The complexity that organisations face in today's world of disruption, risk and rapid technology change is greater than ever. It's difficult to get a grip on all of this and be a successful organisation. We see our customers overcoming these challenges by finding the right tools to manage this technology related disorder. What those tools are depends on how the challenges manifest - but there is an answer out there. And for those that find it, they can become more competitive, more efficient, and more resilient."

### The three types of chaos identified as part of this research are:

**Operational Chaos** – where a maze of different processes and systems slow down, duplicate or disrupt day-to-day operations. Overcoming these operational barriers allows organisations to be more competitive, better controlled and more agile. Operational resilience is the prize for organisations that can manage operational chaos.

**Chaos of Connectivity** – where the expansion of systems is done without a plan to properly connect them together. Overcoming this lack of connectivity allows organisations to become more productive, agile, and better governed.



IT Chaos – where the multiplication of different systems is not done in a coordinated way and technology sprawls uncontrolled and unmanaged. Over-coming this IT threat enables organizations to control costs, plan future development and increase operational resilience.

Dr Stefan Sigg continued: "Finding the right tools to manage the portfolio is key. But we should not be just talking about "managing". These technology investments are being made as part of a transformation agenda. Organisations are aiming to differentiate themselves, be innovative and grow. Technology is a critical enabler for most of those plans. Greater transparency and control over the technology landscape will better align the tech and business agendas and set these companies up for success.

#### Key data points:

#### Impact of expansion:

- 69% of organisations have a higher number of disparate applications/ systems compared to 2 years ago.
  71% say that number will be higher in two years' time
- 70% of companies have accrued more Technical Debt in the last year

• Managing legacy and new systems together is mostly complex for 44%

#### Agility issues:

- 80% say that the size of technology infrastructure makes it harder to be agile and/or productive
- The same number (80%) feel complex tech makes them slow to launch new products/services, improve experiences for customers and employees and increase revenue/profitability

#### Governance issues:

- 65% feel that tech complexity makes governance issues worse
- 46% say difficulty moving data out of legacy systems slows down decision making
- 81% say that a major pain point is not having a clear view/management of all systems

#### **Operational issues:**

- 45% say duplicate process that cause internal conflict slows down action
- IT and LoB are in conflict about deploying new apps in 80% of organisations
- 82% of organisations say Shadow IT is a problem

### Security is strengthened by platform engineering

Survey respondents confirm built-in security and compliance are delivered by self-service platforms, along with efficiency and increased developer productivity.

PUPPET by Perforce has published the findings of the global 2024 State of DevOps Report: The Evolution of Platform Engineering. This report follows the continued maturity of platform engineering, with 43% of respondents reporting they have had a platform team for at least 3-5 years.

Since 2012, the annual State of DevOps Report produced by Puppet has reported on trends that impact DevOps success. In 2023, Puppet shifted the report's focus to a trend in the space: platform engineering. Conducting an annual survey from around 500 individuals all working with or on a platform team, the 2024 report focuses on how platform engineering delivers efficiency, speed, and security to DevOps.

#### Key findings include:

Security is being built into the foundation of platform engineering, with far-reaching benefits for organizations who understand that Security is priority one.

- 43% of respondents say that their platform has a dedicated security and compliance team, highlighting the importance of proactive security management.
- Most respondents report that the platform team has helped their company become more compliant.
- 51% of respondents say that platform teams are also responsible or enforcing software and tool versions for security updates.
- Standardized automation unlocks the full potential of DevOps.
- Organizations report an average of 3 self-service platforms operating internally, indicating expansion and maturity since last year's report.
- "Automation," "productivity," and "standardized processes" are cited as the three top use cases that platform engineering helps solve.
- 66% report that automating



workflows and processes "is in scope" for their growing platform engineering teams.

- It's critical that developers are supported by the platform engineering team to do their best work.
- 52% say that a product manager is crucial to the success of the platform team.
- Respondents cite "increased productivity," "better quality of software," and "reduced lead time for deployment" as the top benefits that the platform team has delivered for developers.
- 65% of respondents report that the platform team is important and will receive continued investment.

"With the expanded scope of platform engineering, we're seeing security become a critical component of platforms from the start," said Kapil Tandon, VP of Product Management at Puppet by Perforce. "Security is everyone's responsibility, but it's notable that platform engineering has become a larger part of this critical work." As the number of self-service platforms increase, the report also shows that most functions have moved onto a platform of their own — especially the security function "Platform engineering continues to enhance DevOps, and we are now seeing the impact on security and productivity." Tandon continues.

With the expanded scope of platform engineering, we're seeing security become a critical component of platforms from the start. Security is everyone's responsibility, but it's notable that platform engineering has become a larger part of this critical work

### Organisations bullish on AI adoption

Research by Fivetran and Vanson Bourne highlights the importance of data quality and addressing the AI skills gap.

FIVETRAN has published the results of a survey which shows 81 percent of organisations trust their AI/ML outputs despite admitting to fundamental data inefficiencies. Organisations lose on average six percent of their global annual revenues, or \$406 million, based on respondents from organisations with an average global annual revenue of \$5.6 billion (USD).

This is due to underperforming AI models, which are built using inaccurate or low-quality data, resulting in misinformed business decisions.

Conducted by independent market research specialist Vanson Bourne, the online survey polled 550 respondents across the US, UK, Ireland, France and Germany from organisations with 500 or more employees. It found that nearly nine in 10 organisations are using AI/ ML methodologies to build models for autonomous decision-making, and 97 percent are investing in generative AI in the next one to two years.

At the same time, organisations express challenges of data inaccuracies and hallucinations, and concerns around data governance and security. Organisations leveraging large language models (LLMs) report data inaccuracies and hallucinations 42 percent of the time.

"The rapid uptake of generative AI reflects widespread optimism and confidence within organisations, but under the surface, basic data issues are still prevalent, which are holding organisations back from realising their full potential," said Taylor Brown, co-founder and COO at Fivetran. "Organisations need to strengthen their data integration and governance foundations to create more reliable AI outputs and mitigate financial risk."

### Different "AI realities" exist across various job roles

Approximately one in four (24 percent) organisations reported that they have reached an advanced stage of Al adoption, where they utilise Al to its full advantage with little to no human intervention. However, there are significant disagreements between respondents who work more closely with the data and those more removed from its technical detail.

Technical executives – who build and operate AI models – are less convinced of their organisations' AI maturity, with only 22 percent describing it as "advanced," compared to 30 percent of non-technical workers. When it comes to generative AI, non-technical workers' high level of confidence is coupled with more trust, too, with 63 percent fully trusting it, compared to 42 percent of technical executives.

### Global UCaaS market to reach over 131m users by 2028

THE GLOBAL Unified Communications as a Service (UCaaS) market is set to grow to over 131 million users by the end of 2028, with a compound annual growth rate (CAGR) of 10.3% over the next five years, according to new research released today by Cavell.

Cavell's set of 2024 Cloud Comms Market Reports surveyed over 100 service providers across the UK, Europe and US. The latest findings also reveal that mobile UCaaS services are growing in importance, now accounting for over 15% of the market.

However, the total available market is reducing because the same number of on-premise PBX (private branch exchange) users are not moving to become cloud PBX users. Instead, many enterprises are putting some or all their employees on collaborationonly licenses without an external PSTN (public switched telephone network) functionality.

Other key findings revealed by Cavell's latest set of Cloud Comms Market Reports, which have been a well-respected and utilised resource amongst the telco industry for over 17 years now, includes:

- 62% of providers are diversifying their portfolio to ensure the resilience and adaptability of their telecommunications business
- 48% are building AI capabilities into their products - to drive cost reduction in operators businesses
- A third (33%) of users will be Microsoft Teams voice enabled by the end of 2028

Cavell has also noted a reduction in both margin and revenue streams relating to traditional cloud communication and UCaaS services for more than 36 months now. This has been acknowledged by more than 40% of respondents in the latest research who have recognised a decrease in UCaaS revenue.

Dominic Black, Director of Research Services at Cavell, commented: "Historically, providers won new users by migrating from on-premise solutions. However, as the market has matured this has changed as there are fewer onpremise deployments to migrate.

This will drive more competition and the need for providers to differentiate whilst also potentially starting pricing consolidation.



### Meet the innovative APC Smart-UPS™ Ultra that's driving the future of uninterruptible power.

The most sustainable UPS of its kind, the Smart-UPS Ultra is now available with improved battery life. The world's most popular UPS is now available with a compact design and improved battery life.

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### **RMD** and **Schneider Electric**

add an edge to education at the University of Lincoln

Established 25 years ago, the University of Lincoln is highly dependent on SaaS applications for operational efficiency and to deliver a great student learning experience. Schneider Electric's next-generation APC Smart-UPS SRT UPS ensure campus-wide resilient IT services and connectivity. The university's network team is supported by leading physical infrastructure solutions including Schneider Electric APC Smart-UPS, EcoStruxure IT and Data Centre Expert software, with installation, upgrade and maintenance services delivered by its Elite Data Centre Partner, RMD UK.

### BY MARK YEELES, SCHNEIDER ELECTRIC AND DARREN COY, UNIVERSITY OF LINCOLN

ESTABLISHED around 25 years ago, the University of Lincoln is one of the newest centres of academia in the UK. Charged with enriching the city's economic, social and cultural life, the university has been adding new buildings to its city-centre campus at a rate of around one per year since inception. Listed in the world's top 130 in the Times Higher Education's (THE) Young University Rankings 2022, today it is also one of the top universities for student satisfaction.

The main university campus is situated in one of the world's great historic cities, in the heart of the city of Lincoln. Today Lincoln is a winning combination of old meets new, where remnants of Roman Britain and a Norman castle and Cathedral Quarter, lay alongside a vibrant city square and the contemporary architecture of the university's campus buildings, providing both student accommodation and housing for its Arts, Science and Social Science colleges, as well as an International Business School.



To date, the university has constructed or acquired 25 buildings at a rate of approximately one per year, recently opening a substantial new student village. In terms of its significance to the local economy, out of every five people you might stop in the streets of Lincoln City, one is likely to be studying at the university where just under two hundred different courses are offered (independent numbers suggest 18,000 students of a total 103,000 urban population).

As an academic institution which has more or less been conceived and grown up in the Internet

Age, its student population is tech literate and the university depends heavily on IT to support the many faces of college life. For example, the campus has become largely cashless in recent years. "You can't buy a cup of coffee or a sandwich if the IT isn't working," said Darran Coy, senior infrastructure analyst and team leader for the Compute and Storage team at the university. "Everything has to work 24 x 7."

With IT and network uptime critical for the function of the university, the university's IT team supports a variety of services, some of which require large amounts of data storage and processing. For instance, at Lincoln Agri-Robotics (LAR), established at Lincoln University as the world's first global centre of excellence in agricultural robotics, lightweight robotic vehicles are sent into fields for a variety of tasks, using image recognition in applications from the identification and eradication of pests and diseases in real time without synthetic pesticides, to monitoring, weeding and harvesting crops.

Elsewhere, Darran Coy says many of the standard applications used by students and the university itself have moved to a Software as a Service (SaaS) or cloud-based delivery model. Accordingly, downtime is a luxury the university simply cannot afford. "In times past we could arrange to shut down IT systems on, say, a Thursday morning to carry out essential maintenance and upgrades, and of course our weekends were completely free," he said. "But today many of our buildings are open all day and every day. So we have to make sure that everything is up and running all the time."



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#### COVER STORY

#### The challenge of reliability at the edge

"We open a new building nearly every year," said Darran Coy, "and each one needs its own comms room. Despite the fact that we operate a central data centre, each comms room is populated with IT racks including servers and networking equipment together with all the necessary supporting infrastructure including cooling, structured cabling, power distribution (PDUs) and power protection. It is the epitome of edge computing."

These edge environments, distributed across the city centre campus and satellite campuses at Riseholme and Holbeach, provision wi-fi connectivity enabling access to SaaS applications required by students and staff. These edge facilities are therefore mission critical to academic and backoffice operations. Each person has a unique IP address, allowing them e.g., to print documents and materials. Even those studying traditional subjects like Geography and Music use as much technology as the Computer Scientists according to Coy.

"We have something like 1000 teaching groups that rely on AV, for example – they've got big screens, sound systems and digital projectors, all kinds of cool stuff to enliven lectures and make information more consumable." And the university is also a major user of Power over Ethernet (PoE). "All of our access points use PoE," continued Darran Coy. "And it's also used to power other assets such as Raspberry pi operated digital information displays widely used around the campus and security cameras. PoE requirements increase the need for reliable power in all situations."

Like many universities, Lincoln works with outside companies on research projects as well as providing incubation services for innovations which may have wider market appeal. These sorts of activities are income generating for Lincoln, and therefore the IT which supports them needs to be robust and demonstrably resilient.



Power reliability is therefore a major challenge for the university. Given its location in a city centre, the utility is generally dependable and since prolonged power blackouts are not seen as a major threat, there is no provision for secondary power generation to any of the university facilities.

However, intermittent disruptions do occur to the mains power supply and there are occasional 'brownouts.' Taken together, these are recurring problems which could present a threat to continuous uptime.

Consequently, the university depends heavily on uninterruptible power supply (UPS) systems to build resilience into its network. UPS systems provide battery backup in the event of a disruption to mains power so that essential functions can continue operating as normal until mains power is restored. Given the distributed nature of the edge IT infrastructure around the college, there has been a substantial is a wide variety of UPS systems in place. Currently, there are 110 APC Smart-UPS SRT Units from Schneider Electric providing backup to essential assets.

Given the lack of power generating equipment at the university, UPS are specified with battery systems to deliver one hour's runtime for the attached load. It had been the custom to add UPS support on an ad hoc basis as new buildings were built and fitted out with IT. In the early days, there was no systematic or co-ordinated approach to deploying UPS systems and in fact it was only the loss of expensive IT equipment in the early days which made their use standard.

"The distributed edge nature of the university's IT infrastructure in the university and the ongoing expansion with new buildings, together with the growth in dependence upon SaaS and cloud services has sometimes meant that infrastructure has not always kept up with demand. We faced two tasks – the need to maintain and upgrade existing UPS systems to ensure they could deliver the required runtime, and the need to meet the provision of new Schneider Electric UPS and installation services in new construction projects. To help us, we partnered with RMD UK."

### RMD and Schneider Electric are the solution for reliable edge

Darran Coy and team began their relationship with RMD UK over a decade ago, when the Schneider Electric Elite partner won a tender for the replacement of some UPS systems on site. Soon after, the university took the step to implement a programme to ensure regular inspection and maintenance of the UPS devices on which it so dependent. "In many respects, Schneider Electric were a victim of its own success – their APC Smart-UPS units were so reliable and worked so well we hadn't really realised that many of them were well past their use-by date!"

#### **COVER STORY**

Opting for a systematic approach to securing power by contracting with specialist UPS service provider, RMD UK was selected on the basis of an open tender. Based on a variety of single and three-phase UPS systems from Schneider Electric, the approach to maintenance has since become much more proactive. RMD's Scot Docherty said, "Our start point was to understand the condition of the UPS under contract using a simple traffic light scheme – there were a lot of red lights!"

Together, Coy and RMD started to renew the UPS and bring them up to spec. This ongoing programme covers the UPS installed in buildings as well as adding UPS protection to some of the older campus buildings which had never had the benefit of protection. In addition to the maintenance and modernisation services, RMD were also tasked to work with construction contractors to support them with sourcing and the installation of UPS to ensure power protection of edge server rooms in the new buildings.

The expertise of RMD has yielded benefits to the university from procurement of UPS systems to maintenance and replacement, allowing the university to match new UPS systems to the exact requirements needed in each locations. "We've found it useful to involve RMD at the construction phase of each new building," said Coy. "Sometimes a main contractor might recommend a UPS system that is wholly excessive to what we really need. Whereas RMD, which has specialist expertise in the field, is much better placed to recommend what sort of UPS system we need and how many battery packs should be installed. So, it's great to have a relationship which allows us to "right-size" our UPS requirements and therefore keep an eye on the efficiency and effectiveness of the proposed solution."

The RMD relationship has made for a more systematic and regular approach to maintenance. "RMD knows us and our requirements and how we work," said Coy. "Now, instead of waiting until something dies before replacing it, we have an ongoing system of regular maintenance and of replacing batteries and UPS units in accordance with their condition rather than their age."

Two other important measures have been implemented as a result of the relationship. Firstly, the installation of monitoring software; using Schneider's Data Center Expert software, Darran Coy is now able to manage and monitor centrally all elements of the data centre infrastructure, including UPS and cooling, to ensure maximum efficiency and reliability.

Data Center Expert is part of Schneider Electric's EcoStruxure IT data centre infrastructure management solution. It provides a scalable monitoring software solution that collects, organizes, and distributes critical device information to provide



a comprehensive view of equipment. Importantly, the application provides instant fault notifications for quick assessment and resolution of critical infrastructure events that could adversely affect IT system availability.

The software gives Darran Coy's small team of six full visibility of infrastructure equipment spread widely across the campus in different edge locations, with the ability to prioritise remedial tasks in the event of unforeseen circumstances and respond more quickly to events.

Additionally, and further demonstrating how RMD's expertise has benefitted the university, bypass panels as an aid to maintenance and replacement activities are now being installed as standard in the electrical design for infrastructure supporting the edge server rooms . "They're not the cheapest things to put in," said Coy, "But they have saved us a lot of downtime. If a battery fails and needs to be replaced for example, you just flick a switch to bypass the UPS and that allows you to keep IT services operating while you swap out any parts that need to be replaced."

#### Results

Immediate results from the university working with RMD and Schneider Electric include improvements to power availability as well as the serviceability of its infrastructure. By increasing temperature setpoints, the university is saving energy as a first step to moving towards becoming net zero carbon for IT services.

The improved monitoring and maintenance has resulted in a more efficient and reliable powersecurity environment that provides peace of mind to the IT staff and also presents opportunities for improvements in the area of sustainability. The insights made available from the Smart-UPS systems, APC PDUs and APC NetBotz security

#### **COVER STORY**

and environmental monitoring devices, using Data Center Expert software have enabled Coy and the IT team to collaborate more effectively with the University's Sustainability Team, tasked with improving the overall carbon footprint of the campus and its sustainability.

The IT team has been slowly raising temperatures in its comms room—which naturally means using less power on air conditioning—using insights provided by Data Center Expert and custom software written by the IT team: "I can use query data to generate helpful graphs that provide an overview of whether the temperature is right in a room and where it can be appropriate to raise the operating temperature for better overall efficiency," said Coy. "Being able to mine the data allows us only to use the power that we need."

In addition, monitoring using Data Center Expert software together with NetBotz sensors ensures that servers, as well as the UPS batteries are kept within recommended temperatures. This ensures that warranty requirements are maintained, and the batteries are in an environment which maximises their useful lifecycle. Another benefit is that equipment changes can be planned according to their condition rather than their age.

On the recommendation of RMD, physical infrastructure in edge locations is now being

deployed in new builds with bypass switches as standard and upgraded in older installations, improving the efficiency of maintenance operations with no break in IT services.

"We enjoy working with RMD – the site engineers give us straight advice which we've found to be trustworthy. This is backed up by the quality of Schneider's products and solutions. They not only enable us to achieve our reliability goals, they help us deliver a great student experience at the same time meeting the IT service expectations of everyone on campus. Our use of SaaS and distributed computing, powered by secure uptime using efficient and reliable Schneider UPS is winning. Working with RMD and Schneider Electric, we're giving an edge to the education of everyone choosing to enrich their lives studying at University of Lincoln," concluded Darran Coy.

"The modernisation strategy chosen by the University of Lincoln demonstrates why improving the reliability of the IT network goes hand-in-hand with reducing its environmental impact," adds Mark Yeeles, Vice President, Secure Power Division, Schneider Electric, UK and Ireland. "The university now has a more operationally and energy efficient infrastructure system, which importantly, helps towards its target of becoming net zero, and provides a resilient learning environment for future generations of students to further their education."



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# How to solve the IT skills gap in enterprise storage

Day-after-day we hear reports about the IT Skills Gap. Hitting all aspects of IT, the hunt for valuable human resources to execute IT plans of CIOs, CTOs, CISOs and other IT hiring managers has become incredibly onerous.

#### BY ERIC HERZOG, CHIEF MARKETING OFFICER AT INFINIDAT

THE IT SKILLS GAP is widening at such an accelerated pace that many enterprises are falling, regrettably, into a "fret it and can't forget it" mindset. With fewer and fewer qualified personnel and potential candidates for open positions, this gap is creating real challenges to manage data infrastructure, encompassing all aspects of IT from cybersecurity, networks, and servers to containerised applications and enterprise storage.

However, there are solid answers on the storage front to address the IT skills gap – things you won't hear anywhere else. But first, it's important to define and understand the underlying problems that are exacerbating this gap.



Look at the numbers. 75% of IT decision-makers have reported gaps in the skill sets of their IT staff – and this is a 145% increase over the past seven years, according to Skillsoft Research. The Computing Technology Industry Association (CompTIA) reported that six out of 10 large enterprises face a skills gap. Globally, at the end of 2023 the shortage of qualified IT professionals was estimated at 3.5 million people, as cited by AG5 software, a skills gap expert organisation. The cybersecurity skills gap is particularly concerning. As CompTIA mentioned, eight in 10 IT and business executives are at least somewhat concerned with the IT skills gap at their companies. One-quarter (25%) are very concerned.

For those of you trapped in the "fret it and can't forget it" approach to the IT skills gap, some very effective solutions are available. Our company recommends a different approach, coupled with a set of strategies on how to bridge the gap. We believe the answers to the questions about professional IT skills involve a mix of system-level solutions, smart data centre consolidation, the right software and new training approaches.

#### The technology bridge

One effective strategy is to deploy autonomous automation into your storage infrastructure, reducing the level of complexity and decreasing the dependence on specialised IT skills that are becoming harder and harder to find. With the power of autonomous automation, an admin can manage PBs and PBs of storage easily and cost effectively. For example, one of our global Fortune 500 customers in Europe went from 15 people managing >75PBs of storage to only four people responsible for managing storage. In fact, their capacity has actually grown to almost 100PB – still with only four storage administrators, while the other 11 were assigned to other important IT projects.

Thanks to the use of advanced and patented Neural Cache capabilities, we have several public references who report not having touched their storage systems in three or four years. The system can automatically configure itself. It automatically adjusts to changes in performance and new apps. Performance levels are optimised on an ongoing basis autonomously and the storage admin doesn't even need to click a button.

A complementary strategy is to automate the technical support process through Artificial Intelligence for IT Operations (AIOps). AIOps supports scalable, multi-petabyte storage-as-aservice (STaaS) solutions, enabling enterprises to simplify and centralise their IT operations and improve cost management.

The flexibility of capacity and workloads are better managed, powering an increased pace of innovation and supporting digital transformation. AlOps is a dynamic way to simplify IT operations, reduce administrative overhead, and add a predictive layer onto the data infrastructure – all without disruption or compromise.

Neural Cache is a great example of AlOps technology, which provides deep learning capabilities. The longer the Neural Cache runs, the smarter it gets about its current and new workloads. It's as if Neural Cache can be your newest contributor to IT operations. It redefines and reshapes "IT skills." Over time, the simplicity that this level of system operation brings means enterprises can redeploy their resources to more productive IT activities.

A third strategy for shortening the gap is through storage consolidation. Consider this example, of a £17 billion enterprise customer that went from 27 storage arrays from three different vendors to only four arrays. A Fortune 100 customer also reduced their storage infrastructure from 450 floor tiles to only 50 floor tiles, running all the same applications and workloads. This consolidation had many benefits, but one of the key ones was reducing the need for IT manpower. You don't need such highlevel skills with years of experience when the need for IT resources has been streamlined.

Simultaneously, you can reduce IT expenditures – both CAPEX and OPEX. This money can then be redirected to other things, such as AI development projects or training existing IT staff on new skills that will be in demand in the near-term and longterm future. In addition, having larger capacity in the same physical footprint of an enterprise storage system reduces the administrative burden. The implication is that you can do more with fewer IT professionals. Your ROI on the IT infrastructure will shoot up.

According to a study conducted by IDC and published in a recent white paper, the average productivity of storage infrastructure teams increased 48% along with 51% more efficient overall storage management teams. This quantification highlights the key value proposition – simplified management. Participants in the study reported that storage infrastructure teams were able to take advantage of streamlined and user-friendly storage management features to improve productivity. These improvements translated into average annual salary savings in excess of £200,000 for each organisation.

#### The human factor

Channel partners are in an ideal position to help fill the gap for enterprises because they have the high levels of IT skills that enterprise customers are seeking. Furthermore, cloud service provider partners, managed service provider partners, and managed hosting provider partners have essential skills that are packaged as easy-to-buy services. Enterprises should outsource certain functions and tasks to these external partners. All IT skills don't have to be in-house anymore, it is possible to harness the skills of local integrators, consultants, and technical experts.

The Detroit Pistons of the National Basketball Association (NBA) had a game plan to improve its data infrastructure in support of the team's front office, administrative and basketball operations at the Henry Ford Detroit Pistons Performance Center. It is a \$90 million state-of-the-art corporate headquarters and training center in the New Center area of Detroit. The opening of this 185,000 squarefoot facility in the state of Michigan was a trendsetter in the NBA at the time it opened in 2019 All that has been outlined in this article can help you to optimise the way your organisation manages enterprise storage. By finding ways to make the most of IT resources you can change the equation for IT skills going forward. Rather than struggle with a "fret it and can't forget it" mindset, why not adopt a more relaxed, "set it and forget it" approach, taking advantage of advanced solutions available today.

#### Storage in action: The NBA's Detroit Pistons transforms its data infrastructure

The Detroit Pistons of the National Basketball Association (NBA) had a game plan to improve its data infrastructure in support of the team's front office, administrative and basketball operations at the Henry Ford Detroit Pistons Performance Center. It is a \$90 million state-of-the-art corporate headquarters and training center in the New Center area of Detroit. The opening of this 185,000 squarefoot facility in the state of Michigan was a trendsetter in the NBA at the time it opened in 2019. It has emerged as a hub with evolving needs to handle steadily increasing data from new and expanding applications.



The Detroit Pistons is a trendsetter once again – this time transforming its data capabilities, workloads, and applications into a state-of-the-art, automated enterprise storage infrastructure. Key points of the forward-thinking IT leadership plan for the Pistons included: enterprise storage consolidation, dramatically reduced complexity of ongoing storage management, and a path for easy, cost-effective expansion of storage capacity. To execute this dynamic plan of action, the Pistons chose Infinidat as their #1 pick for enterprise storage.

The results that have been generated, such as significant cost savings and a whole new level of efficiency, come from a winning combination of ease of use, high performance, expandability, and green IT. Infinidat and their channel partner Mainline Information Systems worked together to deliver a powerful solution that modernized the Pistons' storage infrastructure and implemented a set-it-and-forget-it approach with autonomous automation. This defines a new IT standard for sports enterprises. "We didn't just want an incremental improvement to our storage capabilities; we wanted a leap forward in how we approach storage, as part of our broader vision for simpler, faster, more cost-effective, more sustainable, more flexible technologies," said Paul Rapier, Vice President of Information Technology for the Detroit Pistons. "Infinidat's enterprise storage solution has proven to be a perfect fit for our data infrastructure. Infinidat's InfiniBox® platform for primary storage manages itself. We don't have to touch storage anymore. Meanwhile, the cost savings and time savings from our pivot to Infinidat keep rolling in. Going forward, we can spend more of our time on other projects."

### The challenge: Complexity, high costs, and limitations

Having too many storage arrays created complexity for the Pistons. The money, resources, and personnel required to manage multiple arrays from three different vendors led to inefficiencies, waste, and rising costs. It was also becoming increasingly difficult for the Pistons to expand storage capacity without adding to the complexity or high costs. The IT team was stuck in a bind.

"Our storage space was limited and as we explored solutions, we looked at additional space and the ease to grow as some of our biggest considerations in searching for and selecting a new storage solution," said Rapier. "We wanted to migrate our data asset management system over to something that gives us more flexibility, provides easier upgrades, and has a longer lifespan. We needed a storage system that can grow with our asset management system."

The team still needed high-performance enterprise storage for their workloads and applications in their massive ingests. At the same time, they needed expandability and a new level of ease of use. Simplifying the storage infrastructure had to be translated into a new form of business and technical value for the IT organization within the enterprise to advance. Just as important, they had to ensure cost controls to give them flexibility, yet within budget. Reducing the ongoing storage management burden became a high priority.

"Matching our storage capacity and capabilities with the evolving business requirements of the Detroit Pistons was a challenge that led us on a journey to discover an alternative system," said Rapier. "Mainline Information Systems recommended Infinidat, so we looked very closely at the InfiniBox solution. We were amazed at the innovation of InfiniBox and how much it provides for primary storage in every way. We had to take a time-out and reassess our approach to storage."

With this partner-led solution underscoring the strength of Infinidat's relationship with the channel partner community, Infinidat knocked the outdated, traditional way of thinking about enterprise storage off the court. Working together, Infinidat and their collaborative partner Mainline saw a clear lane to drive innovation into this NBA team's IT infrastructure.

### The solution: Tip off for superior enterprise storage

The Detroit Pistons chose to install InfiniBox, an award-winning platform that provides 100% availability, high performance, ease of use, autonomous automation, flexible consumption models, and green IT advantages. The InfiniBox is also accompanied by Infinidat's white glove service, which is the #1 service and support in the enterprise storage industry.

Installation of the InfiniBox in a single rack in their main data facility at the Pistons Performance Center was 3x faster than the implementation of the Pistons' previous storage arrays by the traditional incumbent vendors. InfiniBox, which was installed in only a single day, went live on February 27, 2023.

The team was able to consolidate the applications and workloads from three different storage vendors onto their InfiniBox platform, which now provides the storage capacity, performance, and advanced capabilities for VMware environments, SQL environments, and various file applications and workloads, including data stores, video, and file archives. The new solution eliminated the complexity of having multiple storage boxes with different user interfaces and different operating systems, as well as multiple service plans.

"InfiniBox is easy to use, and we love how it's easy to expand when we need more storage capacity," Rapier said. "Infinidat took a heavy weight off our shoulders for us in the tech department. We don't have the performance issues looming over our head like we did with the previous storage system. Now, there are no issues doing the data ingest. As a senior IT leader, I sleep better at night, thanks to Infinidat.

### The benefits: More efficiency, flexibility, and cost savings

By moving to InfiniBox, the Detroit Pistons has cut ongoing storage management time by 75% – a stunning benefit that frees up resources for the enterprise. Infinidat enabled the Pistons to evolve their IT implementation into a stateof-the-art, automated storage infrastructure. An admin can run it, utilizing the simple-to-use tools, while the built-in autonomous automation does the heavy-lifting for the workloads and applications with machine learning-powered intelligence.

Economically, the Pistons has been able to save significantly on capital expenditure (CAPEX) and operational expenditures (OPEX). This also ties into the green IT advantages that include less energy usage, less cooling, less waste, less floorspace, fewer man-hours, and less to recycle. This greater The team was able to consolidate the applications and workloads from three different storage vendors onto their InfiniBox platform, which now provides the storage capacity, performance, and advanced capabilities for VMware environments, SQL environments, and various file applications and workloads, including data stores, video, and file archives

efficiency translates into less carbon emissions, which is better for the environment. Infinidat's E2 value proposition – economics and environment – contributes mightily to the overall technical and business value that Infinidat delivers for its customers. As a result, the Detroit Pistons is able to get a faster return on investment (ROI) in enterprise storage.

This NBA team has a win-win scenario. With InfiniBox, they only have to pay for the storage capacity they use. There is no waste and no over-charges. Because Infinidat offers flexible consumption models, the Pistons has greater control of perfectly matching the capacity they need, when they need it, and they have gained 3X performance improvement with Infinidat's InfiniBox. The team also eliminated the complexity of dealing with previous storage vendors' switches inside of the configuration independent of regular storage area network (SAN) switches to go from host side to the storage.

Because of the autonomous automation, the team only needs to set it and then, essentially, they "forget it." The setit-and-forget-it approach, which distinguishes Infinidat's solutions, provides an ideal mode of operation to improve efficiency, remove complex human intervention, and reduce IT costs. The Pistons' VP of IT concluded, "We have a small team, so anything we can do to make the team run more efficiently is not only a priority but significantly advantageous as well. A set-it-and-forget-it approach is the way to go."

#### Looking ahead

The Detroit Pistons are confident in their ability to expand capacity on the InfiniBox platform, when it's needed in the future, yet without compromising performance or availability – and without a hefty budget spend. They are sticking to their IT game plan, and with the cost savings and the ROI of InfiniBox, the team will be able to deploy extra resources to other areas of IT in a noble effort to do more with less.



### Streaming in the 5G Era

How embedded storage is redefining the future of entertainment

#### BY GRACE ENSELL, PROJECT MANAGER AT WESTERN DIGITAL

AS VIDEO-ON-DEMAND (VoD) content continues to increase, so does the UK's rising appetite for streaming services and technologies. The entertainment landscape has shifted majorly from the silver screen to smaller devices. Powered by the proliferation of 5G technology, consumer content is becoming increasingly accessible on handheld devices.



Leading streaming services have been quick to embrace this transformative shift by optimising the experience on smart devices. This change has not only revolutionised how consumers access video content but also redefined the way we manage and download data onto our handheld devices.

#### 5G: A digital odyssey

The introduction of 5G, with its high-speed and low-latency capabilities, has paved the way for

live video streaming in high-definition (HD), ultrahigh-definition (UHD), and even 8K resolutions, all delivered seamlessly without buffering or loading.

However, while 5G is enhancing video quality on handheld devices, there's a pressing need for more efficient and robust storage solutions to keep up with clear quality and storage-hungry content.

Research from Statista reveals that almost 70% of the US digital audience watches videos on their smartphones, a trend mirrored in the UK and worldwide.

With 87% of UK adults owning a smartphone, a further surge in VoD content consumption on handheld devices in the future can be anticipated. As the need to enhance streaming quality on mobile phones and tablets continues, both device

providers and streaming services must protect their investment with effective data storage solutions to support the evolving entertainment experience.

#### Big data in little devices

Data storage is at the heart of this transformation for content accessed on mobile, smart, and other handheld devices. From the consumer perspective, this means faster, more reliable downloads and a seamless streaming experience. In an era where 5G, and embedded solutions are pioneering the digital landscape, data storage plays a central role in shaping the future of streaming as demand rises.

New estimates from Ampere Analysis point towards a global spending of \$42 billion on original and acquired film and TV content in 2023. Major streaming services continue to vie for original and engaging content to captivate existing subscribers and entice new audiences. Their vast content libraries demand secure and efficient storage solutions, especially as streaming platforms diversify their offerings, leading to a surge in data volumes and the emergence of significant storage challenges especially at the edge. It won't be surprising to see phones or tablets with an average of 1TB of storage in the foreseeable future to handle the growth of streaming data. A typical two-hour movie in high definition, for example, takes up about 6GB of storage. Along with this ever-increasing data volume comes a high demand for flash-based storage with higher capacities, newer interfaces, faster read/write performance, longer data retention, and increased endurance and reliability.

High performance will also play a crucial role when it comes to customer experience. To combat potential subscription fatigue and enhance customer loyalty of 19.8M UK households that have at least one paid Subscription Video on Demand (SVoD), streaming services must focus on delivering a seamless digital experience across all available platforms. The expectation is that smart and handheld devices should provide an experience as seamless as the experience available on laptops and televisions.

### Too fast, too clear: enhancing picture quality on smart devices

As the streaming landscape evolves, there is



a heightened focus on enriching visual data. Streaming platforms are updating their content production guidelines, reshaping content creation, and influencing the choice of camera production houses use. Over the next couple of years, consumers will witness a transition from 4K (3840 x 2160 pixels) to 8K (7680 x 4320 pixels) and beyond (12K; 12.288 x 6.480 pixels). While this advancement promises a more immersive televisual and cinematic experience, it also presents challenges for handheld devices.

To keep pace with this evolution, smartphones, televisions, and mobile devices will require accelerated data processing capabilities. Flash memory will be indispensable in maintaining the ever-growing content quality, especially during the shift from 4K to 8K. This trend may even extend to 10K or 12K in the future, accompanied by heightened visual demands that come with new and innovative ways of filmmaking.

As the streaming landscape continues to transform, driven by the escalating demands of consumers for subscription services, the role of data remains paramount in shaping the market. Data storage solutions will continue to drive and enable SVoD accessibility on our smart and handheld devices, ensuring that the entertainment of the future is right at the consumer's fingertips.

It won't be surprising to see phones or tablets with an average of 1TB of storage in the foreseeable future to handle the growth of streaming data. A typical two-hour movie in high definition, for example, takes up about 6GB of storage. Along with this ever-increasing data volume comes a high demand for flash-based storage with higher capacities, newer interfaces, faster read/write performance, longer data retention, and increased endurance and reliability



### How outsourced disaster recovery can play a role in achieving sustainability commitments

When looking for an MSP capable of delivering a robust DR and backup solution that satisfies ESG and scope three requirements, organisations should place equal value on the technology credentials of the provider.

#### BY STEWART PARKIN, GLOBAL CTO, ASSURED DATA PROTECTION

SUSTAINABILITY is an issue that all organisations are grappling with and regardless of ever-changing technology landscapes and economic cycles, it has become a constant that needs to be reckoned with. Whether through government regulation, the demands of customers or investor pressure, no organisation is exempt from its direct or indirect impact.



According to the United Nations Environment Program, the technology industry accounts for 2-3 percent of global greenhouse gas emissions. It could be argued that it has had an easier ride than other industries to date in terms of accountability, when compared with more obvious carbon emitters such as the energy sector and aviation industries that have been the subject of intense focus. This situation is now changing. Increasingly, the technology sector is being held to account for its carbon emissions. In response, technology and organisations have made substantial efforts to address the two key emission calcifications over which they have most control: scope one emissions the organisation is directly responsible for, and scope two - indirect emissions, such as electricity. Many have cut their carbon emissions substantially, allowing them to successfully comply with sustainability directives, as they stand. However, there's a looming issue that is set to make compliance a much greater challenge.

### The challenge of scope three carbon emissions compliance

We're now starting to see the impact of scope three carbon emissions be felt in the technology sector. That is, all other emissions associated with an organisation's activities, including its supply

chain. While scope three emissions aren't yet legally enforceable in the US or the UK, they are being widely adopted by large organisations, as legislation is inevitable and there's a widespread desire to get ahead of the issue. Increasingly the impact of scope three emissions is filtering down to SMEs and SMBs.

Although Disaster Recovery (DR) and backup are only a relatively small part of the overall technology landscape, they are nonetheless important, given that all aspects of IT operations are covered by scope three emissions compliance. Beyond the need to factor them into compliance, many organisations are beginning to realise that in fact DR and backup can actually help them realise their scope three commitments through outsourcing. Outsourcing disaster recovery managed services

Organisations at the forefront of sustainability are increasingly recognising the value of outsourcing the DR and backup function to an MSP, which is a very smart and cost effective way to help achieve compliance, because it eliminates the need for data backup via a second site. These sites are costly to operate, don't always utilise the latest power efficient hardware, and are responsible for significant carbon emissions. Adopting an outsourced approach means scope three compliance is a lot more achievable and manageable.

Some might question whether outsourcing is simply offloading the problem, but that's not the case. That's because MSP DR solutions achieve economies of scale by servicing multiple organisations via a shared facility, making them carbon efficient for customers. This approach makes a lot of sense.

Environmental, Social and Governance (ESG) is now firmly on the C-level agenda and given the rate at which its scope three component is permeating, it's very likely we'll see more organisations adopt outsourced DR services in the near term. Both



current and future business for MSPs depends on helping customers and partners achieve ESG compliance. This is an issue that affects everyone and it's not going away.

#### Considerations when looking for an MSP

When looking for an MSP capable of delivering a robust DR and backup solution that satisfies ESG and scope three requirements, organisations should place equal value on the technology credentials of the provider. It's essential to work with a partner who can offer a backup platform that was built from the ground-up with true immutability in mind. Assured Data Protection are experts in the provision of services to a wide variety of organisations across the private and public sectors. Working closely with data security specialists Rubrik, Assured guarantee the rapid restore of data and operations, ensuring the highest levels of DR capability, with the ability to defeat ransomware and other cyber-attacks, which remain an ever-present threat and offer this service in a sustainable way that can help organisations ensure their scope three compliance.



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### The future of flash:

the all-flash datacenter, the flash technology curve, and the prospects for the next new solid-state memory

It's been around 20 years since flash memory – in its hugely dominant NAND variant – first entered the enterprise datacenter. Since then, it has transformed data storage and majorly increased the performance of a wide range of applications by replacing far slower spinning disk as the default medium for primary data storage.



WITH THESE two decades of flash history now behind us we thought it was time to ask some basic questions about the future of the technology. We assembled a panel of experts and asked them when the all-flash datacenter might become commonplace, where flash is on its technology curve, and when the next ground-breaking new solid-state memory might emerge as a complement or successor to flash.

Tape didn't die and neither will disk

When flash first entered datacenters in the late 90s, it was used only to store a subset of data, for a subset of performance-sensitive applications. But as flash prices continued to fall and flash was used to store data for an ever-widening range of applications, industry watchers began asking how long before flash completely displaced disk to create so-called all-flash datacenters. Two decades later, we put this question to our panel. All the experts agreed flash will not fully displace disk for many years yet, and the majority said the all-flash datacenter will remain a rarity for the foreseeable future. However other responses were surprisingly different.

Alfred Chase Hui, Vice President of International Business at DapuStor, a vendor of flash drives,

system-on-a-chip processors, and other edgerelated products, identified the major factors involved in answering this question: "it's reasonable to expect that all-flash datacenters will become more common in the future. However, the transition to all-flash datacenters may take some time due to factors such as cost, compatibility, and performance requirements," he said.

Other experts on the panel pointed to two causes for the indefinitely prolonged future of disk. The first was what they estimated is a five to seven-fold difference in price per TB capacity between flash and disk. The second was enterprises' need to store large and ever-growing volumes of data that is not in active use, for purposes such as Al/ML and analytics training, archiving and compliance, and backups.

Shawn Meyers, field CTO at Tintri, a maker of storage systems tailored for virtualized environments, said: "The need for lower-cost archival storage, which still includes tape in many places, will remain. The amount of disk purchased by hyperscalers exceeds the amount of flash drives today. You only need fast storage for things you are actively working on, not for things you are just storing for later use."

Meyers' comment on behalf of Tintri was very similar to statements made by others on our panel, which collectively might be labeled as the 'tape didn't die' argument. Despite predictions of the death of tape over the last two decades, tape usage – at least in terms of sheer volume of data stored on it – has increased rather than contracted, because of the need to store ever-growing volumes of cold or infrequently-accessed data.

Peter Donnelly, director of products at storage networking vendor ATTO, shared the majority view that all-flash datacenters "do not make sense," and that there will always be a need for multiple tiers of storage. He added that, counter-intuitively, emerging technologies such as Al/ML are strengthening this argument: "Companies need access to massive storage pools for machine learning training, but once that is complete that data needs to be offloaded to more cost-effective storage technologies. So, while it may be counterintuitive, a strong argument can be made that emerging Al applications actually increase the need for second and third-tier storage systems like disk and even tape."

Coby Hanoch, CEO and founder at Weebit Nano, a developer of next-generation memories shares the views of others about tape and adds another reason why he thinks all-flash datacenters will never be widespread, which is that alternative solid-state technologies will be used in datacenters. "I doubt there will ever be all-flash datacenters, for several reasons. There will always be a need for tapes or disks simply because they can store

huge amounts of data in a cheap way off-line, and

there will be a growing amount of data that is rarely accessed but still needs to be kept. And by the time flash takes over the datacenters the newer NVMs [non-volatile memories], like ReRAM and MRAM, will start taking parts of the datacenters," said Hanoch for Weebit Nano.

Steven Umbehocker, founder and CEO at OSNexus, a vendor of scale-out, software-defined storage systems pointed out that disk is entrenched in object-based storage systems, and that disk-making giant Seagate has predicted continued technology development. "Today the 5:1 cost savings of flash vs disk is making a larger home for disk used in object storage a stronger alternative to tape and with Seagate delivering on long awaited 30, 40, and 50TB disk drives over the next couple years that will extend the runway for disk," said Umbehocker for OSNEXUS.

However IT teams consider more than just upfront purchase costs when choosing between disk and flash. Randy Kerns, senior strategist at analyst firm the Futurum Group said: "There is one aspect of moving to flash technology that is often overlooked as to its value for customers: with the acceleration in performance from flash, there is a simplicity value. By simplicity, I mean the need to manage to device characteristics for data placement/distribution in regards to performance. It is just simpler when there is more performance from storage. This is a factor that will move organizations to higher performing technology."

### However some datacenters are already all-flash

For Tintri, Meyers said that all-flash datacenters already exist. "The answer to this [question about all-flash datacenters] will be based upon the size, scale, and scope of the datacenter. There are many smaller to mid-sized datacenters which are already all flash. But these tend to be more single-customer datacenters. The large enterprises, regional hosting [service providers], and the massive hyperscalers will have spinning rust for any time period you want to forecast."



Dennis Hahn, principal analyst at research firm Omdia, agreed and predicted that there is a class of enterprise datacenters that will be all-flash by 2028. These are the datacenters operated by enterprises that are increasingly using public infrastructure clouds to host their less performance-sensitive or critical applications that do not require flash storage and are using the same clouds to store their cold or infrequently-accessed data.

"On-premises datacenters that are largely focused on running mission-critical applications are swiftly transitioning to all flash storage. In the following three to five years, Omdia predicts that the majority of these on-premises datacenters will switch entirely to flash technology," said Hahn.

In other words, disk is moving out of these enterprise datacenters and into the hyper-cloud datacenters – where Hahn, like other members of our panel, said it will exist for many years yet, because of its low cost, and the lack of need for performance when storing cold data. Hahn gave another reason for not using flash to store this type of data: "Since these [bulk, archive and backup stores] often interface with the relatively slow internet, throughput rather than low latency retrieval, is more crucial." For the same reason of throughput being more important than random access, he adds: "Major use-cases like video and rich media will efficiently be able to use HDD for a long time, as well as other technologies such as IoT and ELT [Extract, Load, Transform] data collection pipelines."

Roy Illsley, chief analyst at Omdia, added: "Another consideration is the trend to extend the life of IT equipment as part of an environmental sustainability and cost saving strategy. Therefore, customers are now less willing to rip a perceived old technology out and replace it with a shiny new one. The impact on datacenters will be the running of a mixture of technologies that could be as old as seven years in some cases, which means the arrival of all flash datacenters is not an immediate prospect."



Curtis Anderson, software architect at Panasas, a supplier of storage software for performancehungry workloads, holds a similar view about the prevalence of all-flash datacenters, but his is based on the size of an enterprise datacenter rather than the workloads its hosts: "We believe that there is a line where deployments less than a given capacity make sense as all-flash and where deployments above that line may not. That line will slowly move upward but in our opinion will mostly keep pace with the growth in capacity needs, so the all-flash datacenter will be forever 'two years from now'," he said.

To illustrate his argument, Anderson said a company might be happy to store relatively small 200TB filesystems in flash because that would cost only around \$150,000 more than storing it on disk and would perform much better. But for a 100-times bigger capacity of 20PB, the extra cost would be \$12m, which would be hard to justify. "Unless you've got some very special requirements, that money could better be applied to purchasing CPUs and GPUs," he said.

### Plenty of steam left in the flash technology curve

Technology development often follows a curve in which the rate of improvement to cost or performance slowly reduces over time, following a curve that steadily becomes flatter as technical advances become increasingly harder to achieve. Indeed, by around 2010, many observers were predicting that the technical development of NAND flash was about to hit a brick wall in terms of the number of memory cells that could be packed into a single flash chip. By then, flash was a wellestablished and growing feature of the enterprise IT landscape, thanks not only to its performance and other advantages compared to disk, but also because its price had been tumbling for the previous decade. If flash chip-makers hit that predicted technology wall, prices would start falling a lot more slowly in terms of dollars per unit of storage capacity.

However, in 2013, Samsung side-stepped the predicted limitation by shipping the first so-called 3D flash chips that consisted of multiple layers of memory cells, rather than the single layer of cells used previously. This meant more memory cells per chip, and as an extremely valuable side-effect, the ability to store more data bits in each memory cell, again reducing per-TB prices. All major flash makers soon followed Samsung's lead, and since then the number of layers per chip has grown rapidly. But that was ten years ago. Is flash now approaching the end or flatter part of its technology curve?

"People who say: 'Moore's Law is dead' are ignoring 3D NAND. This technology has given NAND flash a new engine to continue to add bits to the chip, and every year process engineers find ingenious ways to push it farther than anyone would have thought possible. That's a long way to say 'No' to this question. Expect to see at least another couple of orders of magnitude of cost decreases over the next several years as chip densities continue to increase," said Jim Handy, general director of analyst firm Objective Research.

Announcements at the latest Flash Memory Summit confirmed that outlook, according to Leander Yu, president and CEO of Graid Technology, a vendor of GPU-powered software-defined storage systems. "Flash memory manufacturers such as Samsung, SK Hynix, Kioxia, Western Digital, and Micron will continue to innovate with roadmaps for greater density with more layers using stacking techniques, architecture and design innovations, and more bits per cell (e.g., penta-level cell or PLC)," he said. The first multilayer flash chips that shipped in 2013 comprised 24 layers of memory cells, and stored 128Gbits. Yu pointed to SK Hynix' demonstration this year of a 321-layer chip storing 1Tbit, and Samsung's prediction made last year that it will ship 1,000-layer chips by 2030.

Anderson added important context to this outlook by highlighting the fact that disk technology is also still developing, and therefore disk prices will also continue to fall at around the same rate as for flash. "Flash technology will continue its inexorable improvement curve but we don't see that curve accelerating to gain ground on disks, i.e. lowering that 5x-7x multiplier on \$/TB) or decelerating compared to disk," he said.

Amos Ankrah, solutions specialist at Boston, a provider of high-performance servers and storage systems confirmed the view that flash is still developing:: "There are a few factors, some outlined in previous answers, which would indicate that flash is still on the rise in terms of its technology curve.

There is an argument to be had to considered where current flash technology transitions into new technologies, however with the levels of development which are still being undertaken by companies that develop flash storage this would seem to suggest that there is still more upward trajectory to move along before the plateau is reached," said Ankrah for Boston.

### It's not just inside the chips that flash has plenty of technology curve to ride

Donnelly at ATTO gave a more holistic answer to the question whether flash is at the end of its technology curve. Referring to the development of the network and storage access protocols that connect flash drives and storage systems to servers, Donnelly said for ATTO: "Not by a long shot. We're really just beginning to see how flash can be employed in datacenters. The value of NVMe communication protocols is just starting to be recognized in datacenters, and it will take at least a decade for it to replace the massive SCSIbased infrastructure. Also, the evolution of the Flash has transformed enterprise data storage and was a major force that drove the mobile computing revolution. It is now a major technology. Quite separately to the manufacture of flash-powered products such as storage drives or full storage systems, the manufacture of NAND flash chips alone now generates around \$80bn annual revenue, and that number continues to grow

PCIe interface and emerging technologies like CXL will bring new possibilities for implementing flash storage. Additionally, transport protocols such as NVM-oF, typically via RDMA Ethernet, are just starting to come together as a viable alternative. So, rather than peaking, I believe that we're just starting to see the first steps of a flash technology revolution."

### When will we see the next new discrete solid-state memory?

Flash has transformed enterprise data storage and was a major force that drove the mobile computing revolution. It is now a major technology. Quite separately to the manufacture of flash-powered products such as storage drives or full storage systems, the manufacture of NAND flash chips alone now generates around \$80bn annual revenue, and that number continues to grow.

This raises an obvious question: when will the next new solid-state data storage technology emerge with the same mass-market impact? Billions of dollars have been spent in research laboratories for the last several decades attempting to find another such technology. Intel and Micron's jointlydeveloped Optane memory was the fruit of such research, and first shipped in solid-state drives in 2017. Faster but more expensive than flash, Optane was heralded as the first of a coming class of socalled storage-class memories (SCMs) that would either complement or replace flash and would have a similarly large overall impact on IT. However Optane sold poorly and in 2021 Intel announced its plan to end manufacturing of the memory, only four years after it first shipped.

Meanwhile research into other potential SCMs continues. For Objective Analysis, which has a major focus on emerging memories, Handy said that over this decade and the next there will probably be no new memory technologies with the potential to make the same impact as flash. He made a distinction between two types of memory: those that



are embedded in processors or other chips, and those like NAND flash and Optane that are or were sold as discrete memory-only chips, in far greater quantities and therefore have far greater market potential.

"Optane failed because of its cost. We warned about that as soon as it was announced. But other technologies are likely to thrive in certain markets, especially as embedded memory in microcontrollers, ASICs, and other SoCs [Systemson-a-Chip processors.] Discrete memory chips though, are highly unlikely to convert en masse to an emerging SCM in the 2020s, and probably not in the 2030s."

Coby Hanoch, CEO and founder of Weebit Nano, a developer of next-generation solid-state memories, agrees with Handy's assessment that Optane – also known as 3D XPoint - failed for economic reasons, but says the creation of an alternative to flash is inevitable:

"Several NVM technologies including ReRAM, MRAM, PCM and FRAM are emerging as potential alternatives to flash. Intel's 3D XPoint was an initial attempt to address the issue but didn't succeed largely for economic reasons. The key to a successful flash alternative is development of a memory that can scale to large enough densities but at a low enough price. Intel was only able to meet the density part of this challenge.

It's only a matter of time until we see a technology that can meet both criteria, and we believe that ReRAM will be an answer since it has fundamental technical advantages including speed, power efficiency and cost. Development is underway to get the technology to ever higher densities," said Hanoch for Weebit Nano. David Norfolk, practice leader for development and government at analyst firm Bloor Research summed up the difficulty of predicting a schedule for the arrival of the next new mass-market memory: " A lot can happen in 10 years - saying what will happen is easy (for example atomic memory as being researched by IBM) is easy; saying when is much harder."

### Technology momentum and the SLC variant of flash will be hurdles for any new memory

For Omdia, Hahn agreed with Handy's belief that the inability to reach sufficient sales to justify the production volumes needed to allow viably low prices caused the cancellation of Optane. Illsley added that the relatively new high-speed variants of SLC [single-level cell] flash are handling tasks that Optane was intended for: "It is easy to visualize where Storage-Class Memory might fit into a storage-memory pyramid, but it has been difficult to deliver the right combination of performance, latency, and cost characteristics while providing data persistence in the real world.

Optane SCM seemed to be a good effort, but its production is being spun down for lack of proper volume economics. There are clearly a few good use-cases for Optane SCM but, honestly, those are being addressed using recently-released NAND flash SLC technology. SLC NAND SSD offerings are on the rise for their fantastic durability and good write performance, especially for hot data array tiering and data caching usage."

SLC flash builds on existing NAND flash technology, and Hahn's comment about its value resonated with a statement made by Boyan Krosnov, CTO and cofounder at StorPool, a vendor of software-defined, distributed storage systems: "Any new technology has to overcome the existing technology, which benefits from decades of optimization and largescale manufacturing. So, the new technology will be at a significant disadvantage."

Anderson said he also did not expect an SCM to emerge in the next ten years and pointed to another hurdle that Optane needed to cross. "SCMs had/ have huge promise, but the change in software architecture required for applications to gain all the advantages that SCM can offer was too high, so applications never adopted them." Flash has not faced this hurdle, because its specific combination of cost and performance never required or justified its use as an adjunct to DRAM memory."

Furthering his argument about the IT industry's reluctance to modify software, Anderson refers to NVDIMMs, which are devices that combine DRAM memory with flash to offer the performance of DRAM with the persistence (the ability to retain data safely after a power interruption) of flash: "Intel and AMD have both now fully backed away from vanilla NVDIMMs, let alone the more exotic Optane."



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### Managed Services to take centre stage in 2024

Markets are continually evolving and repeating. With every new disruptive technology there are opportunities for creative and innovative solutions. However, once these technologies become established with preferred ways to operate and sell them, the focus then shifts to maximising cost efficiency until the next big disruptor comes along.

#### BY RICHARD THOMAS, FOUNDER AND CEO OF HIGHLIGHT



IN THE TELECOMS SECTOR over the past 10 years, providers have gradually commoditised connectivity, pushing down prices and striping away all the helpful value-add elements until they are just selling the basic nuts and bolts. This race to the bottom makes it hard to differentiate since everyone is basically selling the same thing and the only way to stand out is to charge even less.

Changing this pattern of behaviour is difficult and many providers are starting from a hard place. The need to continually compete on price means they no longer employ the experienced and usually expensive people who understand how the technology works and how to get the best out of it. They were the first to go when cost cutting. There be gold in them thar hills However, we have seen a rapid change in attitude. There has been a sudden realisation that there's a big pot of money in managed services if organisation have the determination to go for it. Amongst both our customers and partners, we have also seen a bit of a philosophical reinvestigation into what managed services mean. People are trying to properly reengage with it and make the managed portion of their services more significant rather than just using the term as a marketing tagline.

Cisco was one of the first to get the ball rolling about nine months ago by setting a three-year objective to deliver 45% of its current \$57 billion revenues via managed services rather than selling direct to corporates. To achieve this huge leap in such a short



#### MANAGED SERVICES

space of time, Cisco has shifted funding to support the move with training, incentives and commissions all designed to drive behaviours and sell more managed services.

Many MSPs are looking to capitalise on the opportunity. For example, in the last six months, Gamma Telecom, one of our largest partners, launched a new range of innovative managed services and is now selling SD-WAN solutions at scale, differentiated by the value of its service wrap. It's hard to pinpoint what prompted these changes. Perhaps the race to the bottom finished and nobody won, or perhaps SD-WAN reignited the interest from customers. Whatever prompted the interest, it's going to drive a huge shift in the overall telecoms and reseller market.

#### The role of SD-WAN

One catalyst to change seems to have started with the manufacturers of SD-WAN solutions saying that their technology was so easy to manage that enterprises no longer required a service provider. All they needed to buy were the wires and basic connectivity.

This message has basically turned out to be false as users soon realised it takes a lot more time and effort than they anticipated, and many would much rather build a proper relationship with their service provider.

Interestingly, those customers that have tried to manage SD-WAN have also achieved a level of visibility into their systems. They now know what is possible and have seen behind the curtain. When they decide to move back to a provider, many are now asking for tools that give them visibility of their networks.

#### The art of managed services

At present, there appears to be considerable confusion in the market over what a managed service comprises and that's almost the beauty of it. With no set definition, a provider can build their own. A managed service is built on understanding what the customer wants from the relationship, and this starts with a conversation. Many providers need to relearn how to build a relationship. This is where the smaller resellers and service providers have a head start, since they have built their businesses on a relationship basis, whereas larger providers have been largely focused on selling bandwidth with a focus on price.

Interestingly, SD-WAN is well suited to MSPs since to make SD-WAN work effectively, a provider needs to engage properly with both the technology and the customer. However, providers still need tools to help rebuild a conversation with customers. The Meraki SD-WAN dashboard for example is very comprehensive but this is still focused on managing the technology and doesn't help in managing and building a relationship.



We've demonstrated that when it is done right, and when using a service like the Highlight Service Assurance Platform, providers can increase customer satisfaction and reduces failures. In Gamma's case, they achieved a 25% increase in customer retention. So clearly the managed part of the service is demonstrably the part that matters to people.

So in 2024, I believe providers are going to rediscover the lost art of delivering a proper managed service. Adding a proper service layer on top of the connectivity is the only way to stand out, to differentiate and to make more margin on sales. Customers moving back to a service provider are now demanding that their provider supplies the visibility to demonstrate how they will manage the proposed solution and communicate successful delivery of what has been promised. If a provider can include a service assurance platform like Highlight as part of their managed service package, then the customer is more likely to sign on the dotted line and stay with the relationship for the long term.

Interestingly, those customers that have tried to manage SD-WAN have also achieved a level of visibility into their systems. They now know what is possible and have seen behind the curtain. When they decide to move back to a provider, many are now asking for tools that give them visibility of their networks

### Creating a greener future through technology

Global climate challenges have rapidly accelerated business's sustainability efforts and as green credentials shift from a 'nice to have' to a business imperative, tech leaders are increasingly being looked to for tech-driven sustainable innovations.

#### TOBY ALCOCK, CHIEF TECHNOLOGY OFFICER AT LOGICALIS



AN ORGANISATION'S sustainable reputation yields many benefits. From improving B2B relationships, especially among partners looking to reduce their own scope 3 footprints, to delivering cost savings and supporting talent attraction and retention. This was made clear in a recent Logicalis study of global CIOs, which highlighted that 84% of employees would rather work for a business that was dedicated to reducing its impact on the environment, and that 92% of CIOs recognised a distinct link between sustainability, and enterprise value, underscoring the soaring importance of sustainability in the realm of IT leadership.

The use of technology in sustainable solutions Technology is a vital enabler of sustainability and central to greener business strategies. According to an IDC white paper, 62% of surveyed companies worldwide believed that investments in tech were crucial to meeting their sustainability goals. There are many ways in which technology can help businesses make strides towards their sustainability



goals. The European Commission anticipates that data centres will contribute to 3.2% of electricity demand in the EU by 2030, up from 2.7% in 2018, so having energy-efficient hardware and renewable power sources are two decisive ways businesses can improve the efficiency of their IT infrastructure.

Another example of how businesses can use technology to become more sustainable is through the use of smart buildings, which are powered by Internet of Things (IoT) technology. Relying on sensors to monitor office occupancy levels, these buildings adapt heating and lighting systems for optimised energy use. The integration of various technologies allows smart buildings not just to adjust output based on occupancy but also to generate real-time performance data for operators to review.

Although a large factor, energy consumption is just one facet to consider in sustainable technology investments. There are other ways for business leaders to reduce environmental impact. For example, reusing and repurposing IT equipment instead of opting for disposal. Responsibly recycling and disposing of electronic waste for end-of-life hardware can effectively eliminate the unnecessary carbon emissions tied to the conventional practice of dumping technology in landfills. In the modern era where the workplace is so highly tech-driven, making small but effective changes like this can have a large impact on an organisation's emissions.

### Managed technology to improve sustainability

There is tremendous pressure on businesses and tech leaders to combat environmental challenges. While technology equips business leaders with the tools they need to make data-driven sustainability decisions, 75% of CIOs felt that they needed additional assistance to unlock transformative data, according to our research. Deliberately choosing technology that drives business value, embracing more sustainable methods to power technology, and practising knowledgesharing within organisations will propel the tech community toward additional advancements in sustainable technology across the entire spectrum

To address this, we developed the Digital Fabric Platform last year, which offers comprehensive recommendations to businesses by providing insights into key metrics including environmental impact and energy and carbon usage. The platform is designed to give CIOs a real-time view of how their entire digital ecosystem is performing across five metrics including reliability, security and compliance, economics, user experience and environment and benchmarked across industry standards.

Working in partnership to create a greener future Although technology is facilitating a more environmentally aware society, relying on technology alone is not enough. Tackling climate change effectively calls for a joint effort, businesses need to collaborate and work together to address climate change. According to the IDC's predictions for 2024, 40% of ESG services engagements will require a managed services component to better tackle the prolonged nature and intense data needs of sustainable transformation and ESG reporting, helping empower organisations to reduce their carbon emissions not only across IT functions but across the entire business.

Deliberately choosing technology that drives business value, embracing more sustainable methods to power technology, and practising knowledgesharing within organisations will propel the tech community toward additional advancements in sustainable technology across the entire spectrum.

As we find technology evolving to meet the sustainable demands of businesses, we find a unique opportunity to make meaningful changes that will impact business and the global community. In our efforts to tackle the climate crisis, technology serves as both the method and the objective.



### **Breaking with tradition:**

the need for "niche" in managed network service delivery

The need for "niche" in managed network service delivery

#### BY JOHN BIDGOOD, CTO, SYSTAL



IF THERE'S ONE LESSON that's emerged from the past year, it's that large-scale change can happen without warning – emphasising the network's importance for adapting to emerging technologies, tackling cybersecurity challenges and navigating economic shifts.

It's therefore imperative that businesses explore alternative ways of managing network requirements and look for a less "out-of-the-box" model that adapts to the needs of complex organisational structures without restricting their ways of working.

To expand on this, let me explain why global organisations may want to explore an alternative way of managing their network requirements.

### Traditional managed network service providers

When faced with client challenges to meet demand for cost-efficient and effective services, many of



the larger more traditional MNS providers have removed any levels of customisation. This has been achieved using a combination of offshore staff delivery models and a complete standardisation of products and services. Their goal is ultimately to be competitive by reducing cost - even at the expense of service.

Whilst driving down internal operational expenditure can be extremely beneficial to the MSP shareholders, this approach can be counterproductive for clients unless your business requirements remain static and solely focussed on cost reduction.

The lack of integration of the network with other areas of IT hampers visibility and ultimately leads to more service risk when issues are not resolved quickly.

More critically, if a business is to grow or merge, then it may be hard for the new areas of the IT operation to be replaced and integrated together – potentially even leaving the newly acquired business separated in all but name.

Likewise, the client won't be able to make the most of new technologies and adapt quickly to new trends or geographical operating areas. Meaning they need to wait for their MNS provider to offer support as part of their standard service or be left to do it themselves. This delay will inevitably leave a company at a competitive disadvantage.

#### Adopting a niche delivery model

Niche MNS players are often overlooked against larger, more traditional MSPs or other well-known network ISP companies. Whilst traditional MSPs may be viewed as the least-risk alternative – the reality is the opposite. Niche players can offer a service that is more cost-effective, more agile and flexible to business needs whilst still meeting the highest levels of service for business continuity goals. By offering a niche delivery model, MSPs adapt to client requirements, leading to greater levels of business efficiency and innovation rather than a traditional 'by the numbers' constrained service. New trends and emerging technologies can be researched and deployed quickly, allowing organisations to adjust to market changes and cultural shifts without the need for lengthy internal productisation first.

Agile niche players also have the flexibility and capability to better integrate non-networking services. For example, a niche provider's network solutions can be fully integrated with other nonnetworking areas such as cloud, digital workplace and cybersecurity. This offers customers a chance for end-to-end application visibility across their network, even if it is cloud overlay-based. In fact, by encouraging overlays, MSP won't carry the expensive burden of infrastructure WAN, POPs and Data Centres unlike other providers, and won't need to recoup the investments from these assets which would otherwise tie to a limited number of traditional service offerings.

Niche players can also more rapidly make use of Al, machine learning and automation to help identify and resolve incidents quickly across a wide range of vendor implementations and a wide range of non-network IT technologies. But, while a delivery Agile niche players also have the flexibility and capability to better integrate non-networking services. For example, a niche provider's network solutions can be fully integrated with other nonnetworking areas such as cloud, digital workplace and cybersecurity

methodology based on people and processes remains absolutely necessary, a niche player that offers these ideals in conjunction with Al-driven services can help organisations understand and get ahead of any network incidents before they even happen.

Non-traditional MSPs can do more than solely focus on cost-efficiency initiatives, but rather provide value in ways that were never previously imaginable. By offering a flexible approach along with well-proven and standardised delivery methods, these providers represent the least risk option for organisations facing today's market uncertainty that we all need to react to.



### What's slowing down 5G?

5G is one of the most eagerly anticipated technologies of the modern world. Consumers and businesses alike are awaiting its heretofore unseen connection speeds and the technologies that it will empower, such as autonomous vehicles and smart cities.

#### BY DOUGLAS RANKIN, VP EMEA, SPIRENT



YET FOR MANY, progress towards that 5G-empowered future has been slower than they would have hoped. Coverage in many places such as the UK - is too narrow and signal is often significantly weaker than 5G's greatest champions promised it would be.

There are good reasons for this. 5G is far more complex than previous iterations of mobile technology and as such, requires a great deal more attention, focus and investment. Moreover, operators are struggling to monetize their 5G offerings, thus starving them of necessary CapEx to develop further and deliver new products, services and open up new revenue streams. On top of all of this, many operators are wracked with manual processes which slow down operations and waste crucial funds with inefficient Complexity

5G is a fundamentally different proposition than previous generations of mobile technology. Its use of virtualised networks and network slicing; the use cases it will empower; the new vendors and supply chain actors as well as the new considerations that impinge upon it such as cybersecurity make it incredibly complex. It requires levels of

> maintenance, investment and attention that telecom operators have never had to deal with before. 5G networks also require new purpose-built infrastructure - as much as 3x as many base stations as 4G - which drives new building requirements and CapEx requirements.

On top of all of this, many organisations have to maintain their Wi-Fi, 2G, 3G and 4G offerings to maintain operations while developing newer technologies like 5G Standalone and OpenRan.

practices.

#### **Monetization**

Huge amounts have already been invested in 5G -PwC predicts that there will be a total of \$275 billion invested by the end of 2026 - however, operators are still struggling to see a return on that investment. Operators have developed their 5G capabilities up to a certain point, but often have a hard time taking it further. Further developments might help bring out new products, services and the necessary revenue to fund improvement, but they first have to get that at those potential streams of revenue.

Admittedly, 5G has been publicly available for only around five years and they've been a tumultuous few years for the global economy: Inflation has risen dramatically, bolstered by a global pandemic while seismic geopolitical events such as the war in Ukraine have delivered shocks to energy prices and the global economy. This has mitigated consumers ability to purchase premium services.

However, the problems in monetizing lie deeper still. Operators are now struggling to monetize. Premium 5G mobile services and fixed wireless access services are not going to be as lucrative as some might have hoped.

As a result, consumers won't pay for a premium service that doesn't offer a real improvement on their current mobile broadband purchase. This is largely for two reasons. Firstly, operators cannot truly substitute 4G in terms of geographical coverage and capacity versus 5G and secondly, the macroeconomic climate means that soaring energy costs and inflation are driving delayed adoption of 5G to the consumer.

In fact, data from PwC shows that fixed wireless access and mobile internet offers low revenue potential in comparison to other 5G applications. In reality, it's the IoT use cases which will be the real revenue driver for 5G: PwC says that these offer 30 to 40 times more revenue potential than mobile connectivity plans.

And yet here lies another stubborn obstacle - these use cases often need better 5G in order to become realisable and yet operators cannot monetise current 5G offerings to pay for those improvements. Take autonomous vehicles - one of 5G's flagship use cases. In many parts of the world, 5G coverage is not wide nor strong enough - to power the mobile connectivity demands that autonomous vehicles will require. That catch-22 is currently denying operators of the necessary revenue to develop further, and those use cases of the crucial technology to help them realise their potential.

5G private networks - in which individual businesses have their own dedicated 5G network - will also likely be a real revenue driver. In fact, a 2023 report from telecoms.com found that 59% of telecoms professionals believe that 5G private networks are the best path to monetization with huge potential across verticals like healthcare, manufacturing and transportation.

The ability to monetize 5G is The PwC's 26th annual global CEO survey shows that nearly half - 46% - of telco CEOs believe that their current path won't be economically viable in ten years. From that point of view, making 5G monetizable is an existential issue for many operators. As such it is absolutely crucial to maximise efficiency within the sector in order to pursue 5G effectively.

#### Waste and manual processes

Unlocking that CapEx is a crucial step and although operators are still waiting to unlock new use cases to effectively monetize 5G, that CapEx can be unlocked much closer to home.

Telecom operators still deal with a large amount of waste in their operations, largely driven by overreliance on manual processes which drain capital, manpower and time.

Testing labs serve as a key example of this. Telecommunications labs often manually manage a wide variety of equipment that is crucial to testing. Not only is this equipment power hungry and expensive, it's also left running and unused for the large majority of the time. In 2022, Spirent collated customer data to understand the true scope of this waste. We discovered that 93% of equipment in the lab gets used less than half of the time.

Furthermore, over three quarters - 77% - of lab equipment is used less than 90% of the time. This is a major source of waste in the industry and it's not just Spirent data that shows it. A study by Mckinsey shows that 85% of energy waste in the telecoms industry comes from needless energy expenditure such as idling equipment.

Automating those labs would go a long way to reducing that waste and this alone can reduce lab expenditure by 40% and speed lab resource management by as much as 30%. Spirent recently modeled a large telecoms lab that had streamlined equipment used by automation.

In this modeled lab, the ability to schedule equipment use saved this lab 1 million every year. It could save nearly €4 million in labor savings because of the increased efficiency in testing.

This goes further than testing in labs too. The incredible complexity of 5G also demands that automation start to be implemented within the network, streamlining the tangled web of technologies and stakeholders that 5G represents. This will not only free up necessary money and manpower but speed time to market for the products and services which will make 5G a hugely monetizable opportunity.

# **CRMs:** the power play and revenue source for reseller CX revenue in 2024

The battle is already on to gain market share.

#### BY IAIN SINNOTT, HEAD OF INTERNATIONAL CARRIER SALES, ENREACH FOR SERVICE PROVIDERS



NOW THAT the focus on meeting and collaboration technology has moved from adopter to mainstream, the next area of focus — and a source of market revenue for the channel — has become the customer experience (CX). While it may not have the urgent call to action that the pandemic created, resulting in the instant growth of remote collaboration tools, the CX is increasingly at the heart of ICT decisions being made right now.

While thoughts might, therefore, turn to contact centre features (and those most definitely have an essential part in the mix), CRMs are the key to unlocking the broader potential. They also bridge the gap between IT and comms, enabling resellers of all kinds to develop far more sophisticated CX solutions. CRMs can even help pave the way for successful Al adoption.

However, expect competition to be fierce and with early movers beginning to make market impact, so now is the time to start planning an executable strategy. In conversations I have had with industry peers, CRMs will be centre stage. Fortunately, while there are some challenges, the tools, technologies and expertise are in place.

#### CRM as a route to revenue

Before we dive into those points in more detail, let's examine why CRMs are at the heart of the CX's



future in ICT. Knowledge about customers and the interactions with those customers is hugely powerful in delivering a great CX: customers who feel that they are seen and listened to are more likely to stay loyal. Consequently, suppliers grow revenue, increase retention rates and net promoter scores, and gain more referrals.

For instance, if inbound support calls are logged against a CRM record, this information helps the customer service team identify a repeat issue, show empathy and know that they must act quickly.

If a CRM record shows a customer previously expressed interest in a product, the next time they call the support team, that person is also flagged as a potential buyer. Furthermore, if a salesperson has visibility of a customer's buying history via the CRM, then during their interaction, they can make customised and more relevant suggestions for the next purchase.

CRMs are also set to play a pivotal part in using AI to enhance the CX, which in my opinion, AI hype aside, is probably a good year away. However, Al is only as good as the data it depends on, so in 2024, organisations need to ensure they have a clean, manageable, and scalable foundation for data on which they can start to build. A CRM integrated with other systems can deliver much of that data, for instance, through voice and chat queues, call recordings, and performance analytics. CRMs also help resellers grow into new areas by helping business customers evolve their use of technology, creating opportunities for channel organisations from both IT and comms backgrounds. As a result, the boundaries between these two camps start to disappear, with resellers becoming one-stop shops for their customers' ICT needs.

#### Steps to success

However, adding CRMs to their portfolios may seem daunting for many resellers, especially if they have little or no experience in selling IT solutions. Fortunately, there are some practical steps we have seen resellers in the region successfully take, plus there is a growing pool of knowledge and help on which the channel can lean.



The best starting point for a reseller is to focus on the effective use of CRMs in-house so that they can understand first-hand what their customers will experience. Of course, the specific details will differ, but they can learn how CRMs can address typical pain points and enhance the CX.

However, there should not generally be the need to dive into the technical nuances of a CRM because that is a supporting role that a vendor should provide. Of course, if a reseller chooses to appoint an in-house product champion or team, the vendor can provide relevant training, but the sales team does not need that level of detail.

#### Customer outcomes and use cases

Instead, what is more important is to help the sales department gain insight into customers' desired business outcomes and how CRMs can support those. Hence, equipping salespeople with the expertise to identify those outcomes and typical use cases is vital. Depending on whether focused on a handful of accounts or a large number of SMBs, then the approach will vary from workshopping with a single customer, or ascertaining typical use cases that apply to hundreds of customers.

For instance, simple outcomes can already be identified, such as a customer out of terms on their account being routed to the finance team, even if they have called the sales number. Looking to the future, another case — using AI — might be to use the CRM to give special treatment to an incoming caller who was angry or stressed in their last recorded call, putting them straight through to a member of the support team rather than being routed via web chat or IVR.

It is also essential to look at the surrounding environment and all the systems that feed CX data into the CRM, including accounts packages, workflow applications, and unified communications (UC) platforms. The latter is a logical starting point for CRM adoption, particularly the many business customers who are evolving from communications focused initially on voice, so helping them connect that type of customer contact with a CRM is a safe place to start.

#### Start with voice

Example voice-related features include agent availability, skills-based call routing, call recording, conversation transcripts and sentiment analysis. As soon as the customer is ready, non-voice contact such as webchat can be brought into the mix.

In this way, resellers can also help smaller customers make the most of what is sometimes referred to as 'casual contact centre' style features found as part of many cloud-based UC platforms. In other words, businesses without the need or budget for a dedicated contact centre solution can still benefit from some of the functionality.

However, the UC platform or the CRM, is just one part of the bigger picture. So, easy integrations between them and other solutions are important, giving both the reseller and the customer more flexibility and choice. A reseller might want to support different choices of UC, CRM, accounts and other systems. A customer might have a preferred set of technologies or want to adapt the CRM solution in-house to their own environment. Therefore, all vendors concerned must provide simplified and flexible API integrations and a willingness to 'play nice' alongside other vendors, even direct competitors.

It is also worth re-emphasising the role of those vendors to provide product expertise and technical support, even though they may themselves be early in their CRM journey. Vendors, the channel and their customers will all gain more from the CRM discovery and adoption process if they all pull together.

### Cybersecurity insurance in the spotlight

Exploring the topic of cyber insurance and its likely impact on the channel as both a challenge and opportunity.

#### BY JOHNNY ELLIS, EMEA CHANNEL DIRECTOR, ARCTIC WOLF



MSP: What exactly is cyber insurance?

JE: "Similar to the kind of insurance you might get for a phone or car, cyber insurance is a policy designed to help cover the costs associated with a cyber incident, breach, or specific type of attack. It allows a proportion of the cost incurred – whether that's from money being stolen or meeting a ransomware demand – to be transferred to the insurance provider. Certain policies may also cover recovery costs, including legal fees and investigations into incidents. While many entry-level policies only cover first-party losses, a growing number are also covering costs for third parties due to an ongoing rise in supply chain attacks."

**MSP:** Why should businesses have a cyber insurance policy? What are some of the key benefits?

JE: "With almost a third of businesses falling victim to a cyber attack in 2023, being targeted is no longer a matter of if, but when. Ransomware attacks are also on the rise, with our research showing ransomware demands have increased by 20% in the last year alone. Having an effective cyber insurance policy can protect businesses from the costs associated with these types of attacks, reducing their financial losses, and allowing them to recover more quickly. This is particularly crucial in the current economic climate, with many businesses (particularly SMEs) unable to shell out hundreds of thousands - or even millions - on ransomware payments. By improving recovery time, the added protection of cyber insurance can also minimise some of the wider impacts of an attack, including damage to reputation and loss of customer data."

MSP: Will cyber insurance ever become mandatory?

JE: "The ongoing rise in attacks, combined with the deployment of increasingly sophisticated threat tactics, effectively means cyber risk (the likelihood of being targeted) is increasing for businesses. While barriers to obtaining cyber insurance remain, including cost and a lack of education about how these policies work, we'll likely see more organisations investing in cyber insurance products over the next few years. With the market already having tripled over the past five years, I think we could well see cyber insurance, like car insurance, becoming mandatory within the next decade."

**MSP:** What impact do you believe this will have on the channel?

JE: "The introduction of mandatory cyber insurance will mature the market in line with channel-first cyber firms, such as Arctic Wolf. Alongside this, it will also create new revenue for channel and consulting businesses, like KPMG, by increasing demand for services offering advice on how cyber insurance policies can be chosen and delivered. However, it's also important to remember compulsory introduction means every reseller will have to invest in cyber insurance – despite premiums rising by more than 10% in the first three months of last year. This could have a knock-on impact for businesses already struggling financially in the current climate – particularly SMEs with smaller budgets."

**MSP:** How can businesses balance investing in a cyber insurance policy with the need to cut costs?

JE: "While premiums are rising, choosing a policy tailored to what you really need can lower these costs and make cyber insurance more affordable. This can be done by simply running a risk assessment of your organisation using tools such as the NCSC's Cyber Assessment Framework, identifying the gaps in your line of defence, and choosing a policy offering the right level of coverage. Ensuring you have a well-documented Incident Response (IR) plan can also help businesses prove they have an effective strategy for responding to a cyber incident to their provider.

"With over 60% of attacks caused by insider threats, providers may also lower their premiums to businesses with an effective cybersecurity training and awareness programme in place, reducing costs further."

### **MSP:** How will the cyber insurance market evolve in 2024 and beyond?

JE: "Whether it becomes mandatory or not, cyber insurance is here to stay. We know attacks are rising, tactics are evolving, and the profile of your typical 'hacker' is changing day by day. While this makes it difficult to predict exactly where the market will be in thirty years' time, we must ensure businesses, both within and beyond the channel, are sufficiently protected."

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### Building successful channel partnerships

An insightful Q + A focusing on networking and connectivity

#### BY SARAH RALSTON-GOOD, ENTERPRISE PARTNER SALES LEAD, CRADLEPOINT AND THOMAS ROWLEY, CHIEF TECHNOLOGIST – NETWORK & CONNECTIVITY, SOFTCAT

**MSP:** Sarah give us a brief overview of her professional background?

**SRG:** "I have an extensive background in the channel sector, spanning 20+ years, where I've worked with prominent data, voice, and security networking companies. One notable role was EMEA Director of Partner Marketing & GTM Programmes at Juniper Networks, where I dedicated six years to developing and implementing their successful channel strategy.

"Following that, I established my own partner consultancy, which I nurtured for four years, building client's indirect business and creating a new revenue stream for their organisations. Last year, I made the exciting decision to join Cradlepoint, a part of Ericsson; it has been an incredible journey so far." **MSP:** How did Sarah go about developing the channel programme? What was the biggest challenge?

**SRG:** "The biggest challenge with any new channel programme is selling a new brand into an established channel market. While Cradlepoint is extremely successful in the US, we were not as well known among the value-added reseller (VAR), service provider (SP), and system integrator (SI) community.

"Overcoming this challenge relies on gaining the trust of the C-Suite and leadership teams within these communities. Part of this strategy has relied on my over 20 years of experience in the industry, but even more helpful has been the fact that partners' customers have been asking for the solutions Cradlepoint offers. This is because they **MSP:** How do you build successful channel partnerships?

**SRG:** "Building successful channel partnership begins with personal connections. Nothing compares to meeting potential partners faceto-face. Listening is key; partners have so much knowledge about the market. They are the closest to their customers and understand their challenges. By understanding these problems, we can show we offer the solutions they need to meet them. For example, one of the current challenges we see is the current strain on connectivity networks due to IoT device deployments. As a result, we focus on offering easy-to-deploy solutions to address these demands.

"Another crucial aspect is our willingness to collaborate on test deployments and actively listen to partner feedback. This approach fosters trust and helps us refine our offerings. For instance, when we partner with a titan partner like Softcat, we are still agile enough to offer a white glove service for our training and certifications programme via Cradlepoint University (CPU). Providing partners with a seamless onboarding process."

**MSP:** What can channel partners expect to see in the coming months?

**SRG:** "In the coming months, our signed and certified partners can expect more leads; meaning qualified opportunities with the support of our field sales & se teams. They will be privy to market trend information ahead of the curve that we have invested in to support our partners in their markets. We are blowing the doors off of our global and regional partner summits, a key platform we use to communicate to our channel partner community. We will be giving our partners access to industry first insights and activities, as well as accelerating their sales and enhancing their customers experience, by deploying our cellular based secure wireless solutions portfolio."

**MSP:** How have the demands of Softcat's customers changed over the years?

#### Thomas Rowley:

"Undoubtedly, the connectivity needs of businesses have undergone significant transformations in recent years. With the surge in IoT device adoption starting, companies now seek robust connectivity infrastructure to fully capitalise on their deployments. Take, for instance, manufacturers who can remotely monitor their machinery using these devices. The true value of the collected data lies in transmitting it in real time to its intended destination from any location. Therefore, businesses require networks that provide high-speed connectivity with minimal latency, catering to diverse use cases, both remote and on-premise."

**SRG:** "We are also seeing demand from end users for simplified management systems, which is where our NetCloud platform adds value. The ability to manage multiple routers remotely means small teams can more effectively manage huge IT estates. For example, Cradlepoint has one client that has routers in 1300 vehicles across the UK. Manually updating and managing these would be impossible, but NetCloud allows the team to ensure their network is secure while enjoying connectivity on the move."

**MSP:** How has Softcat evolved to accommodate that?

**TR:** "We recognised Softcat needed to adapt its offering to meet this new demand. Recently we decided to rebuild our Networking and Connectivity portfolio from scratch and introduce innovative technologies and services which meet customer challenges and unlock their ability to innovate. Areas such as secure 4G / 5G connectivity, starting with Cradlepoint, were one of the newer technologies in the portfolio. This proactive step means Softcat remains at the forefront of the industry and can cater effectively to customers' shifting requirements as we continue our value-added focus customer fist approach."

**MSP:** Why did Softcat choose Cradlepoint to partner with? What makes Cradlepoint different from other alternatives?

**TR:** "Softcat's decision to partner with Cradlepoint rested on Cradlepoint's unwavering commitment to excellence, customer satisfaction and clear understanding of the industry vertical outcomes their technology can help achieve. This decision was further reenforced by the strong partnership Cradlepoint have with Ericsson enabling solution coverage across both Public and Private 5G technologies. The team at Cradlepoint actively

In the coming months, our signed and certified partners can expect more leads; meaning qualified opportunities with the support of our field sales & se teams. They will be privy to market trend information ahead of the curve that we have invested in to support our partners in their markets



supports Softcat's sales teams, valuing their feedback and promptly adjusting training as needed. It is this collaboration that ensures a strong partnership.

"Furthermore, Cradlepoint stands out from other alternatives due to its genuine enterprise-grade 5G solution. Unlike off-the-shelf devices, their product ensures superior connectivity performance alongside additional enterprise grade tooling, such as SD-WAN and security functionality, making it a perfect fit for Softcat's customers. This distinction reflects Cradlepoint's dedication to providing cutting-edge technology and surpassing industry standards, making them the obvious choice for this successful partnership with Softcat."

**MSP:** How do you see the market developing over the coming years?

**TR:** "The market holds immense potential in the current landscape. Traditional connectivity via Public 5G is continued to grow and connect the previously unconnected. We are also witnessing an acceleration in IoT deployment, and it's projected that by 2030, over 50% of global data will be generated from these devices. Organisations must ensure real-time data transmission and viewing capabilities to unlock the unique use-cases IoT can offer. That's where 5G connectivity comes in with its high speeds, ample bandwidth, and Iow latency, enabling seamless support for many devices.

"Organisations are also now seeking suppliers who offer added value beyond just connectivity. Features like SD-WAN, zero-trust networks and cloud-based management software empower IT teams to manage networks more effectively. As we move forward, these enhancements will play a significant role in shaping the market and delivering exceptional solutions to meet the evolving demands of businesses."

#### MSP: Which sectors are of the most interest?

TR: "There is significant potential in almost every sector right now. However, there are a few that really catch our attention. For instance, manufacturing stands to benefit greatly from significant IoT deployments, allowing manufacturers to closely monitor machine operations and digitise previously analogue systems and processes. Many sectors, from shipping ports to utility companies, use these devices to run processes more efficiently. For example, many meter readings are still analogue; attaching a device that can digitise these readings saves huge amounts of time instead of waiting for an engineer to go round and check manually. Outside of industrial organisations, enterprises are also beginning to adopt 5G connectivity to unlock new and innovate ways to differentiate in the market and optimise business operations."

**SRG:** "The public sector also has a lot of potential. Rapid digitisation within police forces requires support for in-car Wi-Fi, video data transmission from bodycams, and secure connectivity for evidence from crime scenes. These critical applications demand secure and reliable connectivity solutions, and we are eager to meet these needs in the public sector."



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# Worldwide cloud service spending to grow by 20% in 2024

Worldwide cloud infrastructure services expenditure grew 19% year on year in Q4 2023 to reach US\$78.1 billion, an increase of US\$12.3 billion. For full-year 2023, total cloud infrastructure services spending grew 18% to US\$290.4 billion, up from US\$247.1 billion in 2022.

THE INFLUENCE of enterprise IT optimization on the cloud services market is falling, with more customers expanding their commitments with hyperscalers in anticipation of increased consumption requirements. Cloud migration efforts are picking up again, alongside a surge in new demand, particularly in the widespread adoption of AI applications. Hyperscalers are steadily ramping up investments in generative AI, expecting that harnessing its capabilities will catalyze new opportunities in cloud consumption. In 2024, Canalys expects global cloud infrastructure services spending to increase by 20%, compared with 18% in 2023.

In Q4 2023, the top three cloud providers – AWS, Microsoft Azure and Google Cloud – jointly grew by 21% and accounted for 66% of total spending. In Q4, Microsoft Azure and Google Cloud saw a strong resurgence in revenue growth, both exceeding 25% once again. With 30% growth, Microsoft significantly outpaced the market and continues to close the gap on AWS. Market leader AWS saw an uptick in growth compared with previous quarters, but an increase of 13% year on year remains behind the trajectory of both Microsoft Azure and Google Cloud. "AWS has been slower than its key competitors to make AI advances, which may explain why its growth is not accelerating as rapidly as that of Azure and GCP," said Yi Zhang, Analyst at Canalys. "The integration of generative AI into mainstream software products is accelerating, potentially leading to quicker commercialization of generative AI applications. Google recently introduced its rebranded Gemini large language model into Workspace applications, such as Gmail and Docs. At the same time, Microsoft launched Copilot for Microsoft 365 last November, embedding its generative AI platform into Word, Excel and other office applications."





"This trend underscores the growing importance of AI in enhancing user experiences, productivity and efficiency within software ecosystems," said Alex Smith, VP at Canalys. "As AI continues to evolve, solution providers are exploring integration opportunities beyond vendor offerings, aiming to leverage AI capabilities to innovate and deliver enhanced solutions to their clients."

Amazon Web Services (AWS) led the cloud infrastructure services market in Q4 2023. accounting for 31% of total spend. After several quarters of slowing growth, AWS saw a modest uptick in momentum, with revenue increasing by 13% year on year. As of Q4 2023, AWS' backlog (future committed spending by customers) stood at US\$155.7 billion, a year-on-year increase of over US\$45 billion. The upward trajectory of AWS' growth rate is expected to persist through 2024. It announced a reduction in AWS Marketplace listing fees for SaaS and data offerings from 13% to 3% in December 2023, which aligns with its competitors, Microsoft Azure and Google Cloud. This initiative indicates AWS' increasing strategic focus on its marketplace as a facilitator of consumption and partner revenue rather than a standalone revenue-generating asset. AWS launched a second infrastructure region in Calgary, Canada, in December 2023, becoming the first major cloud service provider to establish an infrastructure region in Western Canada.

Microsoft Azure, as the second-largest cloud service provider, saw its market share increase to 26% in Q4 2023, against 23% in Q4 2022. The surge in Al adoption boosted Azure's revenue by 30% compared with Q4 2022. Azure expanded its support for OpenAI's latest models in Q4, including GPT-4 Turbo, GPT-4 with Vision and Dall-E 3, and now offers fine-tuning capabilities as well. It has secured 53,000 Azure AI customers, with over a third acquired in the past 12 months. With its AI advantage, Azure's growth momentum is expected to continue. It announced that, as of 16 January 2024, Copilot for Microsoft 365 is generally available across all sales channels. This move aims to broaden access for customers and create additional opportunities for the partners serving them.

Google Cloud was the third largest provider and grew 26% to account for 10% of the market in Q4 2023. Driven by demand for AI, Google Cloud began a new growth trajectory in Q4. As of 31 December 2023, Google Cloud accumulated US\$74.1 billion in revenue backlog, up from US\$64.3 billion at the end of 2022. Google hopes that its Gemini large language model will elevate it to the forefront of the artificial intelligence industry. Just two months after launch, Google announced its successor, Gemini 1.5, in February 2024, aimed at developers and enterprise users, with plans for a broader consumer launch soon after. Google Cloud has also maintained its focus on expanding channel partnerships to drive growth. It has tripled the number of co-sell deals with partners since 2022. Canalys defines cloud infrastructure services as those services that provide infrastructure-asa-service and platform-as-a-service, either on dedicated hosted private infrastructure or shared public infrastructure. This excludes software-as-aservice expenditure directly but includes revenue generated from the infrastructure services being consumed to host and operate them.

# Spending on GenAl solutions in Europe to exceed \$30 billion in 2027

According to the latest release of the Worldwide AI and Generative AI Spending Guide (v1 2024) published by International Data Corporation (IDC), the European AI and generative AI (GenAI) market will reach almost \$47.6 billion in 2024 and record a compound annual growth rate (CAGR) of 33.7% over the 2022-2027 forecast period. Europe represents around one-fifth of the global AI market.

WHILE THE SHARE OF GenAl reached only 9.6% of the total European Al market in 2023, it is increasing rapidly. Spending on GenAl will grow more than three times as fast as spending on the rest of the artificial intelligence market, and as a result, GenAl will represent more than a quarter of the total European Al market in 2027.

Software will be the largest technology segment in 2024, with a market value higher than hardware and services combined. Furthermore, it is expected to present the fastest growth in the 2022-2027 period, driven by demand for AI applications and platforms. The share of hardware technologies will decrease during the period in favor of software technologies, with the exception of the software and information services industry, in which the hardware component remains the largest, due to specific AI infrastructure provisioning use cases that characterize this industry.

Al adoption is already widespread, and companies are demonstrating their willingness to expand that adoption to GenAl. According to the IDC EMEA Cross-Industry Acceleration Survey run in December 2023, one out of three companies are already using or are planning to use Al solutions in the following 24 months. The maturity of adoption is the result of a need to optimize business processes with a clear focus on customers and employees. Indeed, Al solutions proved to be successful in boosting customer experience as well as improving employee productivity. On the other hand, adoption is facing challenges primarily related to the broad integration of Al into the organization and their ethical use.



"Artificial Intelligence, as well as generative AI applications, should become fully integrated into the business, accompanied by responsible use," says Carla La Croce, research manager, Customer Insights and Analysis, IDC. "Realizing the full potential of AI and generative AI requires time. Although it is clear what benefits AI and GenAI solutions potential bring to companies' internal organization and processes, effectively realizing these benefits requires long-term planning. This requires companies to have a flexible and adaptable business plan to integrate AI and GenAI in a broader forward-looking and responsible strategy."

Banking, retail, and software and information services are the top 3 industries in terms of spending, representing nearly a third of the European AI market. In the financial sector, notable uses of AI solutions span the cybersecurity risk areas, including augmented fraud analysis and investigation and threat intelligence and prevention systems, while customer support use cases include program advisors and recommendation systems. Moreover, financial institutions are increasingly integrating GenAI into their banking services; for example, for fraud detection or to generate accurate predictions and scenarios.

Evolving customer expectations and needs, fierce competition, and the quest for enhanced online customer experience are all factors driving retailers to experiment with emerging technologies. The retail industry in particular is taking advantage of the opportunities created by Al. With uses such as augmented customer service agents or expert shopping advisors and product recommendations, customer experience and satisfaction are always at the center of retail objectives, where Al can become a transformative force. Moreover, GenAl is gaining traction as many retailers expect to explore large language models (LLMs) and foundation models (FMs) applications in marketing, sales and customer engagement.

Finally, the software and information services industry, which represents software vendors and information and data services companies, is characterized by spending on AI by providing AI infrastructure. These companies grant users access

#### THE ANALYST

to this infrastructure, providing resources needed for computing and for storage for AI systems development or the provision of AI services to end customers. AI spending in this industry will be driven by hardware components, which represents the largest tech component of the overall AI market. Nevertheless, software's market share will increase in the long term, growing fastest than any other technology component, as software providers will allow end users also to leverage their platform as a service (PaaS) and software as a service (SaaS) solutions. In addition, technology leaders can use GenAI to accelerate software development.

### European edge computing spending to reach nearly \$50 billion in 2024

According to the Worldwide Edge Spending Guide (Edge SG) published by the International Data Corporation (IDC), European spending on edge computing will reach nearly \$50 billion in 2024, representing an increase of 15% compared to last year. Buyer segment spending, which includes both enterprises (large and very large businesses) and service providers, is expected to continuously grow across various categories such as hardware, software, professional services, and provisioned services for edge solutions through 2027. Spending is expected to reach \$75 billion in 2027, reflecting a strong growth trend.

IDC defines edge as information and communications technology (ICT) related actions that are performed outside of the centralized datacenter, where edge is the intermediary between the connected endpoints and the core IT environment. Characteristically, edge is distributed, software-defined, and flexible. The value of edge is the movement of computing resources to the physical location where data is created, transacted or stored, thereby facilitating business processes, decisions, and intelligence outside of the core IT environment.

"Europe is steadily moving into the digital age, despite the ongoing macroeconomic uncertainty. Edge computing is playing a vital role in this advancement by revolutionizing industries and building resilience through innovation," says Alexandra Rotaru, senior research analyst for the IDC Data & Analytics group. "This transformative process will enable businesses to leverage datadriven insights at the source, with the assistance of AI at the edge. This will facilitate real-time decisionmaking and unlock new potential for efficiency and competitiveness."

Over the next three years, edge computing in Europe is expected to experience substantial growth due to advancements such as the widespread adoption of 5G networks and the integration of artificial intelligence (AI) and machine learning (ML) technologies at the edge. Also, leveraging edge computing for augmented and virtual reality (AR/ VR) applications can enhance user experience, reduce operational costs, and enable new use European Edge Computing Spending by Domain, 2022-2027 CAGR

cases in various industries. The development of Al deployments at the edge remains crucial for Europe, as it can enhance privacy protection by processing data locally. It can also foster innovation and economic growth by encouraging the development of specialized Edge Al solutions. Additionally, it can improve resilience and promote compliance with stringent data regulations, thereby contributing to Europe's leadership in the global Al landscape. Share the image

Investments in edge solutions are dominated by the enterprise segment, with discrete and process manufacturing being the largest contributors, followed by the retail and professional services industries. Production asset management, autonomic operations, electric distribution, and inventory intelligence will be among the use cases with the largest value of investments in our forecast period. These are mostly linked to the maturing IoT domain. In the service provider domain, investments for edge service delivery are based on infrastructure spending for multi-access edge computing (MEC), content delivery networks, and virtual network functions. Across more than 500 enterprise use cases, these three together will account for almost 22% of all edge spending this year.

In the long term, the fastest spending growth over the 2022-2027 period is expected in emerging edge use cases, primarily within the AR/VR and AI domains, such as augmented threat intelligence and prevention systems, collaborative autonomous mining operations, augmented maintenance, or AR/ VR-focused training. These technologies remain instrumental in allowing companies to realize the full potential of their innovation and digital transformation capabilities.

In terms of edge-specific technology spending, the largest investment share will continue to be led by hardware, followed by provisioned services, which will continue to significantly increase spending over the forecast period. Within provisioned services, the cloud portion will represent the fastest-growing category. On-premises software will be a critical component of edge infrastructure but remain the smallest share category over the forecast period.



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