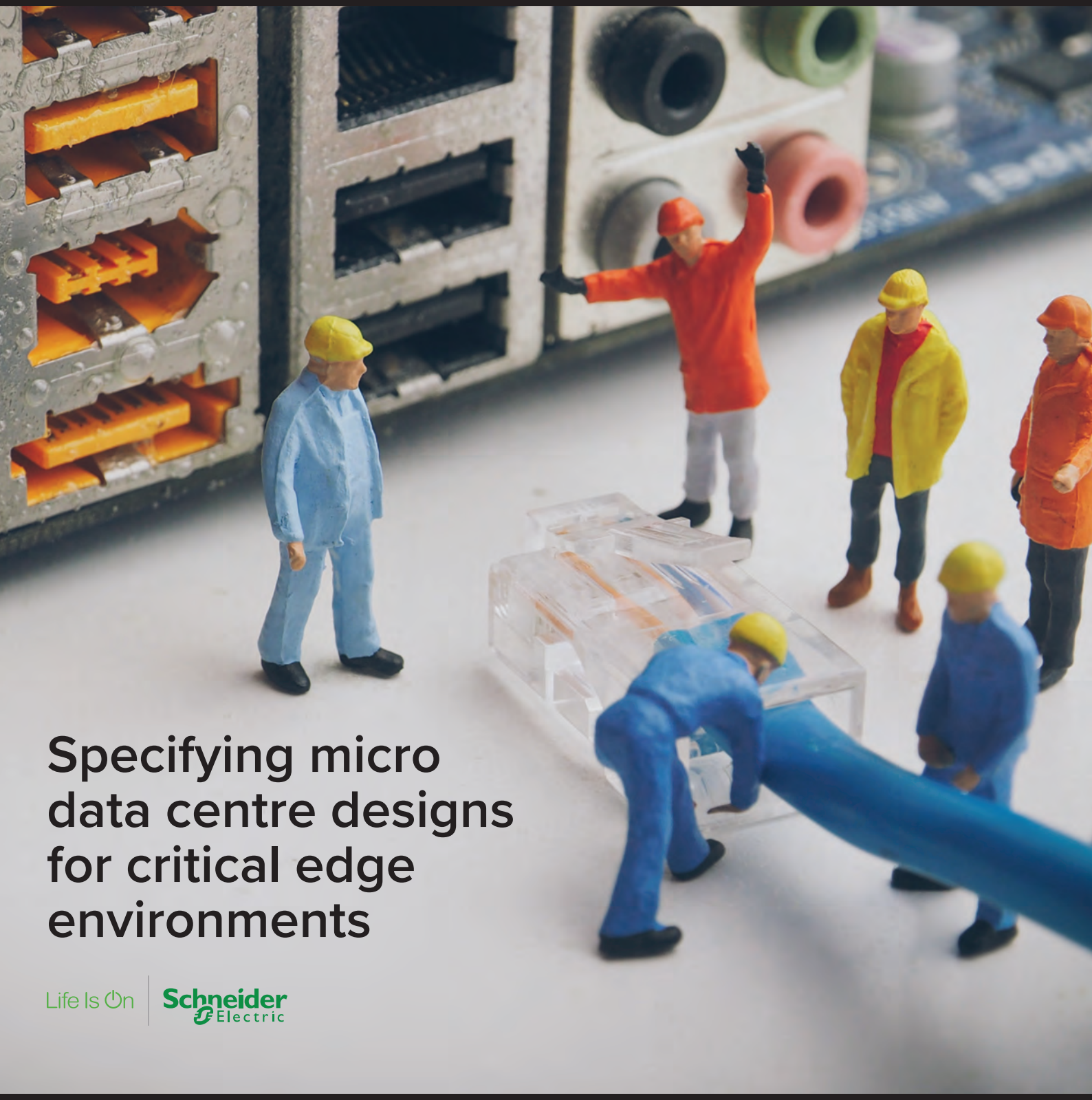
DW
DIGITALISATION WORLD

MODERN ENTERPRISE IT - FROM THE EDGE TO THE CORE TO THE CLOUD

ISSUE III 2022

DIGITALISATIONWORLD.COM



Specifying micro data centre designs for critical edge environments

AIOps | Apps + DevOps | Artificial Intelligence | Big Data + Analytics | Cloud + MS
DC Facilities + Colo Digital Business | IT Management + Service | Networks + Telecoms
Open Source | Security + Compliance | Storage + Servers

AN ANGEL BUSINESS COMMUNICATIONS PUBLICATION

EcoStruxure™
Innovation At Every Level

Deploy your data centre FASTER with less risk using EcoStruxure™ Data Centre solutions.

EcoStruxure™ for Data Centre delivers efficiency, performance, and predictability.

- Rules-based designs accelerate the deployment of your micro, row, pod, or modular data centres
- Lifecycle services drive continuous performance
- Cloud-based management and services help maintain uptime and manage alarms

Discover how to optimise performance with our EcoStruxure Data Centre solution.

se.com/datacentre

Life Is On | Schneider Electric

Editor's view

By Phil Alsop

Hybrid help is at hand

THE PANDEMIC caused massive disruption to our working lives. Many of us enjoyed homeworking; many couldn't wait to return to the office. Most, I suspect, fell in love with the idea of the hybrid workplace – some time spent in the office and some time working from home.

And now we have a cost of living crisis, with soaring energy and fuel prices. And just for good measure, the latest IPCC report suggests that we have very nearly run out of time to take the drastic actions required to halt irreversible, catastrophic global warming. Oh, and then there's the small matter of the war in Ukraine, which is contributing to the global instability of prices for so many goods and services – and that's before the lack of fertiliser and wheat being produced in that country has a major impact over the next few years.

A time of major disruption. Major disruption that requires major, sustained innovation. And so, finally, there just might be some real impetus behind the renewable energy sector.

All of a sudden the 'unreliability' of wind and solar, and the 'fallout' of nuclear waste, don't seem such a terrible price to pay when compared to soaring oil and gas prices. It will be fascinating to see if such a commitment survives the end of the Ukrainian conflict and, presumably, a marked fall in fossil fuel prices.

Especially when one considers that, no matter the overall benefits of the hybrid workplace, there are rather too many alarmingly traditional voices bemoaning the fact that large numbers of workers have not yet returned to their office buildings. The pandemic taught us all new ways of working but, apparently, these were just a temporary fix and there's no substitute for 9-5 (or more) spent at a desk in a building dedicated to work. No matter the potential cost-savings of eliminating the daily commute, the expensive lunchtime sandwich or after hour drinks – mammon must be served... Or maybe not. There is plenty of hybrid working momentum left over from the pandemic (which hasn't actually finished just yet!). Add in spiralling supply chain costs and unreliability and it could just be that those in charge do eventually realise that what are seen as threats to our current way of life just might be a massive opportunity to re-set our societies moving forward, with IT having a major role to play.

My favourite quote, taken from the film The Third Man, is as follows:

In Italy for thirty years under the Borgias, they had warfare, terror, murder, bloodshed. They produced Michaelangelo, da Vinci, and the Renaissance. In Switzerland, they had brotherly love, five hundred years of democracy and peace, and what did they produce? The cuckoo clock.

Let us hope that, given the times we live in, our respective governments can produce more than a few cuckoo clocks!

DIGITALISATION WORLD

Angel BUSINESS COMMUNICATIONS

Editor
Philip Alsop +44 (0)7786 084559 philip.alsop@angelbc.com
Sales & Marketing Manager
Shezhad Munshi +44 (0)1923690215 shehzad.munshi@angelbc.com
Sales Executive
Jessica Harrison +44 (0)2476 718970 jessica.harrison@angelbc.com
Director of Logistics
Sharon Cowley +44 (0)1923 690200 sharon.cowley@angelbc.com
Design & Production Manager
Mitch Gaynor +44 (0)1923 690214 mitch.gaynor@angelbc.com
Publisher
Jackie Cannon +44 (0)1923 690215 jackie.cannon@angelbc.com

Circulation & Subscriptions
+44 (0)1923 690214 circ@angelbc.com

Directors
Stephen Whitehurst: Chairman
Scott Adams: Chief Technical Officer
Sukhi Bhadal: Chief Executive Officer

Published by:
Angel Business Communications Ltd, 6 Bow Court, Burnsall Road, Coventry CV5 6SP
T: +44 (0)2476 718970 E: info@angelbc.com

Digitalisation World is published 8 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.

The paper used within this magazine is produced by chain of custody certified manufacturers, guaranteeing sustainable sourcing. ISSN 2396-9016 (Online)

DW DIGITALISATION WORLD

DCA News

NEWS

STORAGE

No technology, no transformation?

Operations leaders say technology could have transformational impact on their teams' efficiency and effectiveness.

OPERATIONS LEADERS believe insufficient investment in technology could hold back the effectiveness of their departments to manage expected periods of additional significant change, according to new research by Pegasystems. The global study, conducted by research firm iResearch, surveyed operations leaders from 10 countries in the Americas, Europe, and Asia-Pacific for their thoughts on what the future holds for operations functions over the next five years.

With responsibility for people, budgets, project delivery, transformation, and strategy, operations teams can make or break the success of any modern organization. Not withstanding this, the research showed 50% of respondents feel that operations does not currently get the level of investment needed to be truly effective.

This is despite the fact that nearly two thirds (64%) say additional investment in technology would have a significant transformational impact in both the efficiency and effectiveness of operations teams. Meanwhile, 73% say that the ability to keep up to date with the latest technologies will be key over the course of the next five years, with investment in technology seen as key to building greater resiliency and predictability for operations functions, while also potentially mitigating the impact of the next big disruption.

The study also found that the next five years are predicted to bring a period of additional significant change for operations teams, with technology expected to play a key role in enabling the successful operations functions of tomorrow for those prepared to make the required investment. Some of the expected changes to occur include:

A move to ubiquitous automation: Seventy-one percent of respondents say the automation of routine administrative and IT tasks will have either a 'big or transformational' impact on the operations function over the course of the next five years, while the same percentage also indicated that optimizing workflow through AI and automation will have a similar impact over the same period. This suggests organizations will place greater emphasis on implementing AI-powered decisioning and workflow automation to streamline processes and transform their workflow by reducing inefficiencies and unlocking value.

The future is hybrid, not zero operations: While many consultants and technologists have predicted that the future of the operations function is 'zero operations', in which everything is automated, respondents indicated that a hybrid model, with a mixture of automation and in-person, seems the most likely. Almost one third (29%) say they were already too committed to a hands-on, human approach to fully automate their operations function, while one quarter (26%) say they require a specific person to do perform the role effectively, meaning they are unable to automate.

Ops leaders will need to become more tech savvy: When asked which competencies will be most important to them in the next three to five years, respondents identified digital and computational skills as the most significant - with one third (32%) citing them as key. Leaders in the operations function will also be required to upskill themselves in other ways, with business strategy (31%) and collaboration (26%) deemed to be important competencies to develop.

The rise of the ops specialist: The rise of automation and hybrid operations functions will see a greater number of operations specialists. Half of respondents (48%) say they will need to hire more specialists to handle operations work that can't be automated or digitized, while over one third (36%) say they will reduce the number of generalists in operations roles

The most customer centric organisations achieve 9x higher revenue growth

A new study reveals that only 36% of European organisations are truly customer centric.

CUSTOMER CENTRIC organisations grow nine times faster. They are four times more likely to have highly satisfied employees, and the ability to change in months that would take others years to achieve. This is according to a new study by experience design consultancy, cxpartners, in partnership with Google, which surveyed 110 businesses across Europe.

The State of Customer Centricity report reveals the scale of the advantage that Europe's most customer centric companies have—with on average the top 36% achieving around 9x the annual year on year revenue growth compared to lower maturity companies.

What is customer centricity?

Customer centricity is more than having good customer service. It's about the way the entire company runs - from HR, to technology, to product. In essence, cxpartners finds that customer centric organisations are ones where everyone is constantly asking: "how can we better serve our customers?"

The research is based on the cxpartners' Customer Centricity Model, which measures an organisation's customer centricity across five different dimensions that determine whether they can create great user experiences. These are people, process, governance, facilities and communication.

The differences in performance between a high- and low-scoring customer centric organisation are startling.

Faster growth

Organisations with high customer centricity have an average annual revenue growth rate of 8.7%. In comparison, organisations with low to medium levels of customer centricity, have an average of 0.8% growth.

The team of researchers believe there are two reasons for this. Customer centric organisations are more likely to retain customers, which creates a strong foundation for growth. In turn, these customers are more likely to recommend those organisations to their friends and family, accelerating growth.

More satisfied employees

Over 90% of high customer centric businesses have a high employee satisfaction rate compared to just 20% of low-scoring organisations. The researchers believe that a customer centric operating model provides employees a clear mission that gives their work meaning.

Employees empowered with a greater sense of autonomy also deliver a higher performance when they are trusted to do what is best for the customer.

In the increasing battle for talent, a customer-centric operating model seems to offer a clear advantage.

Greater agility to change

The research finds that 65% of highly customer-centric organisations are able to adapt by making major changes to their systems within weeks or months, rather than the years taken by low-scoring organisations.

The researchers put this down to two things. First, high performing organisations are focused on the customer impact of their technology choices, rather than cost or internal politics. Second, high maturity organisations are able to make better decisions faster and deliver more value to customers.

Innovation vital to staying competitive

Despite two years of heavy investment in digital transformation to survive the pandemic, the new 2022 API & Microservices Connectivity Report from Kong Inc. reveals that the pressure to innovate continues to mount for technology leaders.

A SURPRISING 75% of technology leaders fear competitive displacement if they fail to keep pace with digital innovation, up 13% since 2021 and 18% since 2020. Compounding this fear is a lack of skills and talent, cited by 34% of survey respondents as a drag on innovation, when recruiting qualified developers during the ' Great Resignation' is more challenging than ever for organizations across industries.

According to the new research, 40% of respondents predict they will go under or be absorbed by a competitor within three years if digital innovation lags, while an overwhelming majority (81%) predict the same outcome within six years and virtually all (98%) within 10 years.

The annual survey of 500 senior technology leaders across the U.S., Europe and Asia benchmarks how APIs, microservices and modern software architectures enable business agility and compares how they are used at organizations with more than 1,000 employees.

"Kong's latest API & Microservices Connectivity Report sheds critical insights into the state of business innovation and technology adoption as we enter this new post-pandemic era," said Marco Palladino, CTO and co-founder of Kong Inc. "We are in a unique business climate today where almost every minute of our customers' lives are digitally connected, and they expect nothing less than seamless connections and the best digital experiences possible. Businesses must make customer experiences a priority in 2022 – starting by investing in the right tech stack and empowering their developer teams to build the applications of the future."

Technology Leaders Make Creating World-Class Digital Experiences a Top Priority

While business leaders believe they must innovate quickly to stay competitive, the speed of innovation cannot come at the expense of security, performance and reliability. When asked about their top business priorities, technology leaders most cited the need to improve application security (44%), improve application performance/ reliability (40%), make it easier to adopt new technologies to bridge the transition to the future (40%) and improve developer efficiency (39%).

As they strive to accomplish their business priorities, technology teams are most commonly challenged by the complexity of using multiple technologies (38%), reliance on legacy technologies/monolithic architectures (37%) and a lack of automation in IT that ties resources up on trivial manual tasks (37%).

APIs and Modern Software Architectures Accelerate Innovation

In today's world where digital experiences are king, a reliable, secure and scalable tech stack is the linchpin of innovation and superb customer experiences. It comes as no surprise that 86% of survey respondents believe that microservices-based applications are the future and the ability to support distributed applications is critical for success. Likewise, 84% said that organizations unable to ensure the reliability and resiliency of the APIs that connect microservices-based apps are more likely to lose market share to competitors who can.

Nearly nine out of 10 (89%) technology leaders say their organizations have either already fully transitioned to entirely distributed architectures (microservices, containers, serverless, etc.) or are currently using a mix of monolithic architectures and microservices, with 45% fully transitioned to entirely distributed software architectures.

As business software architectures become more decoupled, microservices continue to grow in use. The majority of teams (62%) run 20-99 microservices in production, and nearly one in five (19%) teams run 100-499 microservices.

To handle microservices at scale, technology leaders are increasingly turning to service meshes as a complement to API gateways in providing reliable, secure and observable connectivity between services in distributed, cloud native environments.

This year, more than a third (34%) of respondents report already having service meshes in production. Another 46% report having service meshes in deployment, making it a vast majority of technology leaders (80%) who already have a service mesh either in production or deployment.

2022 IT Budgets and Funding Priorities: Tech Leaders Invest in Empowering Developer Teams

Providing developers with the modern technology tools they need will be a major focus for business leaders in 2022. In order to meet their business priorities and overcome their IT challenges, technology leaders plan to allocate more to their IT/developer budgets:

Nearly four in five (79%) expect their organizations' IT/developer budgets will increase in 2022, with a vast majority (64%) expecting it to increase by as much as 25%.

Tech spend increases by 43% on average for IT decision makers

85% of IT decision makers have seen tech spend increase since pandemic, but only a third report tangible value from new investment.

TECHNOLOGY spend for IT decision makers has increased by an average of 43% since the pandemic began, with 62% also experiencing technology drift in their company. That's according to Orbus Software, a leading provider of cloud solutions for digital transformation, which surveyed IT decision makers across the US and UK to determine the increased financial demands of the pandemic.

The most common reasons for increased spending were revealed as onboarding new technology to support working from home and hybrid working (71%), rising technology costs (69%), and the introduction of new IT regulations (56%).

However, when it comes to onboarding new technology, only 30% say that all new onboarded technology has brought a tangible value, with 51% saying 'most' has. The majority (79%) say that all or most of the technology purchases over the past 24 months have been pre-planned, compared to 13% who say they have been last minute. The study identified that the UK is more prone to last minute investments than the US (17% vs 9%).

Michael D'Onofrio, CEO at Orbus Software, commented: "The past two years have undoubtedly elevated the importance of technology, yet this technology drift – where there is a growing gap between what companies are trying to do and what they actually achieve – is causing significant problems. Despite spending increasing, not even a third of organisations can state it has delivered a tangible value."

To combat these challenges and plan future technology and software purchases, 80% of respondents say

their company has either onboarded (34%) or have plans to onboard (46%) an Enterprise Architecture tool. Diving deeper, the survey found that almost half (47%) onboarded Enterprise Architecture due to rising technology costs and 46% wanted to reduce the gap between IT and business stakeholders. Alongside this, 41% are bringing in Enterprise Architecture to simplify increasing complexities, and 39% say they need to gain greater visibility before moving to the cloud.

"We are currently in a period of significant friction, and organisations are needing to pivot frequently. Because of this, organisations need reliable core services that give them visibility, reliability and agility," D'Onofrio continued. "It's vital to have a tool that can give companies that visibility and insight. Without Enterprise Architecture, the challenges faced by IT teams will continue to get out of hand."
The survey also revealed the IT roadmaps in place across the UK and US. It found that 95% have a technology roadmap in place to help make informed technology purchases. They most commonly plan for the next 6 (26%) or 12 months (37%). However, 14% have an 18-month roadmap in place and 19% for 2 years or even longer.

The most common reasons for increased spending were revealed as onboarding new technology to support working from home and hybrid working (71%), rising technology costs (69%), and the introduction of new IT regulations (56%)

Just one in five offices has a hybrid working policy in place

New research shows a lack of planning and investment in hybrid working is threatening to derail a widespread successful return to the office.

THE RESEARCH, conducted by Opinium for Ricoh Europe, polled 3,000 office workers across the UK, Ireland, France, Germany, Italy, the Netherlands and Spain. It found they remain cautious about returning to the office full time, highlighting the importance of flexible hybrid working for organisations.

Just one-in-five (19%) say their workplace has a hybrid working policy in place. At the same time, inadequate technology and collaborative working environments are holding back the realisation of more accommodating and agile ways of working. Under half (45%) have seen an increase in meeting room communication technology to aid hybrid working, while almost one-in-four (23%) say the amount of collaboration space in their office has decreased. In addition, less than a third (32%) believe there has been an increase in safe access to equipment, such as lockers for picking up IT equipment, without having to meet a colleague face-to-face. This could cause significant friction for employees seeking to return to the office, discouraging them from being present on a regular basis. If left unaddressed, workplace productivity could decline while top talent seeks more flexible employment.

At a time when demand for talent is at an all-time high, more than a third of workers (36%) feel pressured to return to the office by their employer – an increase of 28% from a similar study conducted in 2020. Almost two-thirds (64%) believe it should be the individual's choice to return to the office in 2022, reinforcing the requirement for senior leaders to balance employee preference with business need as they shape hybrid working policies.

David Mills, CEO, Ricoh Europe, says: "Providing the right collaboration tools to create a positive working experience for everyone, no matter where they are, is vital for employers as restrictions ease. Failure to do so risks creating an experience gap between those in the office and those working remotely."

Importantly, trust between businesses and their workforce has improved throughout the course of the pandemic. Almost two-thirds (64%) of employees think their employers are more confident in their ability to stay motivated and productive when working remotely – a 23% increase compared to a similar study in 2021.

Mills adds: "After two years of on again, off again restrictions, the world of work continues to evolve. Employees are rightfully looking to their employers to lead this change at work. The research shows that employers have come a long way in building trust with their workforce. Creating a workplace that truly embraces hybrid working is the next vital step in the journey. While there are many benefits of having people work together in the same room, hybrid working will be here for the foreseeable future. Investing in hybrid working now is an investment in the future – it will improve productivity and help with talent retention."

Just one-in-five (19%) say their workplace has a hybrid working policy in place. At the same time, inadequate technology and collaborative working environments are holding back the realisation of more accommodating and agile ways of working

Research highlights evolution of the workplace

The research also uncovered a gender divide with 70% of women reporting experiencing negative effects from remote work, versus only 30% of men.

IVANTI has published the results of its annual Everywhere Workplace study that worked with global "future of work" experts and also surveyed over 6,100 office workers and IT professionals to uncover employee sentiments related to the past, present, and future of work. The report revealed that the employee priority revolution continues, with a whopping 71% of respondents saying they would prefer to work from anywhere than get a promotion. Despite its popularity, remote work is a double-edged sword, with 10% of respondents reporting a negative effect on their mental health.

The toll the pandemic has taken on employees' mental health has been significant with 70% of IT women respondents reported experiencing negative effects from remote work, versus only 30% of male respondents in the same group reporting negative effects*. Additionally, many employees are feeling the effects of losing personal connection with coworkers (9%) and being expected to work longer hours than when in the office (6%). The report also showed the further gender divide: 56% of female respondents said remote work has affected their mental health negatively, compared to 44% of men. While 52% of women reported having lost personal connection with coworkers, compared to 47% of men.

"Ivanti's research shows that the remote work experience for both office workers and IT professionals varies across gender lines. More men than women report being passed over for a promotion in this digital-first culture. Women, however, are expected to work longer hours, but have benefitted the most overall from the flexibility that remote work brings. This shift in employee experience cannot be ignored. Employers must respond by adopting technology that facilitates collaboration and lessens the disparities in experience across gender lines, and that begins with prioritizing employee input in every tech implementation," said Meghan Biro founder and CEO of TalentCulture.

Looking at potential "future of work" models, the research found that 42% of employees prefer a hybrid model of work (a 5% increase since the last study). Thirty percent of employees said they would prefer to work from home permanently (a 20% decrease since the last study) demonstrating that many are looking to interact with colleagues again.

This decrease could also be attributed to the fact that while remote work has brought many positive changes – respondents indicated that the top three benefits they have realized since working remotely have been time savings due to less commuting (48%), better work/life balance (43%) and a more flexible work schedule (43%) – there have been some drawbacks. In fact, 49% of respondents said they have been negatively affected in some way by remote work. Among the top concerns were lack of interaction with colleagues (51%), not being able to collaborate or communicate effectively (28%), and noise and distractions (27%).

"The pandemic has catalyzed a monumental shift in where and how people work," said Jeff Abbott, CEO of Ivanti. "The good news is that by increasing automation of common or mundane tasks, companies can improve work-life balance for IT and security teams, plus prevent data

breaches and most importantly improve employee experiences."

Automation will become increasingly important as environments are expected to continue to get more complicated. In fact, 15% of respondents said they would prefer to work from anywhere (an 87% increase since the last study). Interestingly, 22% of respondents said they became digital nomads during the pandemic, and 18% said they are considering becoming a digital nomad. Only 13% of respondents said they would like to work permanently in the office (a 11% decrease since the last study).

The study also found just under a quarter (24%) of respondents have left their job in the past year during the 'The Great Resignation,' and 28% are considering leaving in the next six months. When looking at respondents between the ages of 25 and 34, the percentage of individuals who plan to leave their job in the next six months jumps to 36%. Return to the office policies are a key factor in driving resignations. Nearly a quarter (24%) of respondents stated that they would quit their job if their employer enforced a full-time return to the office policy.

Technology leaders examine IT's environmental impact

Notable trends include: opting for a hardware upgrade over a refresh, improving start up time and educating employees on simple greener IT practices.

NEXTHINK has released its Quantifying e-Waste in Corporate IT report, which proves cutting back on environmental waste and creating a more sustainable future can be achieved by eliminating common bad IT habits and better monitoring of device health.

Nexthink's customers are at the forefront of creating a more sustainable future and adopting a digital sobriety mindset. Because of this, they welcomed the opportunity to reduce CO_2 emissions and waste across their organization, which Nexthink identified during the first few weeks of the partnership. This report focused on that data collected during the first weeks of Nexthink implementation from 3.5 million anonymized devices to study how IT leaders everywhere can reduce their organization's environmental footprint and costs while improving employee experience.

The pertinent learnings from the report include:

1: Don't automatically refresh every device. Only replace and pay for what you need to.

The report calls attention to a common trend among enterprises of replacing hardware every few years, regardless of useability. Nexthink's research found that 20% of devices were still performing and didn't require replacement. And of the 80% that did have a low performance score, only 2% were unsalvageable while the remaining 98% were fixable with a simple RAM upgrade or by optimizing startup performance. Companies that are opting to focus on these small fixes are saving millions and helping to address the global e-waste problem.

2. Examine and improve computers' start up time by checking the applications installed and upgrading old devices.

Shockingly, devices that take longer than five minutes to load, produce more than 450 tons of CO_2 emissions per year—that's the equivalent of 50,636 gallons of gasoline. This waste can be prevented with better visibility into the health of employee devices, a clear understanding of user habits and by taking a more proactive approach to common IT issues.

3. Educate employees on green computing habits and create two-way communication channels between the IT team and employees.

A lack of understanding of employee computing habits leads to a higher emissions output and slower computing speeds. The research exposed that collectively, gaming, personal communication and media streaming apps generate 33 tons of CO_2 emissions per year. To put that in perspective, it would take 300 trees a full year to absorb those emissions, based on our sample. IT Leaders have the potential to help their organizations reduce a minimum of 695 Kgs of CO_2 emissions per week simply by educating workers about smart computing habits and by eliminating applications that are heavy emitters.

"Creating a more sustainable work environment is a top priority for enterprises today," said Yassine Zaied, Chief Strategy Officer at Nexthink. "But while many CSR initiatives focus on reducing single-use plastic and eliminating paper waste, they overlook the massive emissions output their IT hardware and digital activities are producing every day. IT leaders have a responsibility to better understand the impact employees' digital footprint can have on the environment and be proactive in rectifying digital issues that are negatively contributing to their environmental impact. Simple acts such as ensuring software is kept up-to-date, turning off laptops when not in use and removing non-essential applications can go a long way in cutting back emissions and saving organizations money.

And while most companies would like to make these changes, many struggle to do so efficiently without a targeted approach. Big CSR changes are possible when organizations have the ability to understand how employees work and the challenges they are facing, and are able to respond accordingly."

EXAGRID®

Tiered Backup Storage

The Future of Backup Storage:

Tiered Backup Storage

Scales to 2.7PB without forklift upgrades or performance degrades with ExaGrid scale-out architecture.

3X
faster backups than dedupe appliances

20X
faster restores than dedupe appliances

Backup window that is **fixed length as data grows**

5YR
Price Protection Plan

New Retention Time-Lock for Ransomare Recovery

Set up with a
Proof of Concept
to experience the difference.

TEST IT TODAY ➤

exagrid.com

Enterprise needs and consumer wants propel 5G demand

Consumers look for faster speeds, but enterprise requirements are driving the future of 5G, says **FROST & SULLIVAN.**

FROST & SULLIVAN'S recent analysis of the global 5G network infrastructure landscape finds that global demand for 5G network infrastructure by communication service providers (CSPs) is considerable and driven by consumer and enterprise needs. The consumer market drove 4G revenues for CSPs and will still be essential in 5G, but there is little room for growth. On the enterprise side, the growth potential is significant. As such, much of the emphasis of 5G is on enterprise requirements across various industry verticals, with both public and private 5G networks.

With enterprises requiring higher-density devices, lower latency, higher reliability, and higher data transmission rates than was possible with 4G, the move toward 5G is well underway, driving demand for 5G network infrastructure. Network infrastructure, which includes radio access networks (RAN), transport networks, and core networks, is long lasting; even as CSPs invest in 5G, they still are investing in previous generations of their networks. The global all-generation network infrastructure market will likely see over $80 billion annually in investments by 2026, with the majority in 5G network infrastructure.

"The network infrastructure that enables 5G is only a few years old but is rolling out much faster than 4G did a decade ago," said Troy Morley, Senior Industry Analyst, Information & Communications Technology at Frost & Sullivan. "The promise of 5G, both for consumers and enterprises, is yet to be realized but will be in the coming months in those geographies that are farthest along in their 5G journey."

Morley added: "As the 5G network is now dependent on software running in the cloud, network functions have been redesigned entirely as cloud-native software. Such new infrastructure

and new architectures make the 5G network significantly different from past networks and enable new use cases for consumers and especially across industries that were previously not possible."

Worldwide private LTE/5G wireless infrastructure market to reach $8.3 billion

New research from International Data Corporation (IDC) forecasts worldwide private LTE/5G wireless infrastructure revenues will reach $8.3 billion by 2026, a significant increase from revenues of $1.7 billion in 2021. The market is expected to achieve a five-year compound annual growth rate (CAGR) of 35.7% over the 2022-2026 forecast period.

IDC defines private LTE/5G wireless infrastructure as any 3GPP-based cellular network deployed for a specific enterprise/industry vertical customer that provides dedicated access to private resources. This could include dedicated spectrum, dedicated hardware and software infrastructure, and which has the ability to support a range of use cases spanning fixed wireless access, traditional and enhanced mobile broadband, IoT endpoints/sensors, and ultra-reliable, low-latency applications.

The worldwide market for private LTE/5G wireless infrastructure continued to gain traction throughout 2021. While private LTE remained the predominant revenue generator, private 5G marketing, education, trials, and new private 5G products and services also began to see market availability. Even so, most private 5G projects to date remain as either trials or pre-commercial deployments.

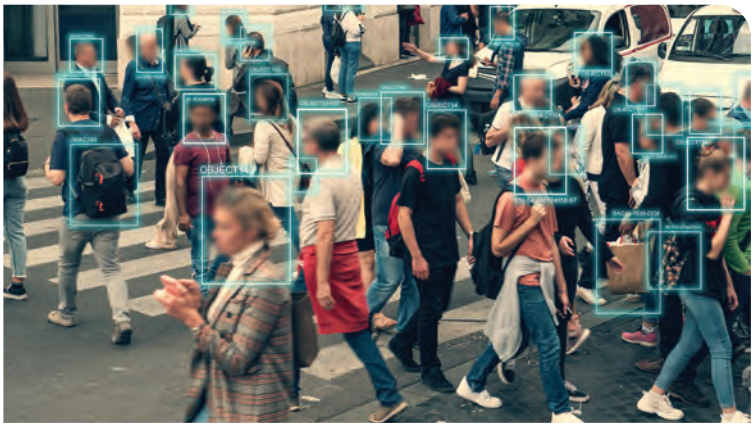
Continued uptake for private LTE and real-world applications of private 5G deployed across the manufacturing, warehousing, and broader industrial sector indicate that while private 5G remains in its infancy from a market size perspective, the appetite and interest for what it can deliver is very real.

"Heightened demand for dedicated or private wireless solutions that can offer enhanced security, performance, and reliability continue to come to the fore as both current and future applications, particularly those in the industrial sector, require more from their network and edge infrastructure," said Patrick Filkins, research manager, IoT and Telecom Network Infrastructure. "While private LTE/5G infrastructure continues to see more interest, the reality is 5G itself continues to evolve, and will evolve for the next several years. As such, many organizations are expected to invest in private 5G over the coming years as advances are made in 5G standards, general spectrum availability, and device readiness."

Organisations must ensure value to avoid AI winter

AI has reached the next stage of the hype cycle; increased collaboration and training now critical for growth.

O'REILLY has published the results of its annual AI Adoption in the Enterprise survey. The benchmark report explores trends in how artificial intelligence is implemented, including the techniques, tools, and practices organisations are using, to better understand the outcomes of enterprise adoption over the past year. This year's survey results showed that the percentage of organisations reporting AI applications in production – that is, those with revenue-bearing AI products in production – has remained constant over the last two years, at 26%, indicating that AI has passed to the next stage of the hype cycle.



"For years, AI has been the focus of the technology world," said Mike Loukides, vice president of content strategy at O'Reilly and the report's author. "Now that the hype has died down, it's time for AI to prove that it can deliver real value, whether that's cost savings, increased productivity for businesses, or building applications that can generate real value to human lives. This will no doubt require practitioners to develop better ways to collaborate between AI systems and humans, and more sophisticated methods for training AI models that can get around

the biases and stereotypes that plague human decision-making."

Despite the need to maintain the integrity and security of data in enterprise AI systems, a large number of organisations lack AI governance. Among respondents with AI products in production, the number of those whose organisations had a governance plan in place to oversee how projects are created, measured, and observed (49%) was roughly the same as those that didn't (51%).

As for evaluating risks, unexpected outcomes (68%) remained the biggest focus for mature organisations, followed closely by model interpretability and model degradation (both 61%). Privacy (54%), fairness (51%), and security (42%) – issues that may have a direct impact on individuals – were among the risks least cited by organisations. While there may be AI applications where privacy and fairness aren't issues, companies with AI practices need to place a higher priority on the human impact of AI.

"While AI adoption is slowing, it is certainly not stalling," said Laura Baldwin, president of O'Reilly. "There are significant venture capital investments being made in the AI space, with 20% of all funds going to AI companies. What this likely means is that AI growth is experiencing a short-term plateau, but these investments will pay off later in the decade. In the meantime, businesses must not lose sight of the purpose of AI: to make people's lives better. The AI community must take the steps needed to create applications that generate real human value, or we risk heading into a period of reduced funding in artificial intelligence."

Other key findings include:

- Among respondents with mature practices, TensorFlow and scikit-learn (both 63%) are the most used AI tools, followed by PyTorch (50%), Keras (40%), and AWS SageMaker (26%).
- Significantly more organisations with mature practices are using AutoML to automatically generate models. 67% of organisations are using AutoML tools, compared with 49% of organisations the prior year, representing a 37% increase.
- Among mature practices, there was also a 20% increase in the use of automated tools for deployment and monitoring. The most popular tools in use are MLflow (26%), Kubeflow (21%), and TensorFlow Extended (TFX, 15%).
- Similar to the results of the previous two years, the biggest bottlenecks to AI adoption are a lack of skilled people and a lack of data or data quality issues (both at 20%). However, organisations with mature practices were more likely to see issues with data, a hallmark of experience.
- Both organisations with mature practices and those currently evaluating AI were in agreement on the lack of skilled people being a significant barrier to AI adoption, though only 7% of the respondents in each group listed this as the most important bottleneck.
- Organisations with mature practices saw the most significant skills gaps in these areas: ML modeling and data science (45%), data engineering (43%), and maintaining a set of business use cases (40%).
- The retail and financial services industries have the highest percentage of mature practices (37% and 35%, respectively). Education and government (both 9%) have the lowest percentage but the highest number of respondents who are considering AI (46% and 50%, respectively).

Global cloud services spend exceeds US$50 billion in Q4 2021

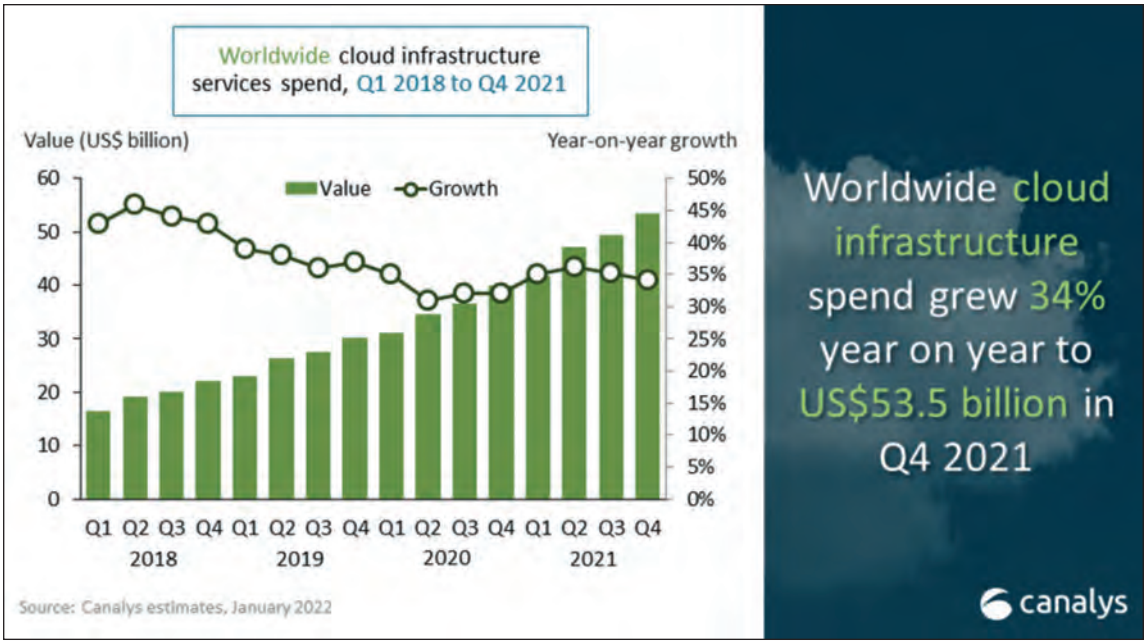
Worldwide cloud infrastructure services expenditure topped US$50 billion in a quarter for the first time in Q4 2021.

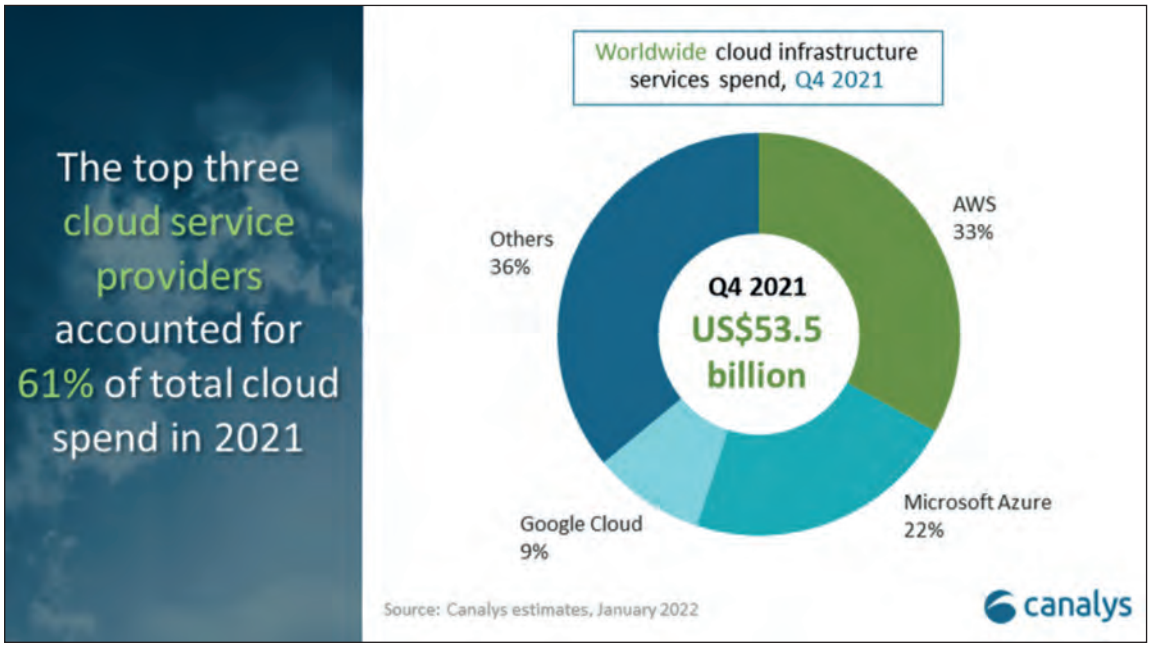
TOTAL SPENDING GREW 34% to US$53.5 billion, up US$13.6 billion on the same period a year ago. Industry-specific applications continued to diversify the use of cloud infrastructure services, especially in healthcare and the public sector.

This combined with more workload migration and cloud-native application development as part of digital transformation projects, which increased demand for services. In addition, lasting pandemic-related consumption drivers, such as remote working and learning, ecommerce, gaming and content streaming, remained important contributors. New immersive use cases are emerging, such as the metaverse, which will drive future demand and the need for more powerful, distributed, intelligent and scalable services with lower latency. The leading cloud service providers are best placed to provide the infrastructure. The top three in Q4 2021, namely AWS, Microsoft Azure and Google Cloud, collectively grew 45%, to account for a combined 64% share of customer spend.

For full-year 2021, total cloud infrastructure services spending grew 35% to US$191.7 billion, up from US$142.0 billion in 2020. The reopening of economies post-lockdowns and growing customer confidence during the year increased multi-year contract commitments with cloud service providers. As cloud service providers diversify their portfolios to reach new opportunities, many are preparing for the cloud computing required to power the shared virtual or augmented reality environment known as the metaverse. This will be a significant driver for both cloud services spend and infrastructure deployment over the next decade. In many ways, the metaverse will resemble the Internet today, with enhanced capabilities and an amplified compute consumption rate. Currently, precursors to the metaverse include use cases spanning gaming, social media, workplace collaboration, education, real estate, ecommerce and digital commerce, including non-fungible tokens (NFTs).

“Cloud services are well positioned for individual developers and organizations looking to enter the metaverse,” said Canalys Research Analyst Blake Murray. “Compute will be in high demand in virtual and augmented reality environments, while storage, machine learning, IoT and data analytics will be essential to support operations such as digital twinning, modeling and interactivity in the metaverse.Continued investment in the metaverse by developers will result in a massive opportunity for cloud service providers, especially the hyperscalers,” said Canalys VP Alex Smith. “Building trust with customers and key technology partners will drive competitive positioning for metaverse development, while global infrastructure, edge deployments and 5G connectivity will be necessary for widespread low-latency experiences.”





Amazon Web Services (AWS) led the cloud infrastructure services market in Q4 2021, accounting for 33% of total spend. It grew 40% on an annual basis. Meta, previously Facebook, recently chose AWS as a long-term strategic cloud service provider and continues to deepen the relationship as Meta begins to move away from social media to become a broader metaverse company over the next five years. AWS also announced key customer wins across retail, healthcare and financial services and emphasized a key agreement with Nasdaq to migrate markets to AWS to become a cloud-based exchange.

Microsoft Azure had a 22% market share and was the second largest provider. It grew 46%, driven by long-term consumption commitments. Across its metaverse technology stack, Microsoft Azure has prepared Digital Twins to model physical objects, Azure IoT to connect physical assets to the cloud and Azure Maps, an indoor private mapping service. It continued to grow its cloud business across multiple sectors in Q4 2021, with key wins in healthcare and financial services.

Google Cloud was the third largest provider and grew 63% to account for 9% of the market. The Google for Startups Cloud Program recently expanded support for investor-backed startups and won key customers, including some in the virtual reality space. It also continued global expansion plans with a dedicated US$1 billion five-year investment across Africa to support digital transformation efforts.

Canalys defines cloud infrastructure services as those that provide infrastructure as a service and platform as a service, either on dedicated hosted private infrastructure or shared infrastructure. This excludes software as a service expenditure directly, but includes revenue generated from the infrastructure services being consumed to host and operate them.

Double-digit growth in global security appliance market

According to the International Data Corporation (IDC) Worldwide Quarterly Security Appliance Tracker, vendor revenue in the overall security appliance market grew 9.7% year over year in the fourth quarter of 2021 (4Q21) totaling more than $5.8 billion and representing a $515 million increase compared to the same quarter in 2020 (4Q20).

Security appliance shipments increased 9.2% year over year in 4Q21 to more than 1.5 million units. Each of the product categories within the security appliances market – Unified Threat Management (UTM), Content Management, Intrusion Detection and Prevention (IDP), Traditional Firewall, and Virtual Private Network (VPN) – delivered positive results in 4Q21. The UTM category had the fastest year-over-year growth in the quarter at 12.3%.

“Even though supply chain issues had varying degrees of impact among security appliances vendors, the market continued its healthy performance during the last quarter of 2021 and security appliances are expected to maintain their relevance within security strategies designed to protect hybrid IT ecosystems,” said Carlo Dávila, research manager, Worldwide Enterprise Trackers at IDC.

Regional highlights

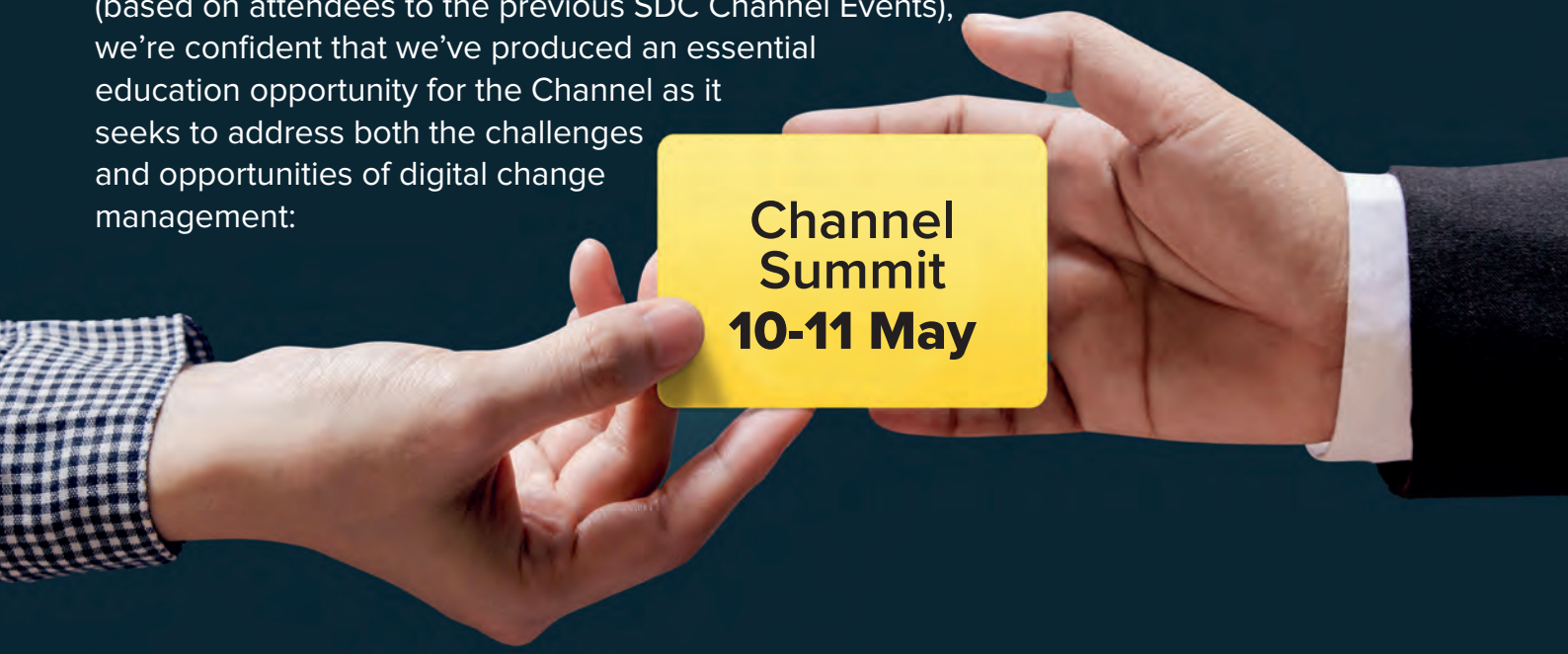
When observing the regional performance across the globe, the Europe, Middle East and Africa (EMEA) region led the way with 13.7% year-over-year growth in 4Q21, followed by the Asia/Pacific region with 10.4% growth. The combined Americas region (USA, Canada, and Latin America) accounted for 40.7% of the worldwide security appliance market revenues in 4Q21, with Latin America showing the fastest revenue growth of 9.4% in the quarter.

SDC CHANNEL SUMMIT

THE 2ND SDC CHANNEL SUMMIT

REGISTER FREE TODAY

We are delighted to introduce our second virtual conference. Based on extensive research conducted with attendees at the first event, as well as survey feedback from our Channel data base (based on attendees to the previous SDC Channel Events), we're confident that we've produced an essential education opportunity for the Channel as it seeks to address both the challenges and opportunities of digital change management:



Over the course of two, consecutive morning sessions (giving attendees plenty of time to run their business as well), we will be providing invaluable insights, advice and recommended actions to help Channel organisations as both they, and their customers, get to grips with what it means to create, develop and optimise a truly digital business.

Topics include:

1. SKILLS + TRAINING
2. SUSTAINABLE BUSINESS DEVELOPMENT
3. SIMPLIFYING THE SOLUTION STACK
4. SELECTING THE RIGHT SECURITY PARTNERS

Register for free here: https://sdc-channel.com

Sponsored by:

AGENT, Kaseya, pax8, PARK PLACE TECHNOLOGIES

In association with:

DIGITALISATION WORLD, CHANNEL INSIGHTS, ANGEL EVENTS

Specifying micro data centre designs for critical edge environments

The design requirements for micro data centres is highly dependent on the environment in which they will reside.

BY MARC GARNER, VP, SCHNEIDER ELECTRIC UK AND IRELAND

TODAY CLOUD COMPUTING has revolutionised the way in which digital services are delivered and consumed. From government and public services to the retail, education and industrial manufacturing sectors, digital dependency is fast-accelerating. Now devices ranging from smartphones and in-store kiosks, to enterprise computing and processing plants, all require real-time access to data, connectivity and application availability.

Traditionally, many digital services were delivered from regional or centralised data centres, whose location and distance from the point of consumption was irrelevant. However, the diversity and digitised nature of today's businesses means that many are deploying prefabricated micro data centres closer to the point at which their data is generated or consumed.

Network latency, or the speed of response to a request for data, remains critical for many of today's business and mission-critical applications. There is also the issue of reducing network congestion given the enormous amount of data being generated by emerging applications such as Internet of Things (IoT)-enabled devices, video calls and streaming

services. In many cases, it is beneficial to keep data traffic within closed, local loops rather than to cause further congestion to the network by transmitting data back and forth from a small number of hyperscale facilities.

Growth at the edge

Consequently, more applications are being hosted within micro data centres and distributed IT systems at the edge of the network. Gartner predicts that by 2025, 75% of enterprise-generated data will be created and processed at the edge – outside a traditional centralised data centre or cloud. Interestingly new research from IDC has found that when organisations were asked why they were investing in edge computing architectures, 50% of respondents cited to improve cybersecurity, with a further 44% stating systems resiliency and reliability were key drivers.

Latency was also crucial and 32% of respondents had experienced a lack of connectivity or slow connectivity with their edge deployments. Furthermore, 82% cited that commitments to sustainability were a key selection criterion for an edge solution provider, meaning energy efficiency and the ability to deploy and manage micro data centres systems sustainably remains a key priority.

To fulfil demand for physical infrastructure systems at the edge, the industry has responded with sustainable, resilient and efficient technologies, including the creation of self-contained micro data centres. These prefabricated, factory-tested, and enclosed units include the power, cooling, environmental control and security components needed to deploy an integrated IT system almost anywhere.

Often built on single-rack systems, micro data centres allow mission-critical infrastructure to be deployed both quickly and efficiently, ensuring standardised computing resources are designed for a specific load and can be scaled as demands increase. As such, businesses can deploy new IT resources as and when they need it, using preconfigured, pre-tested designs to replicate systems over multiple sites.

Key components of prefabricated micro data centres
Although prefabricated micro data centres share many common characteristics, including integrated power, cooling and IT, there are many differences that must be accommodated depending on the requirements of the hosting or application environment. All systems, for example, require racks and enclosures to house standardised IT equipment and critical systems; physical security to guard against unwanted intrusion, human error or to prevent damage to the hardware; power infrastructure such as UPS to protect against power failures; cooling infrastructure to maintain optimum operating temperatures; and both remote monitoring and software management systems.

The design of a micro data centre is largely classified by three primary types of environment, they include. IT environments, which are purpose-built IT rooms with temperature control and secure restricted access; commercial and office spaces, which traditionally comprise any available space in an office; and industrial or harsh environments. The latter can include factory floors, manufacturing and logistics environments, or mining and fossil-fuel extraction.

Traditional IT environments

If a micro data centre is to be deployed within a room that's purpose built to house IT equipment, then many of the environmental, cooling and security requirements will already be provided. As such, there is no need to duplicate them. However, it may be best practice to provide some additional level of rack security such as doors and a lock, but typically cooling and environmental requirements can be kept to a minimum. An example of an integrated enclosure suitable for any IT environment is Schneider Electric's EcoStruxure™ Micro Data Center S-Series. Made for server rooms and network closets, the S-series is highly customisable and easy to configure. It includes standardised NetShelter or Easy racks and wall-mounted enclosures with no built-in cooling facilities other than perforated or vented doors.

These systems will often include Smart-UPS™ uninterruptible power protection from 500VA-5kVA, and environmental sensors to warn of excessive temperature, humidity, smoke and vibration. The self-contained versions of the systems can include InRow SC or Uniflair RM cooling, to supplement any ambient room cooling systems already in place. The key benefits of these systems are that they allow rapid customisation of IT equipment and facilitate fast deployment of additional IT resources to meet business demands.

Often built on single-rack systems, micro data centres allow mission-critical infrastructure to be deployed both quickly and efficiently, ensuring standardised computing resources are designed for a specific load and can be scaled as demands increase. As such, businesses can deploy new IT resources as and when they need it, using preconfigured, pre-tested designs to replicate systems over multiple sites

Commercial and office spaces

Made for commercial environments like offices, retail, education, or healthcare facilities, Schneider Electric's EcoStruxure Micro Data Centre C-Series include similar capabilities to the C-Series, but incorporate additional features such as fan ventilation, air filtration, and soundproofing. In these cases, pre-integrated enclosures full of IT equipment are deployed wherever there is available space in a standard office.

In these environments key issues to address include low noise to minimise impact on office personnel; small sizes for fast deployment in space-constrained spaces; thermal comfort to prevent overheating; and physical security to discourage unwarranted access. Physical appearance is also essential, so systems can often be housed in a cabinet to fit within the general office aesthetic.

From a component perspective, these systems include racks and, if required, wall-mounted enclosures with integrated fan cooling. The UPS power protection in capacities ranging from 1.5kVA-5kVA, security options that include standard lock and camera monitoring alongside EcoStruxure™ IT remote monitoring software to give the user real-time visibility from anywhere, at any time.

Industrial and harsh environments Finally, Schneider Electric's EcoStruxure Micro Data Center™ R-Series have been specifically designed for harsh environments, such as warehouses, manufacturing floors, and outdoors and are used to protect sensitive business or production processes. They include sealed enclosures, some with NEMA and IP ratings, and additional features, like active cooling, enhanced filtration and security.

Built on 42U rack enclosures, they encompass large ruggedised systems that include advanced UPS ranging from 5kVA-8kVA. The systems can also be deployed in a 2N configuration for increased resilience. Cooling options can include InRow DX (direct expansion) or InRow SC for a self-contained system, and all offer advanced management and anywhere visibility via Schneider Electric's award-winning EcoStruxure IT software.

As the proliferation of edge computing continues, the design requirements for micro data centres will remain highly dependent on the environment in which they will reside. While there are fundamental needs in terms of physical infrastructure components, i.e. security, power, cooling, management and safety considerations, the design of the system must be carefully selected based on the needs of the application and the hosting environment. What's clear is that the system must be robust, resilient and efficient, offering protection from downtime and mitigating any risks associated with business processes, employee productivity, customer satisfaction, or other primary functions of the environment.

For more guidance on how to select a micro data centre, download Schneider Electric white paper #278, 'Three Types of Edge Computing Environments and their Impact on Physical Infrastructure Selection.'

CELEBRATING 12 YEARS OF SUCCESS

The DCS Awards: 31 categories across four themes

DCS AWARDS 2022

THURSDAY 26 MAY

Leonardo Royal Hotel London St Pauls

Headline Sponsor

HUAWEI

BOOK YOUR TABLE PACKAGES NOW

All tables sold on a first come, first served basis.
All packages include the welcome reception and three course meal with wine and water.
Champagne Table Package includes four bottles of champagne.
A waiter/pay-bar service is available throughout the evening for other refreshments.

Champagne Table - £3,395

Table of 10
4 bottles of champagne
3 bottles of house wine
3 course meal and coffee
Drinks reception
Evening Entertainment

Standard Table - £2,995

Table of 10
5 bottles of house wine
3 course meal and coffee
Drinks reception
Evening Entertainment

Half Standard Table - £1,795

Table of 5
3 bottles of house wine
3 course meal and coffee
Drinks reception
Evening Entertainment

SPONSORSHIP PACKAGES

The DCS Awards offer extensive branding and sponsorship opportunities through online advertising in our Datacentre Solutions & Digitalisation World publications, and of course at the awards ceremony itself.

For sponsorship opportunities and/or to book your awards table please contact: awards@dcsawards.com or call +44 (0)2476 718970

dcsawards.com

Supported by

dca The data centre trade association

Taking control of security gaps in your hybrid IT environment

As we settle into a more hybrid approach to work and using hybrid IT systems, security teams will no longer be able to rely on traditional methods of asset inventory.

BY FABIAN LIBEAU, VP SALES EMEA AT AXONIUS

A HYBRID IT environment will undoubtedly become the standard for organisations in a post-pandemic world, and it offers a multitude of benefits. However, securing hybrid IT comes with a variety of challenges for security and IT teams. In any scenario where employees switch between in-office and remote work environments, fluctuating types of assets from network routers and firewalls to laptops and cloud containers inevitably connect with the network.

While some of these assets will be managed by and visible to the business, others will not, and this presents a risk. To make their hybrid IT environments safe and effective, security teams must place more emphasis on new processes, policies, and controls of their assets, regardless of the asset type, its location and how it connects to the cloud or on-premises infrastructure.

A new working normal

The rapid shift to remote work, and more recently, a more flexible approach in which on-site and remote work are combined, has placed even more importance on securing employees' connections. In many cases a zero-trust approach is helping companies to reduce risk, but this is predicated on knowing every device and its security posture before a request for a connection can be validated. The cloud has facilitated this change in the working norm, allowing employees to access resources quickly and easily. But the cloud is not without

its security concerns. IT and security teams can be unaware of the cloud apps and services that employees have downloaded, particularly if they don't need special provisioning. This leads to a 'shadow IT' scenario, which is a classic example of an asset management challenge.

The cyberattack surface is further expanded by the growth in cloud collaboration tools, many of which reside off-network and can be accessed through private emails. If corporate data is stored or shared through these tools and the devices being used to access them are compromised, it is a short step for a bad actor to access a multitude of other assets and resources.

Getting a view across assets

Against this backdrop of complex, highly distributed IT environments, it is more important than ever that security teams understand the identity and security status of all deployed assets so they can meet employee demands for access. Without this knowledge across hardware, software and users, they will be unable to fully secure their asset inventory.

Getting a handle on this in a hybrid IT environment is not straightforward. The traditional network perimeter has been consigned to history, to the extent that it is no longer the cyber security control point, and instead security teams must find a new way to protect their infrastructure, whether it resides in the cloud or on-premises.

This can be done through asset management. Each asset has a unique set of attributes which collectively give the asset its 'identity.' When the identity of all assets is known it allows organisations to better understand and control their exposure to cybersecurity risks. In hybrid IT environments, with employees working flexibly and on multiple devices, asset discovery, classification, and management can be challenging. The more assets that connect to company resources, the more support is required to ensure they are secure.

Building an inventory of assets

We always say that you cannot measure what you cannot see. Visibility is everything when it comes to asset management because it allows an inventory to be created in real-time that is accurate. It gives security teams an overview of every device type, every user, every application, every host and every server in use across the corporate estate.

In addition, the inventory must span network environments.

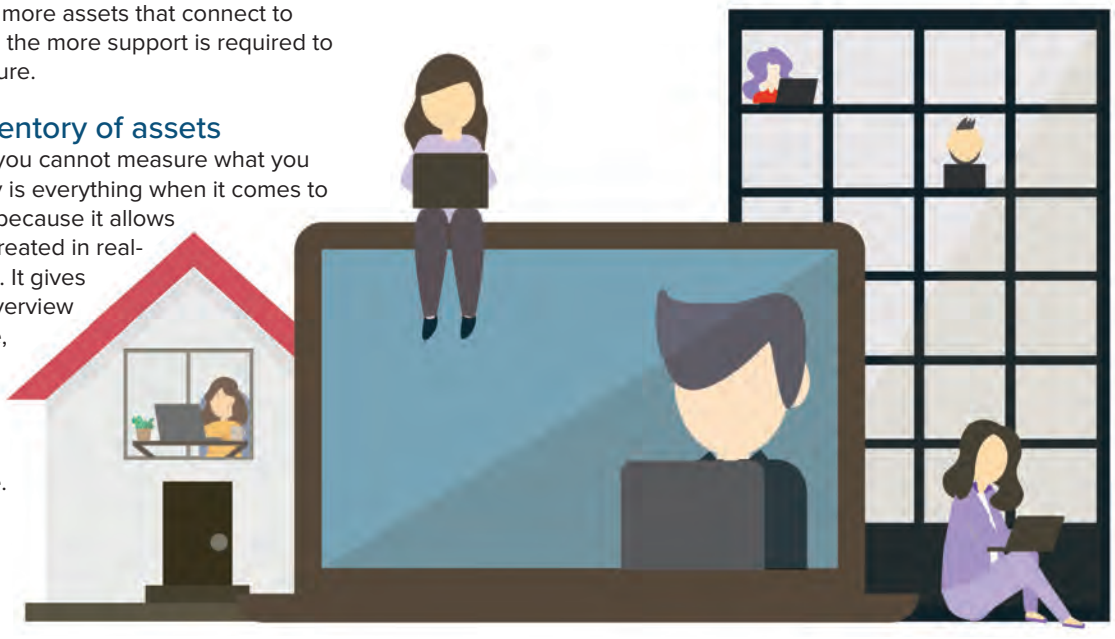
Companies using hybrid IT are potentially operating a combination of multi-cloud, hybrid-cloud, on-premises and virtual networking environments. Any asset management tool must work across these environments and ideally centralise asset visibility via one console.

Not only is it vital to know what assets are on the network, but a complete inventory will also include identification of how tools and systems are deployed and integrated. This gives security teams coverage across all solutions, which can be difficult and time-consuming without being able to view everything in one place.

The next steps in evaluating cyber security asset management

To be effective, a cybersecurity asset management solution should enable businesses to identify all assets in real-time, regardless of their state, ownership or location. It should also provide information on the security configuration of each deployed asset so policy requirements can be put in place based on risk to the organisation, compliance mandates or vulnerability severity levels.

As we settle into a more hybrid approach to work and using hybrid IT systems, security teams will no longer be able to rely on traditional methods of asset inventory. Modern asset management platforms add the ability for users to enforce policies and manage security solution coverage from one single console. They provide context and enrichment from third-party sources, and they are flexible to allow for remediation to be executed and policies and baselines adjusted to ensure cyber hygiene and close security gaps.



How hybrid IT and data can benefit businesses

As data technology and analytics tools continue to evolve, singular data infrastructure, which was once the most popular data architecture as organisations moved to the cloud, is rapidly becoming outdated.

BY BRETT GIBSON, DIRECTOR, STRATEGY & VALUE CONSULTING AT DOMO

HYBRID INFRASTRUCTURE and multi cloud infrastructures have since gained more popularity and importance as the pandemic forced businesses to react and adapt to different ways of working and acted as the key catalyst for the introduction of hybrid working.

A hybrid IT is an infrastructure that combines computing two or more environments, typically private cloud and/or public clouds. Depending on business objectives and needs, operational systems can be put on any element of this mixed architectural environment. The public cloud provides strong computing power and private clouds/ infrastructure bring in security for organisations. The hybrid cloud market was worth 56 billion U.S. dollars, emphasising the growing adoption of hybrid technologies and services (Statista, 2022). Modern hybrid cloud prioritises the mobility and readiness of workloads across several

environments. According to the Office of National Statistics, 85% of employees who were working from home in 2021 want to have a hybrid (both home and work) working style in the future - this demand alone puts pressure on businesses to create a working environment where all workers can access business critical data on the move.

Similarly, 83% of a survey conducted by Intuition (2022) with over 9,000 respondents want a hybrid working model moving forward in 2022, where they can work remotely at least 25% of the time.
This rapid evolution of working models and a data decision gap has made adjustments in businesses digital transformation journeys. Many organisations face technical challenges with the lack of tools and training to implement the right blend of cloud-based processes. In a recent study by Domo, it was found that although organisations all around the world are investing in data at a higher rate than before, half of respondents indicated that decision making within their companies hadn't changed at all. Precise training can support in empowering these companies to implement the changes in cloud models and infrastructure.

Hybrid IT can allow for data democratisation across all business teams. Data democratisation involves processes to make digital information more accessible and understandable in order to make decision-making more efficient across entire businesses. This gives organisations a competitive advantage, as the more people increase their expertise on accessing and understanding data, the easier and quicker critical analysis is made for decision-making, at every level. Moving forward, hybrid IT will support the remote working model where data can be accessed at any time and from anywhere.

Now more than ever, multi cloud is becoming the most popular data architecture. There is no longer a singular infrastructure winner; even organisations with a preferred cloud infrastructure need insights across multiple platforms, such as AWS, GCP, Azure, Snowflake and native SaaS. However, every platform is built differently - with varied components, functionality, pricing, policies and more. These differences mean you need different tools to support the various types of data needed for everyday and strategic decisions, which hybrid IT and multi cloud architecture can help solve.

Data is and has always been a vital aspect of organisations. Changing data architecture and implementing hybrid infrastructures inevitably shifts business models and results in more efficient processes. Data from a research report at Domopalooza 2022 reported that:

- 57% of respondents indicated that machine learning, AI, and/or data science investments will likely receive exponential or substantial investments.
- 76% of respondents indicated that their organisation relies on data analysts to make recommendations based on data.
- One in three (33%) are worried that the data decision gap would create significant data delays in the future.

Based on these statistics, implementing a hybrid infrastructure is a key aspect to achieving business intelligence and automation, improving security, control and scalability and ultimately business continuity. Therefore, business leaders should work to dissolve these limits to increase employee's expertise and optimise operations. Constructing a data-literate workforce through data democratisation and multi cloud architecture will help streamline operations and deliver quicker and meticulous decisions. Furthermore, organisations are able to move any sensitive data to the private cloud whilst still making applications and services available on the public cloud, strengthening risk management and flexible data processes at the same time.

Integrating data can help achieve data agility and can be applied to different departments, solving various data barriers. Everyone in your organisation should be able to access, understand and most importantly act on data more efficiently in everyday work. Business leaders should capitalise on this and start prioritising data democratisation, especially in the work from home/hybrid environment we are largely moving into, to acquire a competitive advantage.

Hybrid IT can allow for data democratisation across all business teams. Data democratisation involves processes to make digital information more accessible and understandable in order to make decision-making more efficient across entire businesses. This gives organisations a competitive advantage, as the more people increase their expertise on accessing and understanding data, the easier and quicker critical analysis is made for decision-making, at every level

Best of both worlds

The rise of hybrid cloud computing (and what it means for businesses everywhere).

BY TERRY STORRAR, MANAGING DIRECTOR, LEASEWEB UK

IN TODAY'S BUSINESS ENVIRONMENT, data is arguably the most valuable asset any organisation can possess, which means keeping data centres running efficiently around the clock is a critical requirement. This need has seen a huge number of enterprises move to so-called public cloud 'hyperscalers' such as Google Cloud, Microsoft Azure and AWS in their quest for 24/7 business performance. However, amidst this fundamental shift, another, potentially even bigger trend is starting to emerge. In an effort to achieve the 'best of both worlds', more and more organisations are looking at hybrid cloud strategies that give them the scalability of public cloud solutions alongside the customisation and control of private cloud offerings.

It's a trend that's growing rapidly too. In fact, Gartner predicts that 85% of infrastructure strategies will integrate on-premises, colocation, cloud and edge delivery options by 2025, compared with just 20% that did in 2020. While many data centre managers are already becoming familiar with the practicalities of a hybrid approach, a number of key fundamentals are important to ensure a smooth transition.

Hybrid cloud has broad reaching appeal

The 'always-on' approach of hybrid cloud means it offers better cost efficiency and scalability, which in turn leads to improved business agility. Conversely, organisations relying solely on public cloud solutions risk spending more than necessary because they are not as effective at tracking actual resource usage. The costs associated with scaling services from a standing start are also rising quickly and becoming increasingly hard to sustain.

Not tying themselves solely to the limitations of on-premises IT, or the unknown costs of hyperscale, means data centre managers everywhere have much greater freedom to design customised data solutions that blend the best bits of public, private, and on-premises offerings.

Furthermore, the rapid growth of the Software-as-a-Service (SaaS) and cloud-hosted online service models, with increased affordability and agility, provides the flexibility to implement a robust infrastructure with minimal disruption to business performance.

However, hybrid cloud is a more complicated model, which means there are several challenges data centre managers need to be aware of before attempting to implement it. Below are four main considerations:

1. Maintaining robust security

Perhaps unsurprisingly, an 'always-on' data approach provides a critical attack surface for ransomware, DDoS, and a range of other cybersecurity threats that, unfortunately, are growing in both volume and variety at an alarming pace. To stay ahead of attackers, robust inbuilt security that includes detailed security notifications, reporting, and dashboards is strongly recommended. It's also important to assess the threat levels before hybrid cloud implementation to ensure defences are secure.

2. Understanding cost implications

Fully understanding the cost implications associated with a proposed hybrid model is essential. Poorly calculated public cloud resource usage, resulting from unclear ownership and governance, can quickly create a resource sprawl issue. Avoiding this requires effective tracking and monitoring of cloud resources from the very beginning.

Obtaining an independent and objective TCO calculation from any prospective service provider is also sensible before committing to a solution or service. This includes detailed financial planning with predictable cost models.

To maintain usage on a needs-basis, using real-time analytics and data can help to optimise the cloud balance. It's important to allocate ownership for every project while setting clear and measurable KPIs and scheduling regular reviews. Firmly embedding these fundamentals will account for the various resources and ensure they are evaluated effectively.

3. Where to host critical infrastructure

The decision of where to host IT infrastructure is a significant one because it can influence the extent to which a business retains control over the design, implementation, and administration of its IT estate. If outsourced, businesses must ensure their chosen provider shares the same views on performance and reliability standards. It's also worth considering whether switching to a service model could improve security, increase the price/performance balance, or ease the strain on overstretched internal teams.

4. How to handle back-end IT

Back-end IT management determines the ability of a business to remain 'always-on'. While some organisations have well-resourced operations teams that help their systems run like clockwork, others are more focused on priorities such as cloud-native development and, as a result, possess a very different skillset. In some cases, poor decisions about how to handle back-end IT management can become a major barrier to business growth. However, the flexibility of modern data centres and the service providers who run them gives businesses with always-on aspirations a number of options. For example, advanced and highly virtualised servers and storage solutions are now relatively easy to run.

Furthermore, the cloud-like management experience of these systems means they can be seamlessly integrated with public or private cloud environments. Doing so allows users to easily manage their back-end infrastructure so they can focus their attention on strategic business priorities, rather than more granular, technical issues.

Hybrid cloud optimisation is an ongoing process
It's important to understand that cloud management optimisation isn't just a one-off process. Data centre managers and service providers need to regularly revisit and review their setup in order to ensure maximum efficiency is maintained. However, when managed correctly, hybrid cloud solutions can be constantly tweaked and changed to accommodate fluctuating business needs throughout different project lifecycles, making them invaluable to business operations. In short, having the right capacity at the right time is crucial.

In today's cloud-first era, it is not about simply moving to the cloud, but connecting multiple clouds efficiently. Completing the transition isn't always straightforward, but by following a clear business strategy and taking the considerations detailed in this article into account, businesses everywhere can devise and implement a hybrid cloud solution that helps them achieve their strategic goals, both now and in the future.

Safeguarding data through the power of HCI

IT teams are increasingly under pressure to support business innovation whilst upholding high cybersecurity standards and protecting data against threats. With up to four in ten UK businesses experiencing security breaches or attacks, there has never been a better time to ensure data is correctly safeguarded.

BY IAN JEFFS, GENERAL MANAGER AT LENOVO INFRASTRUCTURE GROUP

HYPERCONVERGED infrastructure (HCI) provides a solution for such businesses as it offers simplicity and security in data centres. HCI is a software-defined, unified system that combines all the elements of a traditional data centre, such as storage, compute, networking and management. By investing in HCI, companies will have all data centre elements consolidated into single, cluster-ready nodes, eliminating much of the complexity associated with traditional three-tier IT infrastructure. This empowers IT teams to simplify processes, allowing them to uphold data security and maintain the continuity of services. Once such processes are firmly in place, IT teams can begin to focus on business innovation and while ensuring their company's data is safe.

Consolidated system management

Managing traditional three-tier on-premises IT environments typically requires input from

specialists in storage, servers and networking, as well as other areas, such as virtualisation. This results in complex and potentially time-consuming processes.

One of the strengths of HCI is that it brings many of these component parts together. The vendor typically provides centralised system administration and management tooling covering the servers, storage and networking – and potentially also other data centre infrastructure, edge devices, virtualisation software and endpoints.

This consolidation means the environment can be run by a smaller team, with any one individual able to address issues arising at any level, from resource-provisioning to administration, restoring, performance upgrades and patching. As a result, the organisation can deliver the same (or better) levels of IT service with fewer resources, meaning skilled individuals can be freed up to focus on strategic innovation work.

While this means a move to HCI will require an evolution of the IT team's skills base, it doesn't need to be a steep learning curve. Smart organisations are choosing HCI platforms that align with existing investments, enabling them to leverage skills they already possess in technologies such as VMware, Microsoft or Nutanix.

Furthermore, HCI security can align with cloud security. Many organisations are in the process of moving workloads to the cloud. Choosing an HCI platform based on virtualisation technology from a vendor that also offers cloud services, such as Microsoft, means organisations benefit from a degree of security alignment. This goes between their workloads running on HCI and those in the public cloud. As well as streamlining day-to-day security management across the wider estate, this alignment can accelerate future migrations to the cloud.

Security for today

One of the most important aspects of keeping your IT up to date – and thereby protected against security threats – is to apply patches in a timely way. However, there are complexities of doing so, including the need for downtime, or to test whether a patch for one component affects another.

This means it's not uncommon for organisations to leave their infrastructure unpatched and vulnerable for long periods.

Companies that utilise HCI providers to address these challenges and offer fully tested, consolidated patches that cover all aspects of a company's solution, will be best protected against security threats. Crucially, a HCI solution that offers full protection must be fully integrated so that patches for other parts of the stack are then bundled in with HCI updates, where appropriate.

Put together, these measures mean HCI makes staying up to date quicker, easier, and lower-risk, thereby helping IT teams provide maximum protection against threats and vulnerabilities.

Minimising potential data loss

If there is a security incident at infrastructure level, recovery of a hyperconverged environment typically requires fewer systems to be restored compared to a conventional three-tier data centre. This is therefore generally quicker. Recovery can also be accelerated by selecting HCI platforms where the vendor has integrated solutions from leading security, backup and recovery vendors into its centralised management software.

One of the strengths of HCI is that it brings many of these component parts together. The vendor typically provides centralised system administration and management tooling covering the servers, storage and networking – and potentially also other data centre infrastructure, edge devices, virtualisation software and endpoints

Real-time replication of data across the cluster helps minimise data loss, while the clustered design can further accelerate restore time after security incidents, such as ransomware attacks, resulting in reduced application downtime.

Building the foundations to a secure future

With cybercrime being an ever-present threat, businesses have to take tangible steps towards safeguarding their data. HCI offers security within the data centre by streamlining day-to-day management and accelerating restore time after security incidents. These processes will keep crucial company data safe while freeing up time for IT teams to focus on business innovation and to implement technology that drives strategic ambitions.

Adapt or die

In a time of uncertainty, CIOs are staying hybrid and moving apps where they need them

BY ALAN CAMPBELL, SENIOR DIRECTOR & GENERAL MANAGER, UK&I, NUTANIX

THE HISTORY OF IT is one of rapid progress: not for nothing did Bill Gates say in the 1990s that "If GM kept up with technology like the computer industry has, we would all be driving $25 cars that got 1000 mpg." But, despite Moore's Law and the undoubted brilliance of engineers operating in the digital sphere, the realities of business have always meant that enterprises often don't act as pioneers or early-adopters.

Mainframes were written off as dinosaurs and legacy systems 30 years ago, but they persist. Just like responsible drivers using all the motorway lanes, depending on our needs at the time, businesses avoid risk and balance their approach to technology on a risk/reward basis.

That dynamic is being played out once again in cloud computing where, in our latest Enterprise Cloud Index annual research project, we clearly see a trend towards an IT model that covers all bases.

Cloud platforms are great in many ways of course but most of us still need a hybrid approach that

encompasses not just public cloud but also private cloud and on-premises computing.

But what specifically is driving this dynamic today? We can confidently pin the survival of mainframe computing to factors such as the need for mission-critical applications, security and an inability to move applications to other platforms securely and without undue risk. With hybrid computing we are likely looking at application mobility as a critical factor.

Today, smart companies are adaptive because our geopolitical and macroeconomic environment demands the ability to flex, morph and alter according to circumstances. In a world where we're not sure about the future of trading blocs such as the EU, the impact of pandemics or what will happen in terms of currency fluctuations, flexibility is prized. This is also reflected in our attitudes to IT. We don't treat applications in a dogmatic way. Instead, we mix up our deployment platforms on a horses-for-courses basis, placing our apps where they are best suited to deliver what we need: desired levels of performance, security, availability, functionality and accessibility.

Our collective position on cloud has evolved over the last 20 years or so. Initially there was a thrill over the new game-changing platform but there were also many doubts over security, the sustainability of new companies, application availability, performance, functionality and dependency on networks. The success of Salesforce drove many to adopt cloud in niches and then a bold minority declared themselves "cloud-first", putting their apps and services online wherever plausible. Today, there has been some retrenchment and repatriation and the new generation is more "cloud-smart" than cloud-first, even as Covid-19 has meant that online applications are more appealing than ever.

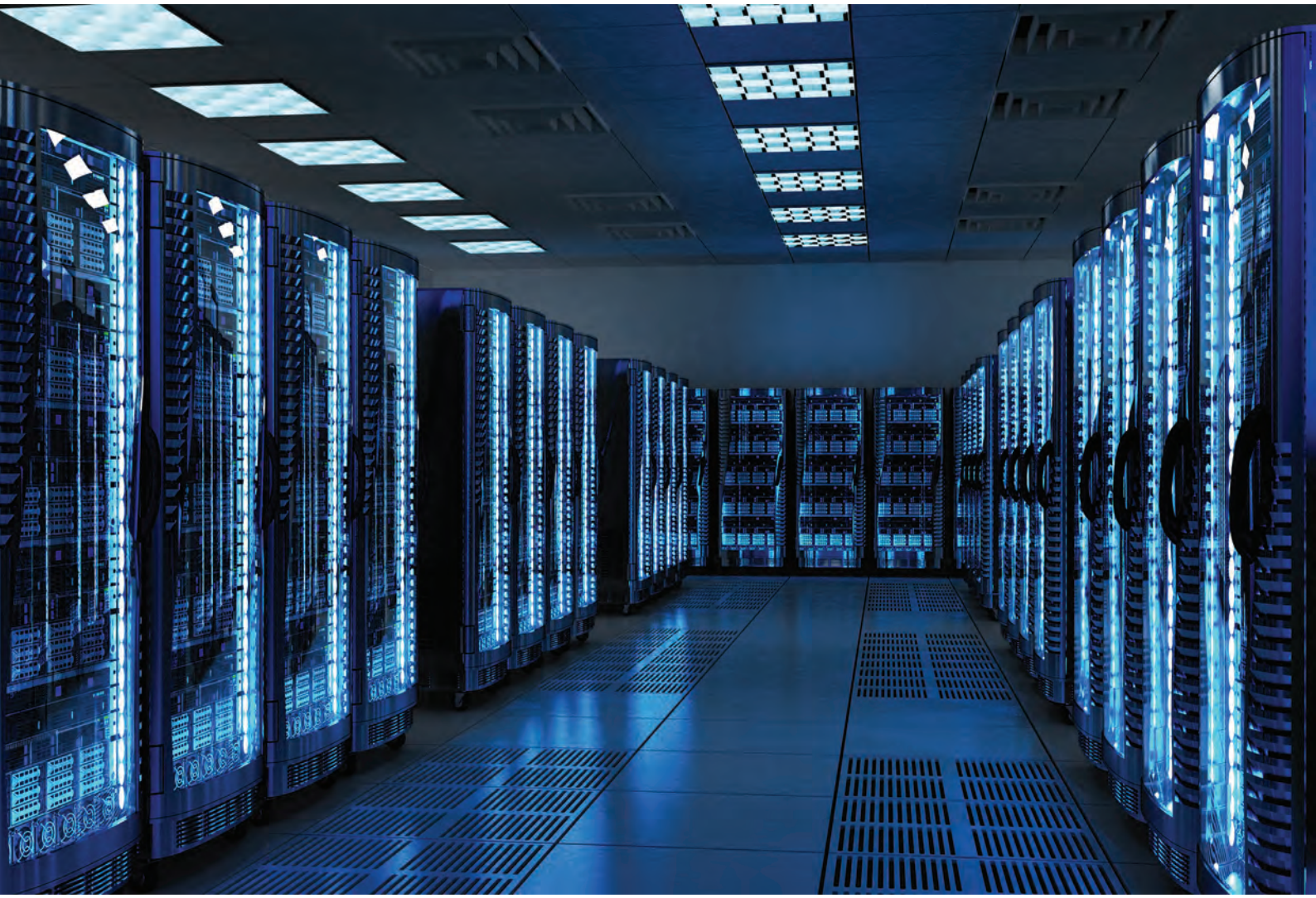
The Enterprise Cloud Index highlights that application mobility is at the heart of contemporary multi-cloud thinking. Here, cloud-smart means continuously monitoring workloads and optimising them accordingly, by selecting the best-fit deployment platform.

The vast majority of UK respondents (86%) said they have moved at least one application to a different IT environment over the past 12 months. Why is that? Cost (44%) is the biggest catalyst but this is closely followed by the related threats of security/compliance (37%) and capacity (33%).

Other factors that concern UK respondents include integrating with cloud-native services, outsourcing, access speed, gaining a stronger degree of control, data access speeds and faster application development. The UK/global/EMEA comparative splits here are interesting with the UK far more likely to cite cost, a little more likely to refer to capacity and a little less likely to have security/compliance fears.

For decades now, the propaganda claims in favour of cloud have been that it offers a slam-dunk approach to IT where deployment, integration and application portability are easy. UK decision-makers appear resistant to such simplification, however. More than nine in 10 respondents (93%) said that porting a workload to a cloud environment can be both expensive and slow: that's well above the global and EMEA findings of 80% and 81% respectively. Little wonder then that CIOs and CTOs are buying into hybrid solutions and seeking ways to orchestrate and dynamically allocate resources across platforms. Increasingly, they are containerising applications to make portability simpler across clouds. Two-thirds (66%) of UK respondents say containers are important today or will be within 12 months.

But what the Index really emphasises is that, although cloud has accelerated in the past year and a half, when we ask enterprises what they want from application deployment options, they state "all of the above". Smart CIOs are maintaining that attitude and keeping their application options open, building for a dynamic future where it is simpler than ever to provision and dynamically allocate apps to platforms on an as-needs basis. And, in a world so full of uncertainty, that attitude makes a lot of sense.



Hybrid IT – Achieving the right infrastructure blends to enable optimal digital empowerment

Creating a modern dynamic digitally enabled data centre involves achieving a finely tuned balance of supporting infrastructures all working in harmony to meet both business aspirations and IT goals of an organisation.

BY MICHAEL CANTOR, CIO, PARK PLACE TECHNOLOGIES

THE FACE OF THE DATA CENTRE – historically located in secure, highly controlled areas contained within the physical infrastructure, has changed beyond recognition in the last decade. For example, traditional on-premise (on-prem) environments today exist comfortably with co-location shared-facility data centres. In tandem with this IT concept, we have seen that the extensive usage of managed services and hosted services have taken some essential workloads into the cloud at a pace that IT has not experienced before. This combined hybrid approach to IT allows enterprises to maintain a centralised approach to achieve IT governance through in-house capability while exploiting the enormous resource benefits offered by cloud apps and providers. Migrating to a hybrid IT model is

now a standard approach to enterprise computing, with Gartner reporting in 2021 and 2022 that IT spending will blend hybrid, multi-cloud, and edge environments; “growing and setting the stage for new distributed cloud models.”

In its simplest form, hybrid IT can be broadly defined as those in IT using their own internal capabilities who then go on to supplement services externally using premium providers to support cloud and off-site workloads. In this basic form, some essential information technology resources stay in-house, both short and long-term. Staunch, total cloud-first advocates argue against this blended approach as delivering IT services from the cloud brings indisputable strategic advantages. And, on the face of it, pure cloud computing is compelling. It can significantly lower costs, especially for CAPEX accounting; supply the flexibility to scale on the fly; and provide specialist expertise without hiring new talent. So why then do organisations continue to run on-site data centres at all?

There are four key reasons why cloud usage hasn’t become totally pervasive and has kept traditional data centres relevant. The first is control - despite cloud providers offering impressive SLAs, there remains genuine availability and security concerns in outsourcing all business-critical data and being unable to seal and control any future breaches fast. With total-cloud comes potential compliance and governance issues as to where data resides, alongside reticence towards the perceived migration complexity and ongoing interdependency issues with existing hardware.

Cost is another critical factor that leads to hybrid decisioning. Some workloads will exhibit a better total cost of ownership (TCO) when placed on-premise. It’s key to predicting the workload and estimating the cost in different scenarios in determining the best placement for the workload in a hybrid model.

Going mixed hybrid IT therefore seems to plug the cloud first gaps to allow organisations to have the best of both worlds, creating environments that blend public and public cloud usage with on-prem stability. Users cite three main advantages of staying semi-traditional noting that hybrid IT: -

· Avoids issues of cloud migration – including service disruptions, control, maintenance – especially when dealing with complex and critical cloud hosted workloads.

· Achieves better security levels for sensitive data – when full control and total management is required against cyber-attacks, outages and internal threats.

· Achieves better overall economies of scale for OPEX and CAPEX for some workloads – at an enterprise level, expanding the wrong business services entirely into the cloud is expensive and can be significantly higher than the TCO of running individual server rooms. Other consolidation saving concepts such as virtualising on-prem servers may offer keener costings than going total cloud.

Clouds’ inherent OPEX pricing is delivered through as-you-go service consumption that meets business growth at any given point. Yet an on-prem CAPEX model also allows for long term, often lower TCO for IT – a calculation never far from savvy CFOs. Last, your company’s business model may favour expense spending over capital spending or vice versa, so this preference may drive different computing investment strategies.

So is hybrid IT the easy, short-term band-aid that cushions cloud adoption and shields us from the great cloud ‘gotchas’? Not necessarily, and indeed the additional infrastructure needed may be a burden on limited resources as cloud computing nearly always involves extra shared responsibilities between the user and the provider.

Running monitoring, security, backups and change management in parallel is both a balance and an overhead often using quite different processes between cloud and on-prem. Sometimes, legacy apps and platforms left on-prem can lag behind, bottlenecking performance and requiring immediate platform refreshes to keep up with their svelte cloud app cousins. The good news is that

recently lots of tools have been developed that provide commonality across cloud and on-prem infrastructures for an end-to-end experience.

By its very nature, choosing to use hybrid IT long-term can also be viewed as a restrictor to digital first strategies. Why does this matter if it bolsters cloud installs in the short-term? Observers note that there's a danger that it can set the scene for lack of mindset change; innovation enablement; and not fully realising the vast digital platform gains made over the past five years. In labouring a dual model, IT may find it hard to release themselves from the routine infrastructure management tasks that a shared management model entails.

Like all serious IT environmental planning, going hybrid or staying hybrid needs a coherent strategy with thorough and detailed planning. Organisations need to work alongside trusted infrastructure partners on a strategy that meets their needs

What about co-location environments, are they part of the hybrid IT model or is it entirely a traditional and cloud mix? Indeed, going co-lo is an increasingly popular hybrid choice and offers many enterprise advantages. Here, IT selects the services of a much larger, usually purpose built, data centre to rent space in which they house servers, storage and networking hardware assets, meaning many different organisations are 'co-located' in one physical specialist data centre. Hardware remains owned by the organisations themselves and is simply housed (and sometimes maintained) by the third-party specialist data centre staff. Such dedicated co-lo facilities offer the option for companies to tap into optimal data centre backdrops for cooling, security, UPS and geographical proximity to differing physical offices. When running in a hybrid IT model, usually some workloads are migrated to co-lo servers, with top Tier 1 business critical workloads staying on servers in-house, under the close watch of the oraganisation's own IT team.

Costs are often far lower, especially when compared to building a purpose-built facility. (Plus, co-los are generally using the latest green technology for cooling to reduce the carbon overhead to help meet sustainability targets. In fact, after the 2021 COP26 UN Climate Change Conference, some governments announced that advanced co-los themselves would become the source for heat regeneration schemes using the heat by-products from cooling processes). With co-lo hybrid IT, fewer staff are needed in-house as the facility offers staff who manage power, installs and tasks. Generally, such centres offer exceptional connectivity through multiple telco providers and higher levels of redundancy through the use of power generators. Adding future racks for growth and acquisitions is also readily achievable for total flexibility.

Like all serious IT environmental planning, going hybrid or staying hybrid needs a coherent strategy with thorough and detailed planning. Organisations need to work alongside trusted infrastructure partners on a strategy that meets their needs and details assets and software, workloads and data, cost planning, and supports ongoing holistic management, before any steps are taken.

*Gartner: https://www.gartner.com/en/newsroom/press-releases/2022-01-18-gartner-forecasts-worldwide-it-spending-to-grow-five-point-1-percent-in-2022

Hospital Trust leans on EcoStruxure™ IT Expert for continuous uptime.

Discover how Birmingham Women's and Children's NHS Foundation Trust leveraged EcoStruxure™ IT Expert to enhance it's reliability and continuous uptime.

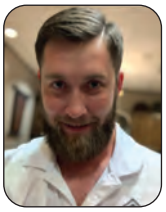
Read the case study

Life Is On | Schneider Electric

Monolithic vs Modular UPS systems

Increasing demand for reliable power, coupled with the growing use of essential electrical equipment and digitization, is driving up adoption of UPS systems.

BY LUKE EILAND, SERVICE MANAGER, SOLAREDGE CRITICAL POWER DIVISION



WHILE DATA CENTERS, hospitals, and manufacturers were among the first to adopt the technology, demand for UPS systems is expanding to other users such as research facilities, schools, or anywhere with critical power applications. Considering the high stakes associated with energy failure, what are the most important factors to consider when choosing such a system?

UPS System design boils down to two main types – monolithic or modular. The original UPS design, the monolithic system, is a solution made of single sub-systems including one static switch, one rectifier, one inverter etc. – but importantly, they have no intrinsic redundancy. The later developed modular UPS is, as the name suggests, made up of several smaller components that can be added or removed to scale the solution up or down. Looking at both UPS solutions, we will analyze the benefits of each in relation to three main decision criteria – cost, reliability and simplicity.

Cost – Is it all about price?

When making any investment, cost is always the primary consideration. When it comes to UPS systems, and if comparing systems of a similar power requirement, the traditional monolithic solution has the lower initial price tag. This is why, traditionally, it has been the solution of choice for organizations with smaller power requirements – especially if their needs are unlikely to change in the near future. However, for those businesses with larger power requirements or where increased flexibility is needed, there is more to consider.

While there are different model sizes of monolithic systems, there is less flexibility in terms of power capacity than with modular UPS. Subsequently, monolithic UPS users often end-up paying more for a system that's larger than they need to reach their power requirements. Additionally, should their power requirements change, due to a lack of design flexibility, a whole new monolithic system is often required.

This is one of the strengths of modular UPS. To increase the capacity of your modular system, it's as simple as buying additional power modules and slotting them into your existing rack. What's more, should you have multiple modular UPS solutions at your facility, you can also swap modules from system to system to address changing load profiles - increasing efficiency savings and mitigating risk.

For organizations that require ultimate reliability and no downtime, a modular UPS system is very appealing - but on the face of it, they do look more expensive

Reliability – When you can't afford to fail!

Designed to ensure that your power supply is reliable and uninterrupted, a UPS system must be extremely robust and reliable – obviously, this is critical when powering lifesaving medical equipment or other essential electrical devices.
Traditional monolithic systems feature a simple design. Consisting of fewer individual components, this means that there are less failure points in the system. Alternatively, modular UPS solutions spread the load over many more components. Which it could be argued, provides many more potential failure points. However, in a monolithic system, failure of one component could mean failure of the system as a whole. But in true modular units, if one module fails, it's separated from the rest of the system and the other modules pick-up the slack to ensure continued operation/power. This is a key distinction between modular systems. Not all modular solutions are the same, and only 'true modular' UPS, like our own SolarEdge solutions, provide this functionality.

Like many things in life, being handmade is generally better, however UPS systems are not one of them. While large monolithic solutions are manufactured manually with the resulting risk of human error, smaller power modules for modular UPS systems are manufactured and tested utilizing automated solutions. This approach adds to reliability, with each of these smaller modules also being machine tested before shipping – something that's not undertaken within the monolithic manufacturing process.

Simplicity is key!

Thankfully, failure of a UPS system is uncommon, but replacing individual components as part of regular system maintenance is both expected and planned. Ensuring that your system remains operational, or that you have back-up power during those service intervals, can be a big issue with considerable consequences for your operation.

For this, modular UPS systems are relatively easy to maintain. In a true modular solution, each essential part is hot swappable and can be removed for maintenance or replaced while the system continues to run. Conversely, a monolithic system will likely need to be shut down for maintenance of core components, which means that you either lose your back-up facility during this period, or you have to switch to another system – essentially meaning that you need two units to provide the same service, with all the associated costs of purchasing, installing and maintaining two UPS devices. Now, some users also install two modular UPS systems for ultimate peace of mind, but this trend is beginning to change as depending on the load's criticality, it's often not necessary.

Crucially, and unlike the modular approach, if certain individual parts fail in a monolithic environment, the process of replacing them is often complex and time consuming, requiring a specialist UPS engineer representing additional downtime and cost.

In Summary

Both UPS systems are reliable, but they employ totally different designs to provide different levels of flexibility and autonomy. For organizations with lower critical power application requirements, a monolithic solution will be both cheap to install and generally fit for purpose. But as we've explored, you could also be installing a system that's larger and more expensive than you need, as well as being more costly to maintain in the long run. Plus, should your power requirements change, and you need to add more capacity, monolithic solutions don't have the system flexibility to support you.

For organizations that require ultimate reliability and no downtime, a modular UPS system is very appealing - but on the face of it, they do look more expensive. But, when the total cost of ownership is calculated considering ease of maintenance, a smaller floorspace footprint and overall system flexibility, the modular argument becomes very compelling.

Digitalisation; underpinning sustainability in chemicals

How can the chemical industry meet growing demand and still reach net zero?

BY VALENTINA RIGGINS, SVP CUSTOMERS SOLUTIONS, WORLEY

BY 2050, the global demand for chemicals will be 50% higher than in 2020. The chemical sector is currently the largest industrial consumer of oil and gas, accounting for 13 million barrels of oil and 305 billion m3 of gas per day. Even in a net-zero scenario, the International Energy Agency (IEA) believes oil will continue to be the primary chemical feedstock.

The challenge of supplying chemicals to a growing population while addressing net-zero targets is complex. It'll take an immense change in thinking on how assets are developed, delivered, and operated. Digital is pivotal to success.

When surveying more than 300 energy, chemical and resource sector operatives, digital technology was ranked as the most important enabler. Respondents also reflected that the application of digital technology presents the largest gap between their ambition and actual performance. While widely accepted that data and digitalisation are key to delivering on net-zero targets, it's clear that making this ambition a reality will be a challenge. Many executives have learned that digital transformation is harder to pull off than a typical change program.

Digital transformation will enable new sustainability pathways

Our chemical and fuels sector set out three pathways that will enable the chemicals sector to reduce its emissions. Firstly, by establishing alternative feedstocks such as synthetic feedstock from captured carbon or blue or green hydrogen. Second, by decarbonising chemical processes by, for example, improving energy efficiency or improving carbon capture, utilisation and storage. Finally, by developing approaches to resource stewardship such as greater product recycling or water reduction and reuse. But these pathways are only made possible through the digital transformation of the chemicals industry. Optimising digital takes more than retrofitting

technologies into the existing approach - we must consider how and when the right digital technology is introduced. We must also change the way we capture, store, and use data, and put it in the hands of the right people at the right time.

A good example of a lifecycle approach is how a chemical's greenhouse gas (GHG) emissions are measured. We calculate this in a life cycle assessment, accounting for all emissions produced. Once we calculate emissions and a establish a baseline, we must think about how to reduce those emissions.

So how does this relate to the implementation of digital technology across the life of the asset?

Translating a lifecycle approach to capture value of digital

Digital enablement is streamlining the engineering process of how we design and deliver large infrastructure. AI and machine learning has an important role in improving the quality of decision making and is enabling more autonomous working. When we apply it correctly, digital technology can bring enormous value across the asset's life. Take the example of digital twin technology.

A digital twin is an accurate digital representation of physical object or process. They're used every day from Google maps to interactive parcel tracking.

The chemical industry can see just as many applications. For example, predictive diagnostics of asset health helps to minimise downtime, accurate assessments of production forecasts enable better planning. And more effective plant navigation and remote working practices are enabled by technologies like 3D modelling.

But the full potential of a digital twin is only realised when we consider how data will travel across the life of the asset.

Reaping the rewards of a digital twin takes value-based thinking

Design and build phases of industrial facilities are often regarded separately from operational phases.

The purpose of twins for design and build is often limited to navigation of the asset, simulation of long-term production forecast and performance, or support for construction teams.

However, the greatest benefit of a digital twin is often realised in the operations phase.

Realising benefits in operations are highly dependent on consideration and implementation of digital twins in earlier phases. But because the return on the investment needed to support effective operations is not realised during the design and build phase, this is often overlooked.

Once the operations' digital twin is implemented, much of the essential data that should be accumulated through design, build and the transition to operation phase, is lost. At best, this extends the time to realise a return on investment. At worst, it makes it impossible to use digital twins effectively in operations at all.

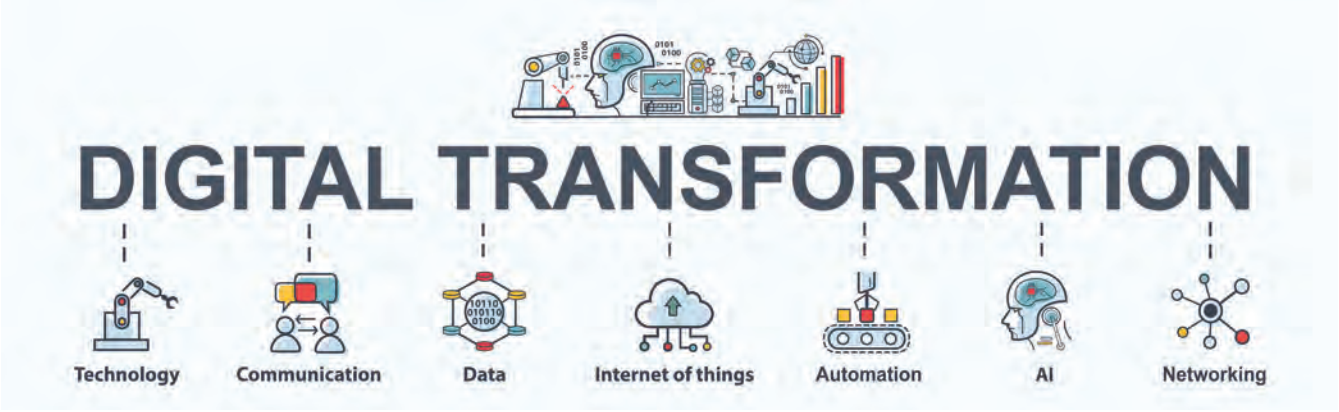
If digital twins are implemented in this way, it can create a narrow business case, restrictive commercial models and financial structures, and risk ineffective connectivity and integration across the asset's value chain.

Shift a digital ambition into reality

While I use the digital twin as an example, this is reflective of the challenges for digital transformation more generally. So how do we capture the maximum value for the asset, and deliver the most sustainable ways of working?

To address demand for chemicals, we have an opportunity to change how we think about integration of digital technology. From the earliest phase of a project, we must consider how data will travel across the life of the asset. That means widening perspectives and challenging working practices.

This shift in thinking could help capture the true value of asset data, enable more efficient operations and accelerate emission reductions in the chemical sector. Only then will we maximise the potential of digital as the enabler.



Low in code, high in priority

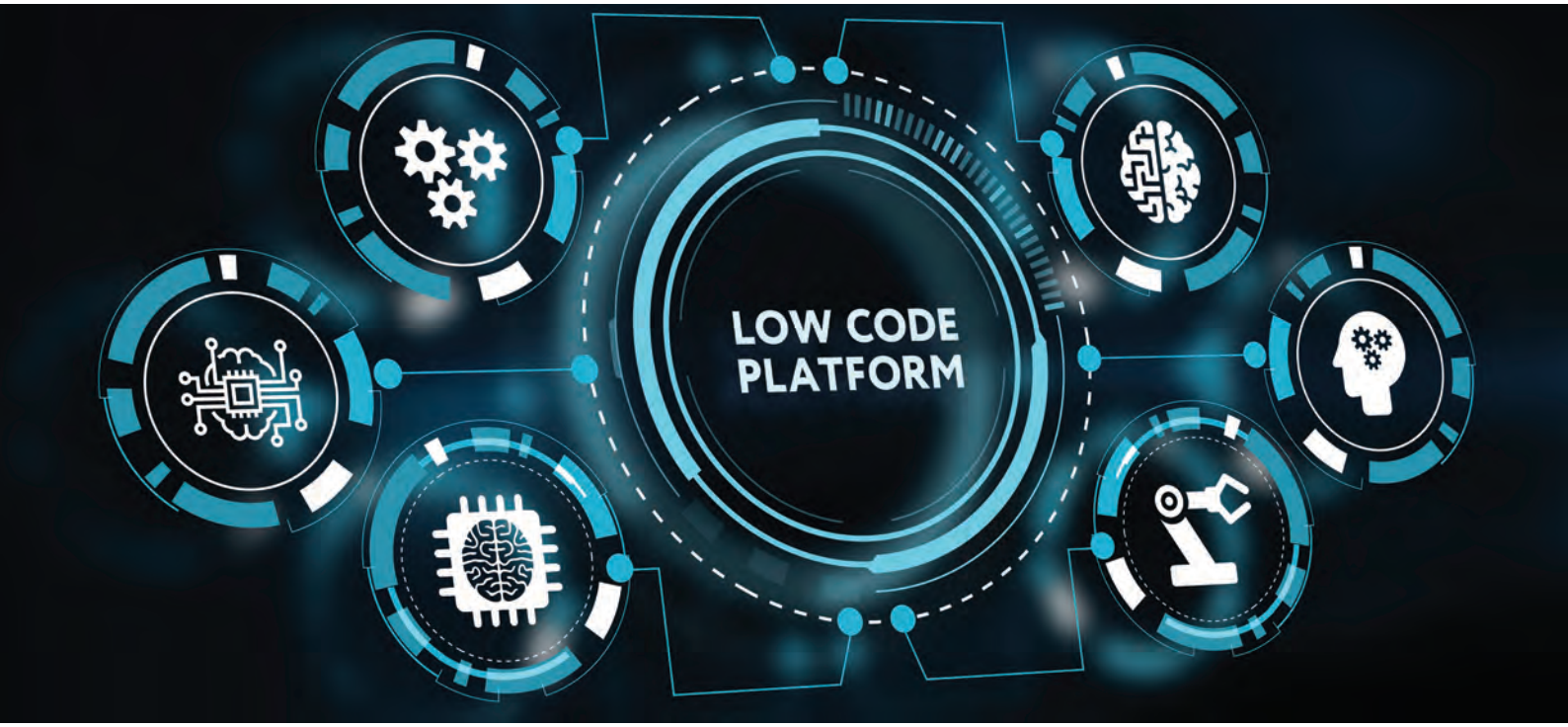
Low code software development has been around for over 20 years in various guises, but only in the past two years has it really become a high priority on business agendas. Gartner forecasts that by 2025, 75% of new applications developed by enterprises will use low-code or no-code technologies, up more than 50% since 2020.

BY JONATHAN WIENER, CHIEF EVANGELIST AT AURACHAIN

LOW CODE is striking a chord with the time-poor and fast evolving businesses of today. Against a backdrop of ongoing pandemic disruption and developer skills shortages, low code allows organisations to speed up application delivery and time to value, enabling them to remain agile and react to fast-changing requirements.

However, not all low-code approaches are equal. The market has been divided into extremes, from tools which provide little more than coding shortcuts for developers, to citizen developer-based workflow builders. One end of the spectrum offers strong enterprise IT governance and control but limited improvements in speed because they are still only understood and used by software developers. The other end offers easy to use tools for non-technical personnel, but are typically limited to the automation of low to mid complexity applications, while also lacking the built-in governance features and scalability required for enterprise use.

So, how do low-code application platform (LCAP) capabilities need to evolve to put more power



and capability into the business' hands, without sacrificing all the complexities, interoperability, and governance necessary for enterprise-scale transformation?

The rise and fall of citizen development

To answer this, it's key we revisit the concept of citizen development. The first low code citizen developer tools came onto the market around four years ago and were heralded as a 'game changer' for organisations. These tools provided 'quick automation for the workgroup', allowing business teams to transform their manual office-based processes into digital ones quickly and easily, without requiring technical skills.

Whoever understood the subject matter within the business could create the application and make changes to it quickly. And the benefits were soon realised. Research from Quick Base found that 68% of users create no-code apps because they fit their organisation's needs better than other solutions, and 61% said it was so they can make changes more quickly to apps as their workloads and requirements change. With testing and development time greatly reduced, organisations were achieving greater productivity and quicker time to value without relying on technical teams.

> One end of the spectrum offers strong enterprise IT governance and control but limited improvements in speed because they are still only understood and used by software developers. The other end offers easy to use tools for non-technical personnel, but are typically limited to the automation of low to mid complexity applications, while also lacking the built-in governance features and scalability required for enterprise use

Having said this, there were limits to what these platforms could deliver. For that matter, citizen developer tools were frequently looked down on by technical developers as more of a 'toy' for business users rather than something that could be used in demanding production environments. They lacked in the crucial areas of governance and scalability, and the business users creating them did not have the capability or technical expertise to integrate them with other business systems. Citizen developer tools also proved too simplistic for larger or more complex use cases – and crucially – didn't deliver on the low-code promise of allowing the business to lead its own transformation.

The evolution to collaborative development

While the citizen developer concept was beneficial to businesses in numerous ways, value was in a sense diminished by the perspective that these tools required little to no IT involvement; something that was ultimately proven to be misleading, if not completely unbelievable to those who understood the demands required by enterprise software deployment. However, the notion being planted was pivotal in the LCAP timeline. It highlighted the significant level of demand for rapidly accelerating automation (largely blamed on long standing development processes) and making the software development effort and its outputs more intuitive for the business stakeholder. This in turn challenged global IT professionals to find a way to achieve this, while ensuring the solution outputs were truly enterprise fit and met all the governance requirements required by the organisation. It was also a turning point for business users, who realised that without IT, there was a limit to what they could do, and high priority and complex transformational processes were out of reach.

This realisation has led to collaborative development, bringing the two sides together at the same table to create a 'best of both worlds' solution. The in-built governance and intuitiveness of these new LCAPs make this level of collaboration possible, resulting in the development of a highly effective and compliant enterprise solution that can scale as the business does. But how does the platform functionality achieve this?

Intuitiveness

The intuitiveness of these LCAPs is largely what makes them appealing for businesses today. Against a backdrop of developer skills shortages, composable technology, and hyperautomation, organisations require fast and efficient methods of developing applications, without being fully or heavily reliant on technical skills.

A truly intuitive LCAP, first and foremost, shifts the focus from how you build, to what you're looking to build; essentially presenting a business context to everything you do while working within the LCAP itself. Where each of the subject matter experts who provides knowledge that goes into the building of a software application can understand what is being built as it's being built and more so, contribute in a way that expedites the entire effort. All the while

keeping in place the IT governance processes that a company requires to ensure compliance.

These intuitive LCAPs significantly reduce back and forth requirement gathering sessions and ongoing translation from business to technical and back to business on what needs to be built and the progress within the build itself. One user can map the process and automation flow, while another configures stage elements, while a third confirms the accuracy of those elements, prior to the testing and production stages. This also means that change requests can be handled in minutes or hours, rather than weeks or months.

Organisations can take this approach a step further by granting business stakeholders the ability to configure some of the requirements into the system themselves, in a way that doesn't jeopardise the stability of the build. This can help to relieve technical resources of some of the more basic elements of development, pushing some of the work upstream to the business itself while allowing IT to reallocate scarce time and resources to more complex system challenges. The incremental components, such as UI design, data models, and built-in business logic, are presented in a way that the business can understand to enable this level of involvement. This fosters quick alignment between the business and technical stakeholders, not only reducing the chances of the business going off in the wrong direction, but also allowing them to see progress quickly and feel more involved.

Governance

Effective LCAPs feature built-in controls to ensure full control over the full application development lifecycle, as well as ongoing application usage and administration. They contain critical functionalities such as granular permissions systems and multiple environments with governed promotions and user levels. The types of features necessary to ensure control over which elements stakeholders have ownership over and access to and ensuring employees can only access and change the sections of an application their domain of authority allows for.
Furthermore, they allow oversight and clarity of all their different applications on a single platform; allowing them to see the permissions and governance rules set in place, as well as the flexibility to quickly make changes to the roles and permission structure so it propagates instantly through the system.

Yet, the better class of LCAPs will go even further. For example, for members of the DevOps team, advanced LCAPs provide full and real time technical and data audits on all instance characteristics, such as failed vs. successful instances, integration calls, and documents processed. For functional business or process owners, they offer real time views of process performance, measuring adherence to KPIs, and identifying areas for improvement. Some, like Aurachain, even provide real time remediation tools for reassigning work on the fly to ensure process continuity.

Low-code platforms with these advanced governance controls are in greater demand than ever. With more organisations trying to rapidly build digital applications with a fully remote or hybrid workforce, these controls enable all subject matter experts to contribute to the process, while ensuring the platform remains secure and compliant. They also provide key stakeholders with oversight of the whole process, so regardless of where their employees are in the world, they can monitor progress and keep the project on track.

LCAP tools, when created with intuitiveness and governance at their core, are the fastest and most effective route to building enterprise grade solutions, allowing business stakeholders to play a crucial role in the process without impacting the scalability, compliance, and ability to handle complex processes. As digital business acceleration continues to pile pressure on organisations to automate business applications and workflows, and expand digital channels, LCAP tools will remain a high priority for those looking to remain agile through 2022 and beyond.

EXAGRID®

Tiered Backup Storage

The Future of Backup Storage:

Tiered Backup Storage

Scales to 2.7PB without forklift upgrades or performance degrades with ExaGrid scale-out architecture.

3X
faster backups than dedupe appliances

20X
faster restores than dedupe appliances

Backup window that is **fixed length as data grows**

5YR
Price Protection Plan

New Retention Time-Lock for Ransomare Recovery

Set up with a
Proof of Concept
to experience the difference.

TEST IT TODAY ➤

exagrid.com

DevSecOps: a culture shift is needed

To break down DevSecOps, you first need to understand DevOps. It's a methodology that aligns your development and operations into one core focus.

BY KEVIN DAVIS, EXECUTIVE CLOUD ADVISOR, CLOUDREACH

THE KEY IS automation, continuous improvement, and teams working collaboratively. It's important to remember that DevOps isn't about where an application exists - on-premise or in the cloud - it's about the culture, mentality and the coordinated approach that is used to develop and deliver applications.

But in a world where security threats are changing daily, security can't just be an afterthought anymore, a part of the development cycle reserved for the end. This is where the methodology of DevSecOps will be key to the development cycle of applications going forward.

DevSecOps secures the application logistics chain integrating security capabilities through the full application lifecycle. DevSecOps replaces the siloed responsibility model with a shared responsibility model fused into every level of development and operations.

Why is DevSecOps important?

Security is empowered by DevSecOps, the development and operations teams are able to rapidly deliver code by leveraging automation and agile methodologies with the confidence it is secure. No longer is development and security two separate camps but a united front with a shared list of priorities that can be worked towards without compromising either efficiency in development or security.

By integrating security into the DevOps methodology companies can reduce the risk of possible cyber attacks and the downtime that comes with them thanks to automated processes that result in fewer errors.

Placing this shared responsibility across the entire application lifecycle, communication between the development, operations and security teams is

increased tenfold. This improved collaboration helps to avoid releasing an application with security vulnerabilities to the public.

The Cultural Shift

DevSecOps as a methodology aids in breaking down the ingrained organisational silos that have developed in businesses over previous decades. Development, operations, security and business teams must work closely together to achieve the shared objective of delivering new capabilities quickly, efficiently and most importantly, securely. To really take advantage of the DevSecOps model, organisations need a cultural shift, ensuring that everyone is following the core DevSecOps principles. Within DevOps environments,

cloud-native technologies like containers and microservices are key elements and security must be able to adapt to these dynamic technologies. This same mindset of adaptability needs to be ingrained in the culture of the Dev and Ops teams too.

Developers and operations need to be up to date on best practices and industry standard security tools. But there are a few more things that can be done to ensure the team is ready to embrace DevSecOps. To put the Sec into DevSecOps there needs to be a 'Shift Left' approach, the moving of security in the application lifecycle as early as possible. This is securing the application logistics chain. Not only does this highlight vulnerabilities early, before they become a bigger issue, it helps to also reduce test cycles as security threats are dealt with from the outset. For example: Identifying a change that will expose the MongoDB to the internet before the change is executed in public environments.

Another key component of this cultural shift is about taking the attacker's viewpoint. This is an idea based around a threat modeling mechanism that helps developers see applications from an attacker's perspective. It's a proactive way of detecting threats, spotting potential gaps in code and encouraging best practices at the core of development.

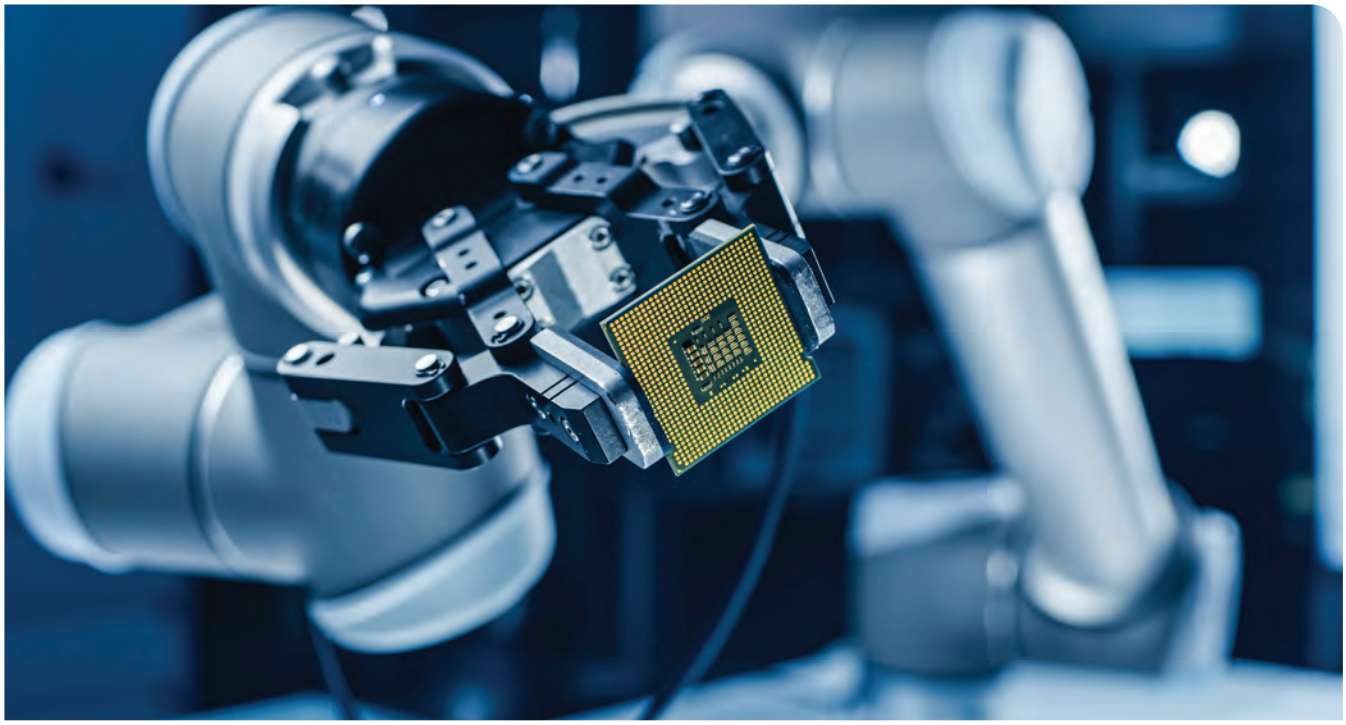
Technology is changing at a rapid pace, as new technologies in the development space emerge, a continuous cycle of upskilling is essential for all team members.

Businesses need to provide learning opportunities, encourage employee growth and strive for innovation in every aspect of application development. Not being ahead of technology change can lead to a catch-up mindset opening up vulnerabilities in applications as teams get to grips with new ways of working.

Automation! A core tenant of the DevSecOps model is to automate as much as possible. From identity and access management to continuous integration and acceptance testing processes, security patches and service configuration. All of these areas and more can be automated to help prevent workflow bottlenecks.

The Way Forward

As with every organisational shift, it won't happen overnight but following some of the core principles outlined here will help integrate security into your development cycle and move towards a more DevSecOps mindset. With the threat of data breaches and ransomware attacks not slowing down anytime soon it is vital that businesses work to incorporate security at every possible avenue.



A vision of true DevOps

Replacing organisational siloes with cross functional collaboration.

BY STEVE BARRETT, SENIOR VICE PRESIDENT, INTERNATIONAL OPERATIONS AT DELPHIX

In many ways, the COVID-19 pandemic has been a crossroad for businesses. Whilst some failed, others flourished. For those that did weather the initial storm, the ever-present threat of new variants and additional lockdowns make resiliency essential to recovery as well as future survival. But, whilst the need to increase profitability and optimise resources has never been clearer, it has also never been harder to fulfil.

In this tough landscape, there are several businesses beating the odds to come back better than ever. For example, Michelin - one of the world's

biggest tyre manufacturers - was recently able to improve its production resiliency by 98% and drive sustainable mobility and growth across the business. The secret to this success? DevOps.
IDC research forecasts that by the end of this year, 80% of European organisations will have adopted DevOps in some form. Yet, the same study found that only 10% of those implementing DevOps will excel in terms of accelerated performance and delivery cycles. To understand what's holding businesses back from achieving true DevOps, we need to take a deeper look at the factors involved in its implementation and what problems it aims to solve.

Say goodbye to siloes

If implemented correctly, a DevOps strategy can help to eliminate the siloes which may be impeding the overall success of a business.

But, what's really so bad about siloes? After all, it's not uncommon for businesses to be set up in this way – organised by function or expertise, with each team or department sorted into different units which have access to varying resources. What damage can this really cause?

The truth is that this set up is not really fit for purpose in our fast-paced world. It means that the communication between different departments and areas of a business is extremely limited, which can lead to dangerous divisions forming throughout an organisation. The reduced productivity and wasted resources that result from this way of working is one thing. The mentality created when departments are structured to work as separate entities can be even more damaging. In order to combat this level of division, business leaders are increasingly looking to shift the focus from departmental to organisational goals. This is where DevOps can help.

The power of DevOps

At a fundamental level, DevOps is all about increasing collaboration and removing barriers between teams. By bringing together development and operations teams, specifically, it enables businesses to build, test and deliver new software and applications at a faster and more efficient pace.

From an organisational perspective, the overall aim of DevOps is to foster innovation – something that every business should be striving for. In most instances, this begins with hiring developers and investing in programmes which will enable them to do their best work. Only by implementing true DevOps practices, will developers be provided with the tools and support they need to achieve this.

In a genuine DevOps business, collaboration is encouraged at all levels, which helps to ensure end-to-end responsibility and accountability across all projects. It also gives employees a greater sense of purpose, as they become more aware of the impact their work is having from an organisational perspective. Promoting cross functional teams in this way can even help in terms of upskilling, as team members across a wider business will learn from each other.

It's not just collaboration

The requirements for successfully implementing DevOps within an organisation are multifaceted. While collaboration and a one-team mentality are crucial, adopting the right technology also plays an unrivalled role.

IT leaders need to ensure that the company infrastructure is set up for long-term DevOps success. The right tools need to be put in place from the start, including a dedicated data platform. By delivering data into development environments at the same pace and level of automation as DevOps teams deploy code, these platforms can eliminate CI/CD bottlenecks. They also allow the developer to access data from different platforms, mainframes and applications whilst still benefiting from a single source of truth.

Data platforms provide easily observable benefits to the overall organisation. By synching data from all across the business, the platforms enable teams to manage all operations, without compromising on compliance or security. Investing in and implementing the right tools is crucial as, ultimately, it will facilitate the cooperation and collaboration of teams, feeding into wider DevOps goals.

Given the expected uptake of DevOps practices, it's clearly becoming an industry standard for enterprises around the world. However, in order to implement a true DevOps plan, organisations need to understand all the elements that feed into it. Though this may seem time consuming, the benefits will far outweigh the effort required to put the processes in place.

At a fundamental level, DevOps is all about increasing collaboration and removing barriers between teams. By bringing together development and operations teams, specifically, it enables businesses to build, test and deliver new software and applications at a faster and more efficient pace

DevSecOps automation will be key to digital transformation in 2022

BERND GREIFENEDER, FOUNDER AND CTO OF DYNATRACE looks ahead to 2022, predicting some key trends we're likely to see impacting organisations' journeys towards digital transformation.

THE PAST 12 MONTHS brought plenty of challenges for IT operations and development teams as they supported the continued move to digital-first services and hybrid work. These challenges are here to stay, but 2022 will undoubtedly bring some fresh problems. Here are the key trends most likely to impact organizations' ability to keep up with the digital transformation imperative.

Developer experience will become mission-critical

In 2022, the talent war will get even hotter as organizations battle to attract and retain the skilled developers needed to drive their digital transformation. They will, therefore, find themselves under increasing pressure to offer the best developer experience, to focus their workforce on driving innovation and give them a reason to stay loyal. Development teams should be enabled to work as artists as much as possible, opening up their productivity to build new ways for organizations and their customers to see and experience the world. They shouldn't be manual laborers who get bogged down in the task of stitching code, infrastructure, and databases together to make sure everything works.

To enable this, IT leaders will need to realize that their efforts to improve the developer experience are equal in importance, if not more so, than their ability to optimize customer experiences. They will need to increase their focus on reducing friction in DevSecOps processes and automating as many repetitive tasks as possible. This will enable their developers to invest more of their energy in the work that gets them out of bed in the morning, and less on routine manual tasks – giving them more reasons to stay.

Data complexity will continue to spiral

In 2022, IT leaders will need to urgently tackle the complexity of the data explosion that's ensued from the introduction of cloud platforms, as well as new technologies, programming languages, and tools in recent years. The volume of observability data that organizations are grappling with is doubling every two years, and will be added to even further in the next 12 months by the rising adoption of OpenTelemetry.

IT leaders will need to ensure the task of handling and analyzing all this data to provide the insights needed for DevSecOps automation doesn't fall to their developers, pulling them away from vital innovation work. As such, it will be increasingly important to use standardized and automated approaches to capturing observability data, and harness AIOps to analyze it in real-time to unlock the insights developers need to accelerate innovation.

Organizations will begin streamlining automation

In the next 12 months, organizations will begin to address the tangled mess of automation code that was created by their initial efforts to reduce manual development processes. These efforts were driven by automation scripts created on a case-by-case basis, and added to workflows as needed. As time progressed, developers used "copy-paste" versions of these scripts to quickly and easily add the plumbing to connect more operations, development, and automation processes. There is also a huge amount of undocumented automation code that was introduced without much thought for the output.

All of this is making automation increasingly messy, which makes it difficult to realize the value of DevSecOps, as already complex cloud environments become even harder to understand and manage. Developers are forced to waste time updating and fixing their automation scripts over and again, pulling them away from more value-adding tasks such as innovation. As well as adding to their workloads, this also increases the risk of human error derailing DevSecOps pipelines, as developers struggle to maintain consistency across different versions of their automation scripts. To overcome this, we'll see organizations adopting smarter approaches to DevSecOps automation in the next 12 months. They'll increasingly look for platforms and solutions that enable them to build automation into their delivery pipelines, rather than manually adding it as an afterthought. This will help to eliminate the reliance on manual copy-paste plumbing and the need for developers to invest time in maintaining fragmented automation scripts.

SRE and DevSecOps will converge

Site reliability engineering (SRE) practices are becoming ever more central to continuous delivery as organizations look to accelerate transformation. As this trend gathers pace in 2022, SRE will move beyond DevOps and become a key part of the DevSecOps movement, as observability converges with security, self-healing, and automation. The pain that SRE teams will face is that developers often don't have enough time to think about self-healing, observability, and automation. They're also only just getting used to having the responsibility for security. As a result, all too often, it falls back on SRE teams to ensure security, self-healing, and automation are built-in during the development stage.

To address this, SRE teams will increasingly look to enable developers to build services that are reliable and secure by default. Self-service observability solutions and 'monitoring as code' approaches will be key, allowing developers to easily build in observability with just a few clicks. The use of quality and security gates in automated DevSecOps pipelines will also enable developers to ensure their code satisfies service-level objectives that establish the minimum requirements for performance and risk, further easing the burden on both themselves, and SRE teams.

NoSOC approaches will gain momentum

Next year, there will be another gear shift in development cycles, forcing organizations to lean more heavily on AI and automation to ensure their developers' code is high quality and secure. To support this, organizations will increasingly move towards NoSOC-approaches. This will see security teams using observability to increase the context of their own data, improving the precision of the insights it delivers and preventing false positives.

They will also look to harness AI to automate more manual processes in security management and achieve faster insights and analytics to improve threat detection and remediation capabilities. This will help SOC teams to move away from constant firefighting, so they can focus on more strategic tasks that improve their security posture, turning them into proactive protectors.

IT leaders will look to extend this automation to taint analysis to support the move to DevSecOps, by helping development teams to automatically understand whether vulnerabilities could expose data or if they are harmless. Those insights will help developers prioritize their efforts more effectively, so they can consistently deliver high quality code that's free from vulnerabilities, at greater speed.

The challenges of digital transformation and making sure APIs are fit for service

Over the last 18 months, we've seen significant acceleration of digital transformation initiatives and while this trend is here to stay, it isn't without its challenges.

BY ERIC NEWCOMER, CTO AND RICARDO DINIZ, VP AND GENERAL MANAGER, UK I AND SOUTHERN EUROPE, WSO2

Eric Newcomer

Ricardo Diniz

OFTEN THIS IS because consumer expectations have been set by the digital pioneers such as Netflix, Uber and Amazon. These companies specialise in creating highly intuitive, easy-to-use interactive websites or apps and as a result, consumers are used to this experience. However, when they go to a more traditional organisation - a bank or government-owned entity for example - and processes are still semi-manual or just not intuitive, they switch off.

The digital pioneers have created a frictionless experience which has made life easy for customers. However, it's a very different environment for enterprise systems, compared to consumer phones and other lifestyle devices.

So how do organisations deliver a similar frictionless experience?

Looking at a traditional enterprise model, i.e., a bank, the customer talks to a teller, presents their ID, and they work with the IT system designed to operate in that bank. Here the customer is expected to adapt to how the bank does business. The system is not designed to interact with the public, it's designed to interact with the organisation's employees.

Digital pioneer applications and systems adapt to the individual. Uber makes it easy to get a ride. Netflix makes it easy to stream a programme. As a result, customers now expect applications to adapt to them rather than having to adapt to the organisation's processes. However, the difference here is that employees are a captive audience; they are trained to use these systems. But, you cannot train a millennial customer or somebody who is on a web browser how to use that app, you don't have the luxury of enabling them to take 30-days training on the app, it must be usable right out of the box.

Here at WSO2 we encourage our customers to view the world through the eyes of their customers and here are a couple of examples where digital transformation was driven by customer needs:

Transport for London (TfL) have a solid plan to improve their services and make commuting safer and better for citizens. WSO2 is part of one of their projects, called London Works. London Works holds the history of all their works and looks at how it can improve the coordination of road maintenance to cause minimum disruption and therefore deliver a better experience to its citizens. Another example is Madrid and the Andalucia government. They adopted WSO2 to help implement a platform to deliver services to their citizens during lockdown. Now, 30% of the citizens in Spain can use the platform to generate new services, so if citizens need a certificate or a passport, they can obtain this through the platform. This enabled the Spanish government to streamline its processes by as much as 30%.

To do this, organisations need a back-end-as-a-service for these great GUIs that power systems to be flexible, intuitive, and enable the data to be available when customers need it, and this is where we come in. However, often companies don't think about how they are going to externalise their internal systems and just expose them to the web without a thought about how they can be integrated and utilised. The digital pioneers think about this right from the outset. They set up those back-end APIs knowing they want to enable great GUIs and experiences.

Unfortunately, a lot of the first, second and even third generation APIs were designed for developers to build internal systems. Companies have tried to clean these up and make them available to

organisations outside the company, but this has merely created security issues, scalability issues, but more importantly, massive usability issues. This requires a change in mindset and thought process when moving from a proprietary world of closed systems or closely integrated systems out to the worldwide web, where everything must follow the same standard. Beyond that, organisations must put themselves in the shoes of the customer, to make sure they have the right data in the right place at the right time, to make it useful and usable.

It is also hard to build scalability into APIs. When websites first came out, such as eBay, Foursquare and Amazon they had very simple server-based applications. They rapidly gained adoption and some of these companies witnessed huge spikes in demand and websites crashed. So, they had to re-engineer, put in more hardware and software and figure out new load balancing algorithms, caching techniques, and faster data stores. This is ultimately what led to the invention of Cloud Native Computing, to help solve scalability issues where organisations can dynamically add to the basic capability whatever they need, and the system keeps going.

We therefore encourage organisations who are looking to provide great digital experiences to customers to move to cloud native applications in a cloud native infrastructure. The reliability, the scale, the always-on capability, the resiliency, outweigh any downsides. However, we recognise that often customers, when they first come to cloud, will have had a very varied journey to get there. Some have simply put their systems into virtual machines and uploaded this into the cloud, while others have gone full cloud native right from the start.

The same is true for their APIs. Their APIs may be written with an assumption that there will be a degree of on-premises systems, but over time they need to start to look at a cloud first, API first environment. Whilst there will still be on-prem and various hybrid environments, organisations want to be able to build and engineer APIs for the cloud and re-engineer their applications to take advantage of micro services to help with scalability, flexibility and reliability.

In many cases, digital transformation projects are going to require a new capability, a new service, another way of accessing data than the organisation had before, so they're going to need to build new functionality to create great services for customers.

To do this, organisations will want to have a cloud native development toolkit, low code, no code templates, cloud native engineering-based integrations, language and syntax that abstracts this and provides the programming model required to make it easy to deploy.

This all requires a huge culture shift which is often difficult to achieve, therefore here are three activities we highly recommend organisations stop doing to help them make that shift:

1. Stop exposing APIs without thinking how they're going to be consumed by the customer. In the digital world, organisations must think differently. It's not the employee they're building applications for, it's the external customer who won't receive any training, so it must be intuitive and easy to use, out of the box.
2. Stop exposing APIs without securing them, because when you're under attack, you're in a rear-guard position and it is difficult to recover from an unsecured API. Bake security in from the outset.
3. Don't just lift and shift your on-prem application to the cloud and expect to get all the benefits of the cloud. There's some investment and effort required, and this involves changing how apps are engineered to get these benefits.

the first, second and even third generation APIs were designed for developers to build internal systems. Companies have tried to clean these up and make them available to organisations outside the company, but this has merely created security issues, scalability issues, but more importantly, massive usability issues

Not all deduplication is created equal

A COMPARISON OF DIFFERENT APPROACHES, BY EXAGRID

Why should data be deduplicated?

In standard backup practice, dozens of copies of primary data are be kept so that the data is available to be restored if necessary. If an organization keeps 8 weekly, 24 monthly, and 5 yearly backups, then it needs to store over 30 copies. The cost of disk can become too expensive for backup when of all these copies, known as retention, are kept.

This is where data deduplication comes in. Data deduplication compares one backup copy to another and only keeps the changes from backup to backup. It reduces the amount of storage versus having no deduplication at all.

There are two considerations that factor into data deduplication. The first is the how much deduplication can be achieved (how high the data deduplication ratio is) and the resulting storage reduction, and the second is the impact that deduplication has on backup and recovery performance, which can vary based on the approach. Data deduplication ratios are all over the map based on what size blocks are used, what advanced techniques are employed, and other factors.

How is the data deduplicated?

Data is either deduplicated by the backup application or by a dedicated backup appliance. Examples of backup applications that include data deduplication in their software are: Veeam, IBM Spectrum Protect, Commvault, Rubrik, and Cohesity, among others. When data deduplication is performed by a backup application, the block size is typically very large and also fixed so deduplication ratios are typically low, between 2:1-5:1. This is better than no deduplication at all as it provides some storage savings, but as an organization's retention needs grow, this approach will still require a lot of storage and therefore still be costly. The reason why backup applications only provide low deduplication ratios is because data deduplication is very compute-intensive which impact backup performance. In addition, all the data is deduplicated which greatly slows down the speed that the data can be restored.

Dedicated backup appliances usually achieve higher deduplication ratios, averaging from 14:1-20:1. The higher the deduplication ratio, the greater the storage savings. The reason why the appliances can achieve this level of deduplication is because they include dedicated hardware to handle the heavy compute required. The lowest-cost storage solutions are those that offer an average 20:1 deduplication ratio. These solutions have dedicated process, memory, and networking to handle the aggressive deduplication. However, these appliances are inline which means the backups occur during the backup window creating a compute-intensive bottleneck that slows backups down and expands backup windows. In addition, since all data is deduplicated, the restores are slow due to data rehydration for each request.

The drawback of inline deduplication in a backup application or deduplication appliance

In addition to deduplication ratios, an important factor to consider is a solution's approach to data deduplication. Most deduplication is performed inline, which means data is deduplicated while the backups are occurring and before the data hits the storage, so the backup performance takes a big hit.

Writing to disk is fast but if inline deduplication is used by either a backup application or an inline deduplication appliance, it creates a bottleneck which greatly slows down the backups by as much as 3 to 4X. In addition, if the backups are performed inline, whether by a backup application or a dedicated appliance, all the stored data is deduplicated. For every restore request, the data has to be put back together (called data rehydration) which takes 10-20 times longer than simply reading undeduplicated from disk.

Key Considerations When Adding Deduplication to Backup

When looking at data deduplication, ask:

- What block size is being used?
- What deduplication ratio is being achieved?
- Is the deduplication being done inline during the backups which slows backups down?
- Is the data stored only in a deduplicated format which results in slow restores, recoveries, and VM boots?
- OR, does the solution have a front-end disk-cache for fast backups and restores as well as a second repository tier for long-term deduplicated storage?

Deduplication in the backup application will save some storage but also reduces backup and restore performance.

Dedicated inline deduplication appliances save far more storage than the deduplication in backup applications provide, but they also are slow for backups due to inline data deduplication (when data is deduplicated on its way to storage) and slow for restores due to the need to rehydrate the deduplicated data that is stored on the appliance.

There is a unique approach to deduplication called a disk-cache Landing Zone which is used in Tiered Backup Storage. With this approach, backups are written to the Landing Zone first for fast performance then and adaptively deduplicated into a repository tier for long-term retention storage for cost efficiency. The most recent data in the Landing Zone is not deduplicated, so that restores are fast and avoid the lengthy and compute-intensive data rehydration process. Tiered Backup Storage offers up to 20:1 deduplication ratio, which provides a huge savings on long-term retention storage, without the negative impact on backup and restore performance.

Deduplication is key to managing backup costs, but it is important to consider which approach will work best in your backup environment.

How to accelerate SAN storage and WANs with artificial intelligence

With latency and packet loss impacting on Wide Area Network (WAN) performance, it's not a bad idea for companies to keep an open mind to uncover new solutions, and to carry out frequent audits to review of IT budgets and enterprise strategies.

BY DAVID TROSSELL, CEO AND CTO OF BRIDGEWORKS

MUCH HAS had to change over the course of the Covid-19 pandemic, with many employees having to work from home. Many firms have had to ramp up their e-commerce and logistics operations to ensure that they can remain in business.

Many organisations have become increasingly dependent on cloud computing and subsequently there is now a significant shift in Storage Area Network (SAN) Fibre Channel. So, with the changing landscape and increased demand for new ways of working and for new technologies even data centres are having to be audited. Companies are also auditing their network infrastructure, their overall IT resources, and they are reviewing the latest IT trends to enable better decision-making to improve operational effectiveness and efficiencies, while also augmenting service delivery.

While Covid restrictions in the UK have mostly been dropped, some data centres may still need to be managed remotely, and the same strategy applies to e-commerce operations. This is creating the need to ask questions about whether there is a need to upgrade their SAN storage and networking infrastructure. This includes considering whether WAN Acceleration, SD-WANS or an SD-WAN-WAN Acceleration Overlay will enable them to meet demand this year despite the potential staff shortages.

Global Fibre Channel SAN

In August 2021, Orion Market Research Pvt Ltd, wrote in a press release that the global Fibre Channel SAN Storage Area Network market is expected to achieve a significant Compound Annual Growth Rate (CAGR). However, it doesn't reveal what this CAGR is in its press release. However, it explains:
"Fibre channel SAN connects servers and storage arrays using Fibre cables, suitable switches, and host hub adapters, and it is a high-speed serial interface that combines data storage and data networking technologies...Fibre channel SAN interfaces are optimised for server-to-storage and server-to-server communications and provide high performance, reliability, low latency, and flexibility."

"The market has seen an increase in both structured and unstructured data as a result of rapid technological advancements. Both large and small organizations demand a versatile data storage management solution to safely store their massive volumes of data. Rising technical developments such as IoT, and cloud adoption many others are substantially contributing to the storage area network market's greater growth."

Gartner IT spending forecast

IT spending will exceed $4.5 trillion in 2022, an increase of 5.5% says a Gartner forecast published in October 2021. "Enterprises will increasingly build new technologies and software, rather than buy and

implement them, leading to overall slower spending levels in 2022 compared to 2021," said John-David Lovelock, distinguished research vice president at Gartner.

"However, digital tech initiatives remain a top strategic business priority for companies as they continue to reinvent the future of work, focusing spending on making their infrastructure bulletproof and accommodating increasingly complex hybrid work for employees going into 2022."

Enterprise software tops Gartner's list of the highest growth in spending for 2022, with growth predicted to reach 11.5%. The research and consultancy firm says this will be driven by infrastructure software spending, which will outpace application software spending. The company's press release adds: "Global spending growth on devices reached a peak in 2021 (15.1%) as remote work, telehealth and remote learning took hold, but Gartner expects 2022 will still show an uptick in enterprises that upgrade devices and/or invest in multiple devices to thrive in a hybrid work setting."

Impact on IT budgets

Despite the reports of growth in the IT sales – much due to the need for organisations to accelerate their digital transformation programmes and shift towards the cloud, the pandemic has created wider challenges which could – despite these positive forecasts – impact on IT budgets. This means that some organisations look to do more with less. Over the past few years, he has been helped with the introduction of SD-WANs which has simplified the deployment and maintenance of WAN.

Yet there has been an increased need to invest in cyber-security to thwart the growing attacks by cyber-criminals on businesses, organisatons and on individuals. Hackers have been getting more and more clever. Organisations therefore have to keep their guard up. Hackers don't care about the festive spirit of a new year, or of any other time of the year. They want to catch people off-guard.

Balancing pros and cons

Organisations' IT and network teams are therefore trying to balance up the pros and cons of the different types of storage open to them. SAN is for speed. Cloud and hybrid cloud have some compelling costs-savings - whether this is for online storage, backup or archive. They are increasingly concerned about the cyber-attacks on their most sensitive data, such as that involving the personal client data, financial and transactional data. Part of their IT audit review is a focus on cyber-security and data management.

Hackers have learnt from their mistakes. They now attack the backup files and programs first, before encrypting the data and spoiling organisations' ability to operate. Ransomware is rife. Getting data offsite is therefore key to being able to recover.

The further away and air-gapped the data and the backups are the better. When IT teams try to move data offsite via a Wide Area Network (WAN) to the cloud, or to a disaster recovery centre, there is always a performance penalty created by latency. This is true of both IP data streams or SAN protocols such as ISCSI and Fibre Channel.

Should organisations upgrade?

The question is: With latency and packet loss affecting Wide Area Networks, and potentially Storage Area Networks (SANs), should organisations upgrade and invest in new IT infrastructure, or should they consider WAN Acceleration, or an overlay of WAN Acceleration and SD-WANs? Well, nothing is safer when protecting that vital off-site last ditch copy than the use of tape. The more that tape can be totally isolated from all other connections, the better. A standalone tape library connected over the WAN at a distance is the perfect solution. However, how can data be protected over the WAN? With WAN Acceleration over the WAN.

Despite the reports of growth in the IT sales – much due to the need for organisations to accelerate their digital transformation programmes and shift towards the cloud, the pandemic has created wider challenges which could – despite these positive forecasts – impact on IT budgets. This means that some organisations look to do more with less

This leaves organisations asking: Where will SAN storage and networking trends go in 2022? The choice of SAN technology is changing rapidly – where once Fibre Channel ruled supreme in the data centre, IP networks with iSCSI and iSER do - as well as other RDMA protocols running across 100Gb networks. These technologies are taking over, and so Fibre Channel may not be the way forward for every organisation. To answer his questions, organisations are often found looking for a good partner to help them to accelerate and protect data and help to ensure that they have the right infrastructure and SAN storage in place. Ultimately, their aim is to ensure business and service continuity with a boost from WAN Acceleration solutions such as PORTrockIT, which use artificial intelligence, machine learning and data parallelization to mitigate the effects of packet loss and latency.

DCA data centre sustainability SIG

An Introduction from DCA CEO Steve Hone

AS THE Trade Association to the Data Centre sector the DCA understands that it is imperative that key issues affecting the sector have a point of focus.

The DCA SIG's (Special Interest Groups) / Working Groups regularly come together over shared interests to discuss issues, resolve problems and make recommendations.

Outcomes result in best practice guides, collaboration between group members, participation in research projects, this includes clarification and guidance for decision and policy makers.

Members find these groups are a great way to ensure their opinions and views are considered in a positive and cooperative environment.

The DCA currently facilitates nine Special Interest or Working Groups. DCA members can join any of the groups and contribute find out more here: https://dca-global.org/groups

The DCA Sustainability SIG is chaired by Astrid Wynne, Sustainability Lead at Techbuyer The purpose of the Sustainability Special Interest Group is to develop best practice in the UK data centre industry with respect to materials usage, energy efficiency, skills development and workforce retention in an operational data centre environment.

The group aims to achieve this through:

- Optimising energy efficiency at use phase
- Expert insight into IT hardware and the effect on energy draw
- Insight into the role of IT load with respect to this, including:
  a. the effect of full utilisation on efficiency as measured by compute power over energy.
  b. the ability of software to dematerialise hardware.
  c. minimising data transfer and storage, potentially leading to a sector Code of Conduct
- An understanding of the importance of Scope 3 emissions (also known as embodied energy) in the hardware, facility and building.
- Circular solutions for the IT hardware and other infrastructure
- Circular solutions for heat, power and IT load
- Use of renewable energy in the sector.
- New technologies that can aid this.
- Existing and upcoming standards relating to this.
- Education of workforce with respect to sustainability insight and practice

The group work very closely with the Energy Efficiency SIG to provide DCA members with an entire overview of data centre energy efficiency and sustainability.

To request to join this group please contact the DCA - mss@dca-global.org

2022: The year of action

Sustainability special interest group update, March 2022

AFTER DECADES spent focusing on energy, this is the decade where we begin to look at the wider picture – materials supply, social benefits and how we can support the needs of today without compromising on the needs of future generations. The good news is that this offers a distinct set of advantages for all businesses – and the data centre sector is no different. From the Harvard Business Review to Black Rock, more and more capitalists are pointing to the advantages of sustainable business practice. These include sales revenue increase; staff attraction and retention (particularly interesting for data centres at the moment); investment; legislative compliance and resilience during hard times (topical again).

The Sustainability Best Practice Whitepaper

It is against this backdrop that the Data Centre Alliance sustainability special interest group is releasing the first of its best practice whitepapers this Spring. It has been created in partnership with a number of organisations outside of the DCA, including the Sustainable Digital Infrastructure

Alliance in Europe and Interreg-NW-funded circular economy research project Circular Economy for the Data Centre Industry (CEDaCI). We have very much aimed to make this of its time, with a discussion of the current landscape. More importantly, we have tried to make it accessible with five simple steps organisations can make today. These cover each aspect of the triple bottom line: people, profit and planet.

Workshops

The Special Interest Group re-booted our monthly workshops in March after a short hiatus to generate the best-practice document. The format of the meetings is a 20-minute presentation from a specialist (this is posted on our SIG portal) followed by a 70-minute discussion of the issues raised (which is full, frank, fun and private). Our first this year was from Colin Curtis of Triple Bottom Line Services, talking about how to set up and manage a framework to support the UN Sustainable Development Goals. This is something the DCA and its members will be looking at in more detail over the coming months.

Following on from this, we will be looking at Circular Economy approaches, creating a code of conduct, conducting impact assessments and other topics related to these and carbon accounting that are of use and interest. We take this hands-on approach because there is a time imperative to get moving on sustainability. Yet at the same time, it is an evolving area, and we need as much advice as possible on next viable steps. As a high-impact, high-growth sector (according to some estimates, a projected 500% growth globally by 2050), data centres in the privileged position of driving significant positive change and we are hoping to chart a pathway towards this.

Call to Action

Each of our five suggestions this year is relatively easy to begin, and we have provided short explainers and resources in the document. However, as a group we know that there are challenges the industry will face in getting where we need to be. One example of this is the Net Zero Pledge, which will involve accurate measurements of Scope 3 (embodied) Greenhouse Gas Emissions. This is going to be difficult to assess at the moment given the lack of Environmental Product Descriptions on the market and the lack of standardisation around Life Cycle Assessment. However, beginning the process will activate positive change in the market. The DCA sustainability special interest group aims to do its part in this, highlighting developments that help us move in the right direction and leading the conversation on what might be missing. We are trying to do this in a world which is dramatically changing.

Practical advice

In line with this, our articles in this issue try to look at real-life solutions in the face of issues we are seeing today. Mohan Gandhi of STG Advisors is extremely experienced in highlighting the importance of data and integrating this into core decision making within an organisation. He has given us an insight into the importance of transparency when it comes to driving positive change.

Five actions to create positive change

- Make a Net Zero Pledge
- Address Environmental Impacts through Circular Economy practice
- Create a code of conduct for your company and the supply chain
- Carry out an impact assessment
- Announce Support of the UN Sustainable Development Goals

DCA sustainability special interest group member Enel-X is an expert on managing energy market volatility, which has now become very much an operational concern in our sector. The supply chain issues related to the pandemic have been compounded by the events in Ukraine and resulting sanctions on Russia. Addressing the profit and planet aspects of sustainability, author Andrew Toher gives pointers on contracts, secure supply and energy use avoidance that are currently very topical.

We hope that you enjoy reading these articles and some of the topics raised in them. We also look forward to introducing our Best Practice Whitepaper later this year and discussing some of the issues raised in the group and in industry forums. This sector is full of robust and honest debate. We look forward to enjoying this soon.

Energy markets volatility

Energy strategy Q&A with Andrew Toher, Head of Customer Insights, Enel X Europe

IN THIS Q&A, Andrew shares the answers to some of the most frequently asked questions by our customers as a result of current energy market volatility.

What has happened to wholesale electricity and gas prices?

Wholesale electricity and gas prices across Europe and UK have increased dramatically and recently reached all-time-highs. This is primarily due to uncertainty about whether natural gas supplies will continue to flow into Europe from Russia because of the war in Ukraine and associated sanctions. This impacts electricity price due to much of the electricity generated across Europe coming from gas fired power generation. Prices have risen significantly but also the volatility or the size of price changes from day to day and within day has also increased.

Can the recent price increases be justified?

There is a lot of sentiment currently driving market prices with market participants pricing in concerns about future availability of gas supply. The high volatility also indicates low liquidity so in some cases, even though prices for future periods have increased dramatically, there are relatively low volumes of gas and electricity being traded at these high prices. That said, there is a real potential for reduced supply of gas in future and we are advising our customers to prepare for the risk of a sustained period of elevated prices.

Will there be a situation where there is no gas and electricity available to my premises?

It should be noted that currently there are no gas or electricity shortages in Europe and UK markets. If there were to be a significant abrupt reduction of gas flowing from Russia then there are a range of alternative ways the market could respond. This can range from alternative electricity generation sources such as coal and nuclear to alternative gas sources including pipeline gas from other countries, increased liquified natural gas imports and withdrawing more gas from storage. While local risks of no availability of gas or electricity cannot be completely ruled out, this is relatively low risk, the bigger risk is on prices spiking higher.

Should I enter a long-term fixed price deal now?

Generally following such a ramp up in prices this is not the right time to enter a long term fixed price deal unless you can tolerate the price and it is critical to have certainty of price. We would generally advise customers to enter into flexible price contracts where they can, and to implement an active risk management strategy using a progressive purchasing approach. Where customers cannot access flexible supply contracts, they should consider a shorter term fixed price deal, then actively monitor markets to determine the best time to run a further tender or contract extension for future periods.

Should I make some hedges for future years now?

The first step is to ensure you have a flexible supply contract covering the periods that you wish to actively manage. This allows you to move quickly if there are opportunities to lock in lower prices. Even though the near term market is significantly elevated compared to historic prices, you may consider making some hedges for future periods as part of a progressive purchasing strategy. It's best to have a defined strategy for example using a Capital at Risk model to provide some overarching risk controls and help you navigate these decisions.

How do I budget for energy costs with so much uncertainty?

Our customers found it helpful to have regularly updated position reports showing the forecast spend for remainder of year vs the budget, along with regular updates to finance team with explanations of what is happening in the market.

Is there anything I can do to avoid high energy prices?

Yes. The lowest cost energy is the energy you don't use! Therefore doubling down on low/no cost energy efficiency and avoiding waste is the best place to start. Following this, accelerating distributed generation and onsite renewables projects can help as this will avoid both the elevated commodity prices and non-commodity charges such as network charges. Battery energy storage can increase the electricity utilised from onsite renewables to further reduce grid imports. Customers should revisit the return on investment (ROI) calculations for all recently considered energy efficiency and onsite renewable projects as they may now represent better investment cases. Corporate power purchase agreements (PPAs) are another way to fix prices for a longer period of time and avoid the market volatility we are seeing. In addition, customers can consider how to extract value from the energy markets. For example participating in demand response schemes to support the grids through these volatile periods can be a revenue source to help offset increased commodity costs.

Should I switch supplier now?

Many suppliers are not taking on new customers and where they are taking on customers they may not be offering attractive terms and / or asking for large security deposits. Extending terms with existing supplier may be most favourable situation particularly where you are in a flexible supply contract.

Can I get out of my existing retail supply contract?
If a customer is already in a fixed price deal from last year then now would not be a good time to try and exit this. This would likely expose you to a further significant increase in commodity cost and as set out you may struggle right to get the best terms from new suppliers.

Are there any other risks to be aware of?
We have also seen a significant inflation in the cost for unbundled renewable energy guarantees of origin costs (REGOs or GoOs). While this is not directly linked to the situation in Ukraine we have seen some retail suppliers back out of previously agreed fixed price green electricity uplift costs on green retail tariffs. Where this happens it then exposed customer to a risk of procuring the REGOS or GoOs at a significant premium. There are a range of options to procure REGOs/GoOs through retail supplier or other routes and all should be considered before accepting inflated pricing from Retail Supplier.

Should we postpone our renewable or net zero carbon targets?
No! As described above, energy reduction and renewables adoption may represent the best way to avoid this commodity price volatility. It also takes time to develop these programmes and the commodity market backdrop can be ever changing. The global trend towards decarbonisation is unlikely to fundamentally change due to this situation and if anything may be accelerated.

Sustainability is a data play

By Mohan Gandhi, Senior Sustainability Consultant, STG Advisors

WOULDN'T IT BE IDEAL if decision makers could see the environmental impacts of their decisions? If design, procurement, operational and disposal related decisions could be made with full visibility and consideration for the environmental consequences? In almost every case, the well-informed decision maker would make the most sustainable decision possible (business considerations held equal). Sustainability, therefore, is the act of getting the right information into the right hands at the right time to make the right decisions. Sustainability is a data play.

Current Best Practise

Currently, good sustainability practices include the creation of a corporate sustainability team, annual public reporting of scope 1 & 2 emissions, ESG statements and the occasional Life Cycle Assessment of a product or process, consistent with the ISO14000 series on environmental management systems. The conversation naturally moves to the purchase of offsets and green energy, or as I call it, the purchase of forgiveness. This isn't wrong, but it isn't the most effective method of improving company operations. The following article will outline who, what and how corporations can make more sustainable decisions.

The Right Hands: The Decision Maker

No matter what stage of the life cycle, sustainability is best delivered by the persons holding the keys to business decisions. Too often sustainability is considered retrospectively, by a sustainability team in the Head Office at the end of the year. Let's use the increasingly common scope 1,2 & 3 calculations as an example. They're often calculated and reported at the end of the year, by the sustainability team, using data held - but never used - by the engineering/design teams. Whilst annual reporting is a great first step towards transparency, we should ask ourselves whether GHG reductions would be more effectively delivered by the engineering/design team in the first place. If GHG emissions reductions were considered at an earlier point in the decision chain, significant reductions could be realised.

It is the empowered decision maker (the engineer, the designer, the procurer, the disposer etc) who can make significant inroads into emissions reductions.
The Right Information: Relevant, Measurable Impact data

To determine what is relevant, identify the most pertinent impact categories related to your Industry. For ICT we believe energy consumption, GHG emissions, pollution, raw material use and e-waste are the most important.

Conducting an LCA is a great next step because it will identify what information is relevant, and where that information can be collected. Follow this up by creating a collection process, and increasing the granularity of the data as resources allow. If data collection processes don't exist, create and embed them. Use measured data over proxy data wherever

possible. Crucially, LCA practitioners rarely feedback their findings to the right person in the organisation. Make sure LCA insights are fed back to the decision maker.

The Right Delivery: Practical and simple

Once you've mapped what to collect and who to deliver it to, ramp up the frequency of delivery. The gold standard is real-time information however developing this process may take time. For the decision maker, the information must be as accessible and simple. If we're trying to create a sustainability motive to compliment the profit motive, then the "price signals" we use need to be as simple and accessible. This will empower the decision maker, without overwhelming them or turning them off the subject altogether. As a result, you may need to forego accuracy in favour of simplicity in the beginning.

It falls to the sustainability team to identify, collect, structure, and deliver the right data. This requires the free flow of relevant information horizontally and vertically throughout the organisation. Continuous monitoring often does occur in an organisation, but this data is often collected and stored for a different purpose, in a different team, on a different system. You'd be surprised how much information is already collected in an organisation but stored in an information silo, waiting patiently to be deployed.
The Right Decisions: Understanding Trade-Offs
Organisations often treat GHG emissions as the only form of impact. However, environmental sustainability is far broader. From water consumption, e-waste production to ozone layer depletion, sustainability is a broad spectrum of impacts. The figure to the right denotes a powerful yet simple visual aid that would empower the decision maker to understand the environmental trade-offs of any product/option etc placed in front of them. This is because the diagram structures the environmentally pertinent information in a simple, practical way.

Conclusion

Without data, it is impossible to make informed decisions. It's impossible to understand the potential impacts, or to make sense of environmental trade-offs, or report your scope 1,2 & 3 emissions. The only way to make more sustainable decisions is to empower the right decision maker with the right information, delivered in the right way. This information must help the decision maker to understand business-environmental and environmental-environmental trade-offs. The data must be collected accurately and robustly, and delivered in a practical and simple manner.

Call to Action

Sustainability teams will play a crucial role over the next decade. Beyond annual reporting, ESG statements and reports, the sustainability team has the powerful opportunity to make their organisation sustainable by design - by becoming fluent with their data. Mapping the decision makers, sourcing the correct information, developing data collection processes, structuring the data in the correct format and delivering the data into the right hands. This is the opportunity for the well-motivated sustainability team.