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DIGITAL DILEMMA

RESOURCES AND SKILLS ARE HOLDING BACK COUNCIL I.T. PLANS

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Contents

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Insider

Power to the people

As governments of all sizes go through the process of digital transformation, it's important that they don't lose sight of the end game — making it easier for private citizens and enterprises to achieve their goals.

Government departments and agencies across Australia are spending hundreds of millions of dollars on digital transformation projects that aim to improve internal efficiencies, reduce costs, empower staff, standardise processes, increase agility in the face of ever-changing demands, and so on. The list is almost endless. And there's no doubt that such innovation has the very real potential to revolutionise both the way in which government enterprises operate, and in how they service their clients — the public and businesses.

Which is why it is important that the customer experience always remains front of mind for public sector digital transformation specialists when designing public-facing systems and interfaces. As several features in this issue demonstrate, putting people first and designing for successful operational customer experience pays dividends when done correctly. Two of the cases cited — the Western Australia's Public Transport Authority (transport information for the visually impaired) and that same state's Department of Communities, Child Protection and Family Support (finding skilled workers for regional areas) — are prime examples of how attention to end-users' needs can result in great success with relatively little effort.

At the same time, for smaller governments such as local councils, a lack of resources, skills and funds are threatening to derail even the best laid plans. An IBRS report into local government IT management — 'Winds of Change Also Sweeping Local Government' — has found that local government IT leaders are finding it hard to simultaneously improve online customer-centric service delivery while balancing that against reducing operating expenses. Rural and regional councils are also finding it hard to attract and retain skilled staff, with many prospective employees being reluctant to move away from the capital cities. Business analysts, project managers, solutions architects and security analysts are in high demand, as are those with skills in data analytics, AI, machine learning and the Internet of Things.

Yet it is not all doom and gloom. Councils are finding innovative ways to upskill their extant staff, and engage with vendors to leverage external experience and abilities. They are also finding ways to help management and IT to work more collaboratively, building upon internal relationships so that digital transformation delivery is seen as a partnership... which is a worthy result in itself.

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DIGITAL DILEMMA

Dylan Bushell-Embling

LIMITED RESOURCES AND A LACK OF SKILLED STAFF ARE HOLDING BACK COUNCILS' IT PLANS.


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Australia's local councils are under increasing pressure to modernise their operations and improve online service delivery for residents, but many are starved of the funds and skills needed to achieve those goals.

These are among the key findings of a report from IBRS into local government IT management. The report — 'Winds of Change Also Sweeping Local Government' — found that local government IT leaders are grappling with demands to simultaneously improve online customer-centric service delivery while reducing operating expenses.

Adding to this pressure, councils are faced with rate capping legislated by state governments, requirements to comply with IT security and procurement guidelines, and pressure from state governments to merge to achieve economies of scale.

But a survey found that the IT management staff of many councils lack the funds needed to replace ageing legacy systems because they must compete with business managers and councillors for limited resources.

Small regional councils in particular also typically invest significantly less in IT as a percentage of revenue than their peers in the cities. While average IT spending as a percentage of gross revenue among councils was 3.5%, spending by smaller councils was consistently below average, with one small council surveyed spending just 1.5% of gross revenue.

Smaller councils also often struggle to improve online services because the skilled staff needed to develop them are often reluctant to relocate from capital cities, and the councils cannot pay salaries comparable to those earned in the major cities.

The shortage of skilled staff is not confined to regional areas, with demand for skilled IT professionals sector-wide outstripping supply, particularly for specialists such as business analysts, project managers, solutions architects and security analysts.

Business analysts top the list because they are needed to support councils' digital transformation and legacy systems replacement initiatives. Some councils have allocated extra resources for such transformation initiatives, but not all.

Over the next five years, additional skills are expected to be required in areas such as data analytics, AI, machine learning and the Internet of Things (IoT).

The skills shortage is being compounded by a reluctance among councils to pay the costs required to upskill existing staff. One large regional council has bucked this trend and addressed the shortfall in the supply of business analysts by recruiting librarians and training them for this role. IBRS is advising other councils to consider following suit.

The report, authored by IBRS advisor Alan Hansell, also recommends other ways to improve councils' IT capabilities, such as cross-training of existing IT staff or assigning them to HR departments or to senior management to help them gain valuable insights into the workings of council. Skills enhancement events, coaching or mentoring programs and outplacements can also help build capabilities.

IBRS's survey meanwhile found that the IT literacy of business managers was considered to be low, and that this was frustrating councils' digital transformation initiatives.

>>

But councils are exploring methods to improve IT literacy, such as seminars designed to introduce staff to new technologies and digital approaches, as well as application systems training covering the use of mobile devices in the workplace.

TOP PRIORITIES

IBRS's survey found that providing a secure environment is IT management's top priority, with email security a major concern. But councils face an inability to hire qualified security professionals, and so must often rely on managed security service providers.

Enabling the digital transformation of business processes ranks second, with respondents often reporting that the strategic mandate to transform is lacking at the council or executive level.

IBRS said the best way to achieve this mandate will depend on the individual council. For some, elected officials must be convinced that digital transformation will improve outcomes for ratepayers, while for others the executive may need to be convinced that the cost of council services will be reduced.

Implementing business solutions on time and within budget was ranked as the third highest priority overall, with project managers considered to be lacking skills and unable to implement solutions on time.

IBRS advised that project managers in local councils must be multiskilled and learn how to handle the bureaucracy of government. This can be achieved by engaging a skilled mentor such as a retired manager to advise project managers on how to construct management reports, hire staff and make procurement requests.

Ranking equal fourth are integrating software and services with major systems — an ongoing challenge considered to be critical to service delivery — and justifying the value of IT to council members while competing for funding within the council's operational demands.

Reducing costs was considered a lower priority, with management now emphasising delivering quality services, and seeing IT as a way to improve that quality and the efficiency of these services.

Smaller councils rated attracting and retaining skilled IT professionals as a high priority due to the difficulties they face in doing so.

Meanwhile, managing a responsive IT infrastructure and network was rated only a medium priority, with infrastructure increasingly being viewed as a commodity rather than a speciality.

Likewise, taking advantage of the cloud was only a medium priority, with many respondents stating that they are waiting for cloud technologies to mature and operating costs to decrease before making the transition to the cloud.

IT AND BUSINESS PARTNERSHIP

IBRS's survey also found that IT management is considered to have the main responsibility for driving digital transformation within council, followed by the executive. A number of councils report that the executive is working with IT management or both IT management and business management on digital transformation.

The report recommends that councils develop a program designed to transform not only IT solutions but also business processes.

At a minimum, such a program should identify "quick win" improvements such as: updating existing systems; securing the IT resources and capabilities required to achieve these quick wins; automating applicable business processes with commercial-off-the-shelf systems or by engaging major vendors; initiating the development of an IT strategic plan; and presenting a business case for the transformation program based on this plan.

Achieving these goals will require a closer partnership between IT and business management.

Councils' IT management are exploring a variety of approaches to strengthening ties between IT and the business. These include consulting widely before making strategic IT-related decisions and seeking approval for IT management to give presentations on hot topics for the CEO and board.

Other approaches found to be successful include convincing IT staff that they are enablers instead of systems owners, engaging business management in systems development as early as possible in the life cycle of a project, and helping business managers understand what IT can and cannot deliver.

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THE FOLLY OF **'FAIL FAST'**

PUBLIC SECTOR I.T. AGILITY IS A GOOD THING, BUT NOT WHEN IT UNDERMINES CONFIDENCE.

Kevin Noonan, Lead Analyst, Government, Ovum

Modern applications development is all about agility: build fast, fail fast, fix the problem and move on. However, the underlying politics of government service delivery haven't changed. Sometimes, public failure is just a bad idea. In the government sector, it is not just about 'fail fast' but 'fail smart'.

The government sector differs from the private sector in one very important way. The private sector business model is based on competitiveness. It is all about winning market share and delivering profitability. The government sector exists in an area referred to by economists as 'market failure', where traditional market forces do not operate as expected under the private sector model. For example:

There is no competitive advantage for a government in growing the number of welfare recipients.

There are no prizes for a government collecting welfare debt if it is seen to abandon the principle of acting as a model litigant.

The public will only continue to provide good Census data if the public maintain confidence in the soundness of the process.

A public service organisation exists to serve the public. It can only continue to perform that role if it retains the confidence of the public it serves. When projects fail badly, it strikes at the very heart of the public sector's raison d'être. This is why the 'fail fast' doctrine should be approached with great care.

The public sector has moved a long way from earlier days of absolute risk aversion. Risk management is now accepted as a legitimate part of good management practice. Failing and recovering fast is the latest development of sensible risk management practice. However, there is a fine line that must be walked. Any whiff of recklessness or naivety will be dealt with harshly by the community.

Consider the Census — an excellent example of the significant downside in failing in a public way, even if the recovery was relatively fast. The move to an online Census was a reasonable decision and a good example of digital government in action. On Census night, the inability to deal with a series of denial-of-service attacks was a significant issue for the project. From a purely technical perspective, it could be argued that the Census did produce good data, and it did save money, so what is the problem?

The government's own review into the project outlines the problem very clearly. The executive summary commented "the public's confidence in the ability of government to deliver took a serious blow, more so than any previous IT failure ... crucially important is the need to understand how the Census got to the point where the cybersecurity arrangements brought into question the trust and confidence in a fundamental government service. The public's lack of confidence will linger."

The lesson is clear. In contemporary government, it is good practice to be agile and, if necessary, to fail and recover fast. But it is extremely foolish to take any action that places community confidence in government at risk. The challenge is not to fail fast, but to fail smart.

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OPERATIONAL CUSTOMER EXPERIENCE — **THE MISSING METRIC**

MEASUREMENT OF OPERATIONAL CUSTOMER EXPERIENCE CAN ASSIST IN RECOVERY FROM ONLINE FAILURES.

In the past year, Australians have experienced a series of operational failures from online government services. It's safe to say that if similar failures had occurred within a commercial organisation, they might have been enough to send it out of business. In order to address these failings, there is a key strategy that government agencies have only recently begun to explore which can rebuild trust with the public.

Measuring operational customer experience (OCX) is an obvious yet largely underappreciated method of providing an outside-in perspective of an organisation's digital infrastructure, enabling faults to be identified and fixed before they are experienced by the customer. OCX is focused on the experiences customers have of technology systems in voice and digital interactions. The concept seems simple — prevent the problem before it arises through testing — but overlooking OCX measurement is still all too common.

Customer experience is critical in government agencies as, unlike other service providers, they do not operate in a competitive space. This means that the services they provide are mission critical for a particular government function and are depended upon by an entire population, often for highly personal or sensitive matters such as tax, health care or education. Unlike commercial service providers, customers don't have the option to go elsewhere to receive the same service, leaving them stranded if an operational failure occurs. It is therefore critical for governments to be proactive in ensuring their OCX is performing without fault along all touchpoints of the customer journey.

By recreating the customer's experience, OCX picks up failures such as calls not connecting or being dropped, or web pages freezing, along each point of the journey. Testing and monitoring systems to scale whilst in production will see them work flawlessly once live.

While commercial companies reap the financial benefits of perfecting OCX, some see the government as having a laissez-faire attitude towards providing high-quality online customer experience, as there is no financial gain to be made from getting it right. However, just as with organisations losing revenue from a loss of customers, governments too face their own kind of loss if they neglect OCX.

The government is trusted by the public to use taxpayer money to deliver high-performing and reliable online services. Therefore, poor OCX could lead to the erosion of trust from the public and potentially result in a loss of voters. Many see technology failures from government agencies as a sign of an unreliable or mismanaged government; therefore, it is just as critical for a government to prioritise OCX as it is for a commercial organisation, if not more so.

By exploring the full benefits of OCX measurement, agencies can confidently deliver online services. OCX allows government agencies to be proactive, rather than reactive, through the testing and anticipation of any potential failures in a system before they become customer-facing.

Alok Kulkarni, CEO, Cyara

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AUSTRALIA FACES A 17% SHORTFALL IN CYBERSECURITY SKILLS BY 2020, A SITUATION THE NSW GOVERNMENT IS DETERMINED TO HELP RESOLVE.

If you aren't online in today's business environment, you don't exist. That's true regardless of whether you are a farmer or a financier, in big or small business. This also brings its challenges, with cyber fraud now a critical business risk no matter who you are. The rising rate of cyber attacks only confirms this.

But efforts to tackle the cyber menace also present enormous commercial opportunities, and for me as Minister for Industry it's a top priority.

The global market for cyber protection is forecast to be worth $170 billion by 2020, with investment in the sector now increasing at extraordinary rates. We're well placed to tap into that market in NSW, with our well-educated workforce and a strong IT sector. I want us to be a world leader in this market.

We're already home to 60% of Australia's information and communications technology business headquarters and 80% of mature Australian businesses in the cybersecurity industry.

This means we have a strong capability platform to build on — but our immediate challenge is to ensure we have enough professionals with the right skills and experience.

The rapid rise of the digital economy has seen demand for jobs in STEM professions — science, technology, engineering and maths — grow 1.5 times faster than other professions, and all at a time when STEM student numbers have been falling.

Too many of the talented professionals we do produce seek careers beyond our shores, in Silicon Valley and elsewhere. As a result, according to a study by Intel, Australia faces a 17% shortfall in cybersecurity skills by 2020.

I am determined to address this, and to help ensure that NSW has the cyber skills base we need.

One way our government is tackling this problem is through the creation of a foundation to support the development of critical STEM skills. Through this foundation we'll provide scholarships, study incentives and professional development to attract as many high-potential candidates as possible and to keep them here.

We know the young talent we need is here — I saw it first-hand at a student-employer matchmaking event we held in May to engage students with cybersecurity opportunities.

More than 120 of the best STEM and ICT university students from around the state took part in CyberPitch@Parliament,

impressing executives from 24 leading companies including IBM Australia, Google, Telstra, Microsoft, Westpac and Deloitte.

The event was a great success and it underlined to me the benefits that come from improved collaboration and engagement between government, business and our research and education sector. This is vital if we are to lift investment and build our skills base and provide new opportunities for our cyber exports.

We're also currently engaged with local industry in drafting a NSW Cyber Security Industry Development Strategy that will coordinate this effort, so watch this space.

A Cyber Security Knowledge Hub is being developed to coordinate industry-wide strategy and research, to enable a more agile response to new challenges and opportunities.

We are also working closely with the CSIRO's research unit, Data61, and developing partnerships with a number of universities. I look forward to seeing more initiatives such as the University of Newcastle's new research centre in cybersecurity engineering.

An important part of our work will be to extend those research networks to businesses and industry bodies.

It's important we align with the national effort, too, particularly the federal government's Cyber Security Strategy, and we are committed to playing a leading role in the Australian Cyber Security Growth Network.

Finally, I'm particularly excited by the cyber opportunities we can create for businesses in regional NSW, through the innovation and start-up hotspots we're developing.

This state has all the ingredients for a successful cyber protection industry, and the NSW Government is determined to secure the cooperative effort required to deliver it statewide.

Niall Blair is the NSW Minister for Primary Industries, Regional Water, and Trade and Industry. Before entering politics he was a horticulturalist and then a work safety consultant at Integral Energy Australia, prior to starting his own safety consultancy. Niall has a Bachelor of Horticultural Science and a Masters in Occupational Health and Safety.

SMART MAP SYNCS ROADWORKS TO REDUCE DISRUPTION

Hundreds of thousands of dollars have already been saved by a new app that lets councils coordinate roadworks.

Recurring roadworks that frustrate motorists and ratepayers will be slashed with the launch of a groundbreaking collaboration tool that synchronises underground maintenance projects. More than 50 NSW councils, utilities and agencies are expected to join the cloud-based iWORCS platform to coordinate capital works jobs to ensure that roads are only dug up once to undertake maintenance and repairs.

Collaboratively developed by NSW Streets Opening Coordination Council (SOCC), Sydney Water, local councils and Esri Australia, it is estimated that iWORCS could save hundreds of thousands of dollars as councils and utilities harmonise their work schedules.

SOCC Chair Dominic Puiu said a pilot program conducted last year identified savings in the range of $300,000 by sharing the cost of road surfacing, surveying and traffic management.

"Sydney Water and nine Sydney councils uploaded their work programs into iWORCS for a few months to create a central record of planned works that all could access," Puiu said.

"Even in that short time, significant savings were able to be made by coordinating the various projects so that there was just one road opening and resurfacing.

Stuart McDonald, wastewater & stormwater team leader at Sydney Water, said the organisation could save $1 million in the first couple of years when the majority of Sydney councils and other government departments join the program.

"Too often when utilities and councils work independently, projects aren't aligned, causing rework, customer frustration and waste," McDonald said.

"We've been proud to assist in the development and promotion of iWORCS, as we can see the opportunity to minimise interruptions to our customers, reduce waste and duplication, while ensuring Sydney's assets — including council's resheeted roads — last for the longer term."

City of Sydney Lord Mayor Clover Moore said the council has been working with the iWORCS online platform since the initial pilot and had seen the program save time, cut costs and reduce inconvenience for residents.

"For current footpath improvement work on Bourke Street, Surry Hills, iWORCS has delivered immediate benefits for the community by improving coordination and avoiding the cost and disruption of any unnecessary duplicated work," the Lord Mayor said.

"It's an excellent example of government agencies and councils working together in a way that's of real benefit to residents and businesses alike — it would be terrific to see more utilities get on board."

Esri Australia Managing Director Brett Bundock said iWORCS has spearheaded a new era of collaboration between councils, utilities and other agencies.

"iWORCS will help ease the frustration felt by road users, with freshly resurfaced roads being dug up repeatedly for underground maintenance," he said.

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PUTTING PEOPLE FIRST

Anna Lee-Renwick, Director, hatchd

USER-CENTRED DESIGN IS VITAL TO INSPIRING INNOVATION WITHIN GOVERNMENT PROJECTS.

The 'innovation' buzzword has been embraced by government bodies across the world. However, as the hype around major announcements such as the federal government's $19 million business and innovation initiative begins to soften, the measurability and tangible outcomes of innovation investments are coming under scrutiny.

Mistakes have been made — consider last year's online Census disaster or NSW's learning management and business reform issues.

While government is by no means the only sector prone to expensive IT implementation or delivery errors, the stakes are somewhat higher. Complex procurement processes mean that most projects are behind before they've even begun, and transparency about taxpayers' dollars spend means that failures make the news.

But how do you ensure genuine innovation is being fostered instead of costly, high-risk technology investments?

In our experience, innovation isn't a job title or a department. It has to be embedded as a cultural value across the organisation — particularly in government. Technology should meet the needs of the users, not the needs of the procurement department. It has to be user-centred. In our work with various government departments across Australia, the end user has always been the priority and as such we've been able to innovate freely.

TRANSPORTING THE COMMUNITY

The Western Australia Public Transport Authority (PTA) approached us with a unique problem. Similar to an airport, its new $217m Perth Busport features a state-of-the-art dynamic stand management system that allocates buses to different stands every minute.

Passengers take a seat and large departure screens display the time and the stand from which their bus will be leaving, between two to five minutes before its arrival or departure. A first of its kind in Australia, this new system delivers a 50% increase in the number of buses that go through the station each day.

But the PTA realised that the technology was not inclusive of those who couldn't see the changing screens, and that this new system had therefore caused a serious problem.

Our challenge was to make it easier for passengers with visual impairment to know which bus stand to go to, within a two- to five-minute window.

The process began with speaking with the people who'd use it. We needed to understand their travelling experience from start to finish, the problems they face and whether they felt our ideas would bring relief. They told us about their transit challenges and how the various solutions available to them either helped or fell short.

Armed with these insights, research and user testing, we had a clear understanding of what we needed to do. Vision-impaired passengers needed simple, direct information that could be with them at all times and give them live updates as the bus stands changed.

After working with the PTA marketing and technical teams, we determined that a mobile app was the best method of delivery.

The native accessibility functionalities of Android and iOS were the perfect fit; married with location awareness technology, creating an app enabled us to deliver timely, relevant information right when passengers would need it. Furthermore, it would always be with them, in their pocket or bag.

We worked with Adapptor to develop an app where users can choose to switch on the features they need, such as specific gestures or voiceover to have the device read bus departure details in real time.

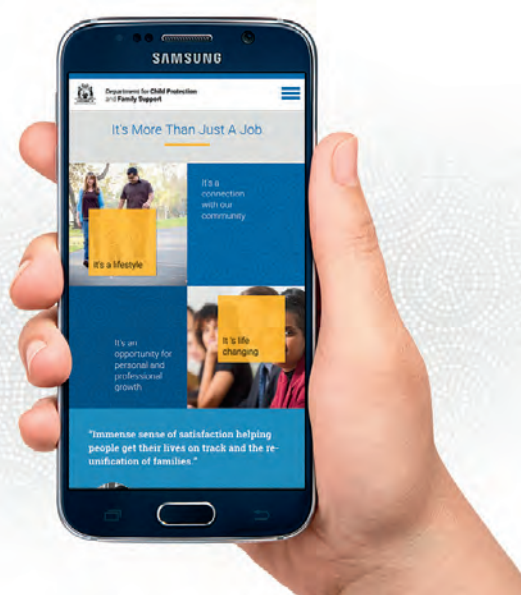
"Our challenge was to make it easier for passengers with visual impairment to know which bus stand to go to, within a two- to five-minute window."

SOURCING THE BEST TALENT

The Department of Communities, Child Protection and Family Support relies on its skilled and passionate workforce to continue its valuable work within the community — which means attracting and retaining the right people is vital.

The Department found it was struggling to attract and retain skilled people in regional Western Australia. The talent pool was relatively small, given the qualifications needed, and a number of people were unprepared for the realities of working in remote areas.

We identified two ways that we could make a long-term impact on recruitment. The first was to create a central information hub to educate people on the realities of the job, while the second was to simplify the application process.



We used insights, interviews and video diaries from real child protection workers in country WA to inspire potential applicants and highlight a career in the Department as 'more than just a job'.

Simultaneously, we designed a user-friendly platform that permitted interested candidates to apply or register their interest to work for the Department.

The Department's new user-friendly recruitment system got to work quickly: within just two weeks of launch, 15% of users had already clicked through to apply for a role, with yet more signing up to receive vacancy updates and join the Aboriginal Employment Register.

Traditionally, government has struggled to be truly innovative because it is risk-averse. This makes it difficult to tackle the dynamic and evolving issues that Australians face every day. However, there is a groundswell of government bodies searching for solutions that centre on people rather than technology. If they continue to do this, there is a real chance that they will actually be able to help those people.

CLOUD'S AHEAD, BUT THE FORECAST IS FINE

The ACT is powering ahead with cloud adoption, with dramatic savings already evident.

The Australian Capital Territory (ACT) government is taking a cloud-based approach to its digital transformation strategy to dramatically reduce costs and streamline operations.

Almost 400,000 people live, work and study in the ACT, and there are 20,000 territory government employees tasked with delivering quality and responsive services efficiently and effectively to citizens.

The goal of the transformation strategy is to be recognised as a digital leader with a strong reputation for innovation, while promoting inclusion for all residents and visitors to the territory, Al Blake, territory CTO, said.

"This is about digital inclusion, about improving social outcomes by making things more accessible," he said.

The digital strategy, launched last year, notes that cloud computing has driven down prices to an order of magnitude lower than that which could be achieved through on-premise infrastructure within the ACT. Advances in security and service management have also ensured that cloud is no longer the risky option.

Instead, said Blake, cloud is a powerful and important ally, producing robust digital foundations to deliver more responsive government services rapidly, effectively and efficiently.

Microsoft will be one of the major providers of cloud services for the strategy over its Azure platform, according to Gary Davis, ACT government executive director of ICT shared services.

"Microsoft cloud enables us to reduce our IT infrastructure footprint — hopefully we can move 80% into the cloud — that helps reduce costs, improve responsiveness and improve the services we deliver to citizens," he said.

"The less money we spend on back-end administration of IT the more money can be allocated to the front end of citizen services, for example on health, education — more teachers, more doctors, more nurses."

The territory has so far adopted Azure for projects including providing a data warehouse for the Health Directorate and providing cloud services across ACT schools for a teach-anywhere initiative.

"When we examined the Health Directorate's need for a data warehouse we identified that a Microsoft Azure implementation would be many hundreds of thousands of dollars a year less than our internal hosting model," said Blake.

"Because we are a territory, we get very close to the pointy end of service delivery," he added. "Every dollar not spent on a computer gets spent on a nurse or teacher's assistant. When the Heath Directorate saves half a million on IT that has direct and immediate impact on its ability to deliver frontline services to citizens."

The ACT is also using Azure Active Directory for monitoring, alerting, backup and recovery, data protection and security services, and has so far transitioned more than 100 workloads to the cloud.

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E-HEALTH IS ABOUT PEOPLE, NOT TECH

Kathleen O'Brien, Global Industry Principal, SAP Hybris A/NZ

FUNDING ALONE WILL NOT USHER IN THE NEXT WAVE OF DIGITAL INNOVATION IN HEALTH CARE.

Health is undoubtedly a sector on the rise. And we're on the cusp of a huge opportunity for digital health care to be a driver of further innovation in Australia.

If the public sector is to be trusted with the digital delivery and security of health care, there needs to be a concerted effort to get Australians on board. To fully realise the opportunities that exist with digital health care, services need to be geared toward patient outcomes to garner support from the very constituents it is designed to help.

This focus will require a fundamental change in the way services are delivered.

In the most recent NSW Budget, digital services received $536 million, to be focused on two projects: a digital patient record and a system-wide digital platform. Both are vitally necessary for the delivery of digital health care, and to futureproof the system for upcoming technology advances.

The level of investment is an important and significant step, signalling a clear willingness from the NSW Government and the sector to embrace digital technology and foster innovation. It also comes at a critical time, with a number of recent IT problems challenging public sector bureaus, dominating news headlines and shifting public opinion on government tech expenditure.

THE POWER OF DIGITAL SERVICES

Personalisation and consistent, timely delivery of services are the end goals of these recent investments.

Every industry and organisation is feeling the impact of customer empowerment. Customers expect to be able to interact across channels including the web, mobile and in person. They also require a consistent service

experience. This is no different in the public healthcare sector.

For instance, of the healthcare IT investment cited in NSW's Budget, more than $286.3 million across nine years will be used to "enhance the digital infrastructure that supports clinical and other health-related systems cross the state". This includes connecting all local health districts to a broader area network and creating a path for mobile health care and video conferencing within the system.

A further $236.2 million over seven years will go to an integrated digital patient record, including $18.7 million this financial year.

From a patient's perspective, these platforms have the potential to create a singular healthcare network — rather than a disjointed experience where the onus is on citizens to fill in the gaps. For example, a digital health record helps Australians recite their patient history and ensures doctors instantly have a more complete picture of their needs, enabling consistent treatments regardless of where the services are accessed.

The linchpin of digital health is data. Instead of having records in multiple databases and sitting in Excel spreadsheets, a platform that brings all of this information together would be necessary.

If we extend that into the future, a digital platform and holistic patient record has the potential of being integrated into new technologies. From artificial intelligence and the Internet of Things, data can predict what problems patients have now and will potentially have in the future. Blockchain could store important health records for citizens, accessible when they travel, move abroad or come to Australia from other countries, ensuring a holistic and trustworthy source of health history.

ADDRESSING PATIENT EXPECTATIONS

If the move to digital health care is to be adopted, it needs the public to be brought on the journey. To do this effectively, health providers must adopt the same approaches leading brands use to satisfy consumers.

At the top of that list is developing a holistic view into all citizen interactions through a journey map detailing each touchpoint in the engagement. These platforms display key information about an individual and provide a visual timeline of all interactions, allowing public sector staff to ensure consistency across interactions that might take place through different channels. Having a record of past interaction also allows communication to be personalised to the individual when they choose to engage.

These journey maps have a direct impact on the overall success of public sector engagements. An Aberdeen Group study, commissioned by SAP Hybris, found public sector institutions that provided personalised communications outpaced those that didn't across multiple rankings — net promoter scores, employee engagement and first-contact resolution. Journey maps also drove down the cost of service for these organisations as a result of these improvements.

THE DIGITAL ROADMAP FOR SUCCESS

Moving towards this digital, personalised system requires the support of the public. It means any digital transformation needs to tick a number of boxes; namely that it is successful, has a clear patient benefit and is secure.

An agile approach in delivering a digital roadmap is the best guarantee for success. It's centred on the smaller steps which make up an overall journey — that is, delivering on one thing fairly quickly and then continuing to iterate. With this approach, mistakes and concerns can be found before they reach disaster stage and improvements can continue to be made as need grows.

This approach also helps get complicity from the public. With a change regarding information as personal as health care, it's important for the public to know that it's not only secure, but to understand how things are secured, under what conditions information can be accessed and how they would be notified, and how they can control of their own data. It is important for the government to outline these conditions and address concerns before the digital health system rolls out any further or becomes mandatory.

We're at a critical juncture in the move to a digital healthcare system. The foundation we build now will directly impact the success and the future innovation of the sector. Support from the public, and mechanisms to ensure the system is designed to meet their needs, is a crucial part of this infrastructure.

TACKLING THE DIGITAL TRANSFORMATION 'HYPE' TO DRIVE RESULTS

Andrew Martin, VP APJ Zerto

'DIGITAL TRANSFORMATION' HAS BECOME A MAJOR BUZZWORD IN RECENT YEARS WITH ORGANISATIONS AROUND THE GLOBE CONTINUING TO INVEST HEAVILY IN MAJOR TRANSFORMATION INITIATIVES FOCUSED ON INTEGRATING DIGITAL TECHNOLOGIES SUCH AS SOCIAL, MOBILE, ANALYTICS AND CLOUD.

And it's not just the private sector where digital transformation is taking place. The government sector received a commitment of $70 million for digital transformation projects over the next four years in the 2017–18 Australian federal Budget as part of the next phase of the transformation agenda.

So while it often seems overhyped, digital transformation should be seen as an opportunity. Digital transformation is the way an organisation adapts to change and reinvents itself using technology. Leaders that are proactive and see the value in improving IT agility are seeing greater innovation, growth and development.

Departments and agencies need to be mindful of what their risks are while undergoing a digital transformation project which should include uptime and availability shortfalls. A move towards digitalisation signifies that more of what government does will be online and cloud enabled, thus making government more susceptible to incidences such as a ransomware attack.

Here are five tips to drive the greatest success in a digital transformation project:

1. BECOME AGNOSTIC TO MINIMISE DISRUPTION

To make life easier, an organisation should focus on finding technologies that remove dependence on any specific part of its infrastructure such as storage arrays or even the hypervisor. By doing this, enterprise applications can become more portable and be moved to the platforms that make sense at that time without disruption.

Traditional IT infrastructures are built on technologies that are not open. For example, hardware-based replication requires identical storage hardware at the second site. However, truly hardware-agnostic replication allows for unobstructed compatibility between storage systems and cloud platforms, providing ultimate cost-saving freedom without complication or impediment. This also allows users to leverage the latest storage vendors and network components.

2. LEVERAGE MULTIPLE CLOUDS

Moving applications without downtime or disruption between clouds is very difficult to achieve. However, having software-defined replication products that are written into the virtualised layer can solve this issue and make cloud portability a reality.

It is also imperative that the solution enables the IT team to move data, workloads and applications to another destination with a simple mouse click. This enables easy migration into hybrid cloud and keeps data in two separate locations. Keeping data on premises and off, for example, can potentially save organisations the cost of another physical location.

This is easier said than done, because at their core, clouds have a virtualised layer. Most clouds are built on a specific hypervisor. If organisations run VMware on premise but CSP built their cloud on HyperV, it becomes difficult to easily move workloads between them, unless the organisation has a technology that abstracts the hypervisor itself.

3. GREATER AGILITY, ELASTICITY AND SCALE WITH HYBRID CLOUD

As the department or agency progresses, grows and changes, the services it provides will require the infrastructure and capability of a growing data centre. Looking toward the next few years, it would be prudent for governments to look towards data centre solution providers that can provide hybrid cloud capability, allowing for agility, elasticity and scale. This should be true from both an infrastructure and commercial, or cost and billing perspective.

4. SOFTWARE-DEFINED 'EVERYTHING' FOR GREATER FLEXIBILITY

Software is key to implementing a flexible data centre strategy. If governments are tied to isolated physical assets, they are inherently locked in to the capability of those. This means departments will not have the ability to adjust and makes it more difficult to move to the cloud. Moving intelligence to software gives governments a level of flexibility that isn't possible when it is held only on isolated physical assets.

"Government must find ways to embrace digital transformation, and the opportunities it presents, to be stronger and more resilient than ever before."

5. MAKE YOUR IT RESILIENT

Resilience is defined as the ability to recover from or adjust easily to misfortune or change. The ongoing wave of aggressive ransomware attacks highlights the increasing reliance on IT, and this is set to get even bigger as IoT concepts come to fruition. It's important that departments/agencies are resilient in the face of an attack and can bounce back quickly with as minimal disruption as possible.

Change is the new normal and it is no surprise that government must find ways to embrace digital transformation, and the opportunities it presents, to be stronger and more resilient than ever before. Having a simplified and automated DRaaS solution in place can help government to focus on their strategic digital initiatives while providing greater peace of mind in the event of an outage.

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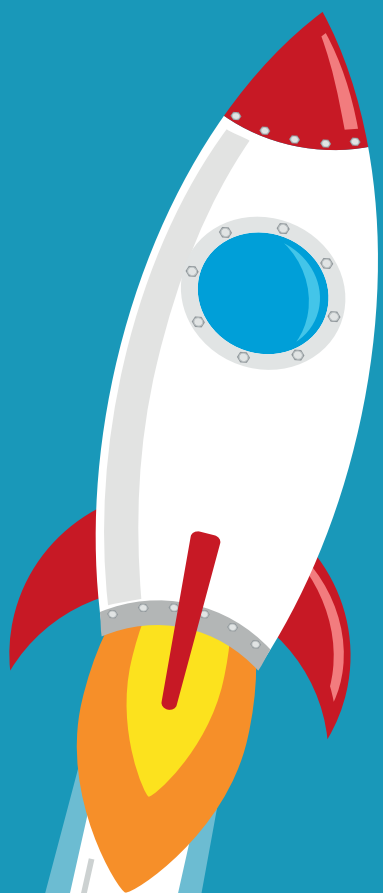

LIFT-OFF FOR LANDING PADS

AUSSIE COMPANIES MAKING IT BIG IN THE U.S.

Q3 2017
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It has been said for a while now that these days 'every business is an IT business'. But perhaps that needs to be modernised a bit more, to become 'every business is a data business'. And if your business isn't, chances are you're going to miss out. Data is everything in the 24/7 online world, but data alone will not save you. To paraphrase that old song, 'it ain't what data you have, it's the way that you use it'. And that includes keeping your, and your customers', data safe and secure. It's a responsibility we all share.

The ICT skills debate continues to rage in Australia and elsewhere, with huge shortfalls in the numbers of trained staff continuing to make headlines. It's a problem the whole tech industry needs to address. Fortunately, those in positions of influence — industry associations, the education sector and government — are well aware of the problem and are at least trying to solve it. In this issue, we hear from representatives from several of those sectors. But I'd like to hear your ideas and opinions too. Please send me an email, or leave a comment on our Facebook page.

Jonathan Nally, Editor
jonathan@technologydecisions.com.au

Q3 2017

INSIDE

FEATURES

LANDING PADS BECOME LAUNCH SITES

THE FEDERAL GOVERNMENT'S LANDING PADS PROGRAM IS HELPING TO PROPEL AUSSIE START-UPS TO SUCCESS IN THE UNITED STATES.

Australian entrepreneurs are reaping the benefits from participating in the San Francisco Landing Pad, with some securing significant deals in the lucrative US market and others using the experience to refine their business offerings.

Steven Ciobo, federal Minister for Trade, Tourism and Investment, said the Landing Pads program, part of the National Science and Innovation Agenda, helps Australian entrepreneurs bring their ideas to a global market and build high-growth and high-return enterprises.

"The Turnbull government is directly supporting start-ups in five of the world's innovation hotspots because we know that entrepreneurship and innovation will be major drivers of job creation and growth in the future," he said.

"We are already seeing significant outcomes for Australian companies who have taken part in the Landing Pads program in Berlin, Shanghai, Singapore, San Francisco and Tel Aviv," added Minister Ciobo.

Since launching in February 2016, the San Francisco Landing Pad has housed 20 start-ups and is midway through its fourth intake. Participants have represented a wide spectrum of target sectors including medtech, fintech, sports tech, edtech, govtech, logistics, retail and e-commerce.

Landing Pad Manager Gabe Sulkes said the San Francisco Landing Pad provides start-ups with a 90-day residency to kickstart their US market entry, fine-tune their pitches, test their product-market fit and identify partners, customers and investors.

"Austrade also provides advice and connections to additional services such as mentoring, business coaching, advice on local regulations and on identifying investors and potential business partners," said Sulkes.

Image courtesy T. Arai/University of Tokyo

The San Francisco Landing Pad is located at RocketSpace, a renowned tech campus and accelerator for start-ups whose alumni include household names like Uber, Spotify, Weebly and Supercell.

"Participants benefit from being immersed in the San Francisco Bay Area — widely recognised as the epicentre of global technology innovation — gaining vital experience and knowledge from exposure to the biggest tech market in the world," added Sulkes.

San Francisco Landing Pad alumni such as KoalaSafe, Event Workforce Group, OpenCities, GymSales and Indee Labs have taken their innovations to the next level by securing deals in the US.

US EMBRACES KOALASAFE

Following their Landing Pad residency, KoalaSafe co-founders Steve Pack and Adam Mills have secured several key deals with Walmart.com and Amazon.com. More recently, KoalaSafe secured a distribution deal with US retailer Target, which sees its product sold in more than 250 stores.

"We have achieved a lot [with the Landing Pad program]. We've got thousands of new customers in the US and we've just arrived on the Walmart.com store; and now we've secured a deal with [US retailer] Target," said Pack.

KoalaSafe is a router box which allows parents to easily control their children's use of the home Wi-Fi network and linked devices with a simple smartphone app.

"San Francisco is the technology hub of the world. Quite literally with the amount of companies, investors and entrepreneurs here, there is no better place to try and build your business," added Pack.

KoalaSafe now operates out of San Francisco and Cairns, having initially worked from the Australia Technology Park in Sydney.

SPORTING DEALS

Victorian start-up Event Workforce Group (EWG), formerly known as Rosterfy, is another start-up kicking goals after a stint in the San Francisco Landing Pad.

Founded by Bennett Merriman and Shannon Gove, EWG first began as a placement agency to help motivated tertiary students and graduates find casual work experience in Melbourne. EWG sought help from the San Francisco Landing Pad to expand its business model and penetrate overseas markets.

"Moving to a new country and validating a new market can be a big step, but it's not as intimidating as it first seems by doing it through the Landing Pad," said Merriman.

EWG secured a contract with the NFL 2017 Super Bowl, using its technology to mobilise 30,000 volunteers — the largest volunteer workforce in the Super Bowl's 50-year history.

"Having the Landing Pad base and that network in place is a powerful thing.

"The biggest positive was the opportunity to arrive into a new country with a support network already in place. Without the Landing Pad, we possibly may have delayed moving international as quickly as we had," said Merriman.

The start-up has since secured several major clients, including the five-day Aspen Ski World Cup, and was re-signed by the NFL for the 2018 Super Bowl in Minneapolis, in part due to its new US base and connections made through the Landing Pad.

To cement its place in the market, EWG has now set up a US company, hired a California-based business development director and is looking at employing a US-based support team.

TRANSFORMING CITY SERVICES

Alex Gelbak, founder of OpenCities, hasn't looked back since his start-up arrived at the San Francisco Landing Pad in July 2016.

Since its residency, OpenCities has won several large full and beta clients, including City of Miami, City of Orlando and the City of Grand Rapids, Michigan.

OpenCities helps cities go digital and improve the way they service their communities. Their offering helps local governments move from paper-based, 9-to-5-style interactions to 24/7 mobile-friendly online services.

"Having a base of operations in the US, particularly when you're dealing with government, is absolutely critical," said Gelbak.

"We wanted to enter the market strongly by securing a large, recognised city. Having the Landing Pad as our US base helped us do that," he added.

One of OpenCities' biggest wins since the Landing Pad has been securing a strategic partnership with Microsoft. After holding the introductory call while at the Landing Pad, Gelbak and his team have now started working with Microsoft to help US cities deliver better services.

"The Landing Pad helped us focus on the tasks most important for achieving success, rather than on the operational things you'd have to pay for and think about if you're going solo," noted Gelbak.

OpenCities is now focused on expanding its reach and plans to use its US success as a platform for launching into the Canadian market.

ENTERING THE FITNESS MARKET

Founded by Tristan Alexander in 2013, GymSales provides fitness clubs with the latest technology to implement and monitor a proactive sales strategy.

Alexander wanted to build on the company's client base of over 300 Australian fitness clubs and studios by expanding into the US and North American market, which is home to over 45,000 clubs.

>>

Left: Steven Ciobo, federal Minister for Trade, Tourism and Investment, speaking at a Landing Pad event.

"San Francisco is the technology hub of the world. Quite literally with the amount of companies, investors and entrepreneurs here, there is no better place to try and build your business." — Steve Pack, KoalaSafe

"I came here for a head start in building networks within the Bay Area. For me, that's mentors, investors, advisers and other start-up founders that I can reach out to in the future. I'm on the way to achieving that," said Alexander.

"Austrade has given me warm intros over email for me to follow up with a meeting or coffee and the expat network is very beneficial and influential."

Alexander subsequently secured a contract to supply his technology to 1100 Snap Fitness Clubs in the US.

With industry giants such as Snap Fitness, YMCA, Goodlife, Gold's Gym and over 2000 clubs using its software, GymSales is quickly becoming the gold standard in the health and fitness industry.

ANGEL FUNDING

Indee Labs, an early-stage biotechnology company, founded by Ryan Pawell, has found its Francisco Landing Pad residency a great way to access the US market after receiving a Jobs for NSW Minimum Viable Product grant.

The start-up is developing a new method and device for delivering therapeutically relevant molecules into cells. According to Pawell, Indee Labs was founded on the idea that everyone should be able to access safe, effective and affordable cell-based therapies.

Participation has paid off, with Indee Labs announcing last month it had secured US$1.3 million in angel funding with participants such as Y Combinator, SOSV and Shaun Maguire, Partner at GV (formerly Google Ventures).

Amy Twite recently joined as chief scientific officer to lead gene-modified immune cell development and the team signed its first customer — a clinical-stage biotechnology company developing gene-modified B-cell therapies for rare disease. It is also collaborating with a notable medical research clinic in the Mid-West and a private Bay Area research university on both T-cell gene editing and chimeric antigen receptor T-cell (CAR-T) development.

"We have been able to access the US market a lot better and are in discussions with a number of big pharma and big biotech companies," said Pawell.

Pawell added the goal was to "secure a partnership with one of these companies and work with them to develop their cell therapy using our technology".

Expressions of interest are being accepted for five Landing Pad locations — San Francisco, Tel Aviv, Berlin, Shanghai and Singapore.

San Francisco Landing Pad

For more information about the Landing Pads program and how to apply, visit www.australiaunlimited.com/Landing-Pads, contact Austrade on 13 28 78 or email landingpads@austrade.gov.au.

OPPORTUNITIES FOR **AUSTRALIAN CYBERSECURITY**

CYBERSECURITY AND ICT TRAINING SHOULD BE A TOP PRIORITY FOR BOTH GOVERNMENT AND INDUSTRY.

Anthony Wong, President, Australian Computer Society

Even though cybersecurity has made its way to the top of the nation's political agenda, due in part to the high-profile WannaCry and NotPetya attacks earlier this year, Australia lacks sufficient professionals to cope with the challenge of growing cybersecurity risks.

It is estimated that, internationally, there will be a shortage of approximately 1.3 million cybersecurity professionals by 2020. In Australia, the demand for cybersecurity services and jobs is anticipated to grow by at least 21% over the next five years — we will need an additional 81,000 skilled ICT professionals to fuel technology-led growth. Already, LinkedIn data gathered for the ACS 2017 Digital Pulse Report shows that computer and network security positions were in the top 10 job advertisements placed by Australian employers in 2016.

In response to this shortage of cybersecurity professionals, the federal government announced that the role of ICT Security Specialist would be added to the Department of Immigration and Border Protection's Medium and Long-term Strategic Skills List (MLTSSL) for the first time, effective from 1 July 2017. Those applying for and working in ICT security specialist roles can now stay in Australia for up to four years, ensuring the country benefits from their expertise in this ever-evolving landscape.

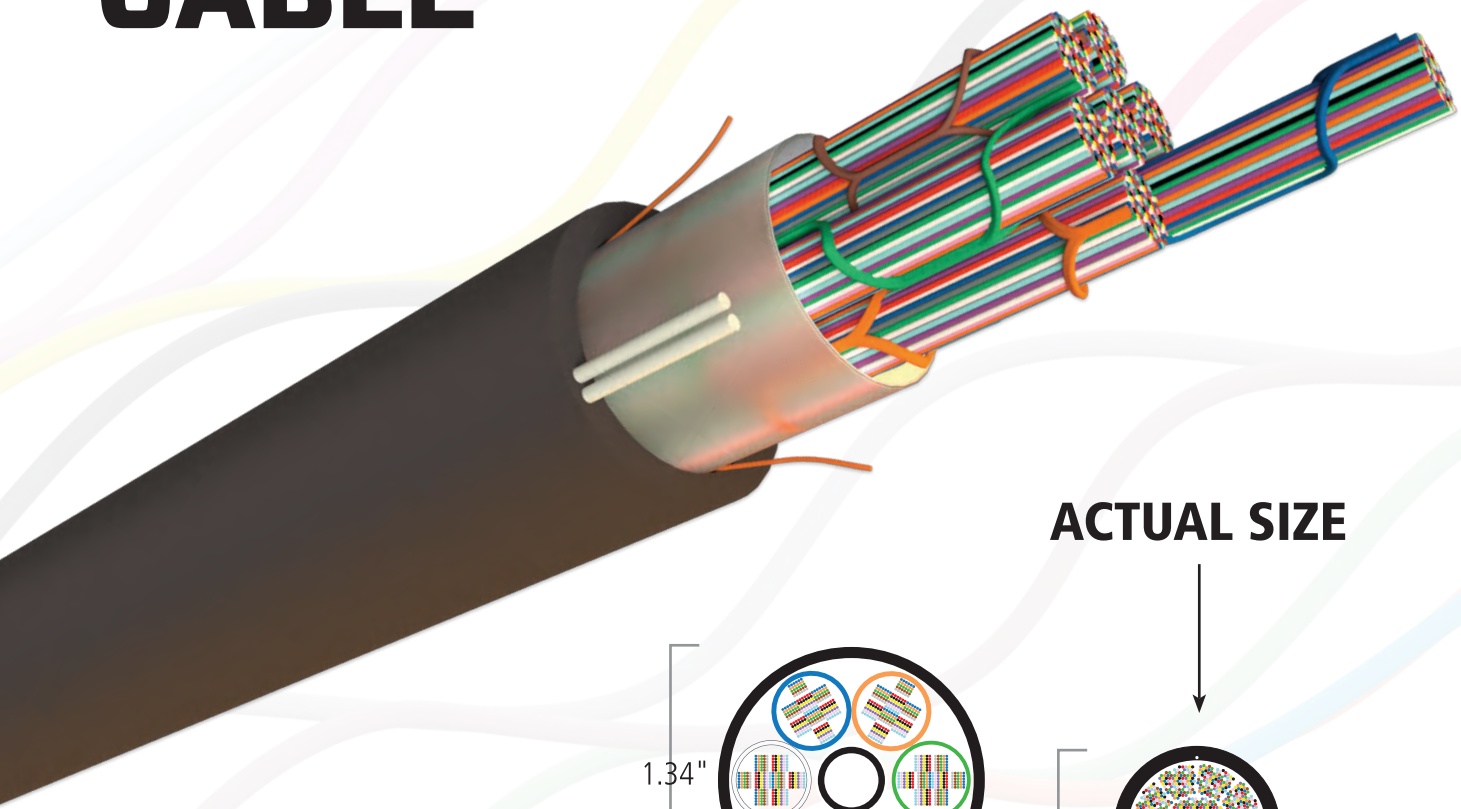
Further to this, the Minister Assisting the Prime Minister, the Hon Dan Tehan, has outlined Australia's strengthened cyber capabilities with the development of a new cyber division within the Australian Defence Forces. The government has directed the Australian Signals Directorate to use its offensive cyber capabilities to disrupt, degrade, deny and deter offshore cybercriminals. This new division will need to fill more than 800 cybersecurity roles over the next 10 years.

Professor Jill Slay, director of the Australian Cyber Security Centre in Canberra and chair of the ACS Cyber Security Taskforce, said the move was about pulling together Australia's cyber capacities as a joint function: "We have to grow our cyber capacity, as do the Americans and our other allies."

Last November, the Australian Computer Society (ACS) hosted the International Federation for Information Processing (IFIP) President's Ministerial Forum where key issues concerning the Internet of Things, artificial intelligence and cyber resilience were explored, including the importance of staying on top of old and new cybersecurity threats.

In addition to this, the ACS has launched its *Cybersecurity: Threats, Challenges and Opportunities* guide, which identified five pillars of cyber readiness: education and awareness, planning and preparation, detection and recovery, sharing and collaboration, and ethics and certification. In May 2017, the ACS also launched the 2017 Digital Pulse Report, which included 13 policy recommendations for government — with cybersecurity and ICT training and education being priority initiatives.

WRAPPING TUBE CABLE



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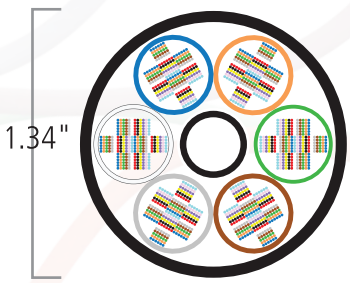
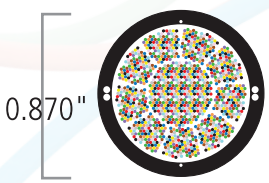


Typical 1728 Fibre
RILT Construction



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It offers active toll fraud monitoring and cloud-based software updates to help defend against cyber-based crime.

Features include: onboard, expandable VoIP capability with 4 SIP trunks included; unified messaging; InUC web-based unified communications client; web-based videoconferencing and collaboration with four licences included; toll fraud guard; cloud-based automatic software updates; mobility/remote worker support with mobile extension; smartphone integration; music on hold; auto attendant; audio conferencing; and an enhanced handset range.

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NEXT-GENERATION CITIZEN SERVICES: IS THERE AN AVAILABILITY GAP? IF SO, HOW DO WE CLOSE IT?

Nathan Steiner, Head of Systems Engineering ANZ, Veeam Software

Communications and citizen experience within the government sector is being redefined. The world as a whole, as well as the Australian government, is going through what can only be called a digital explosion. With exponential growth in connectable things, overall connected devices and data, 'digital service' is transforming citizen interactions from the traditional 'episodic' to the 'real-time' experience.

With over 50% of DHS services conducted online and over 88% of all Medicare claims processed digitally, availability of services and access to systems, data, applications and resources has never been more crucial in the delivery of government and citizen-centric digital services.

This is what will underpin digital transformation for government.

Transformation is about harnessing the value of the Internet of Things (IoT), protecting the digital asset of data within the government paradigm and minimising the impact of downtime to citizen critical services to ensure compliance, access and differentiated service. How do we create an 'always-on' government, with access to services, personal/citizen information and data?

The answer is a software-defined data centre.

A software-defined data centre is about driving operational and technical outcomes and using a lot of physical to virtual types of technologies. The ultimate software-defined data centres are Amazon Web Services and Microsoft Azure and cloud platform service providers. Users do not need to build them and can simply consume them. But when people do build or consume them, their primary purpose is to manufacture apps and content for people in the workforce and wider world.

A software-defined data centre must therefore be focused on delivering and enabling business and human outcomes.

By 2020, four out of five Australians will engage with the government through an online service, and data centre infrastructure will be the enabler. Delivering availability within data centres is more crucial than ever — government agencies are demanding provision IT services faster, strengthened security and control, and lower operational costs. Meanwhile, citizens are demanding 24/7 operations and access, and have zero patience for downtime and data loss.

The digitally transformed data centre will deliver true and flexible ITaaS capabilities for government to interact and provide always-on services and access to citizens.

TAKING CARE OF SECURITY **SHOULD BE SIMPLE**

BY DOING THE SIMPLE THINGS IN SECURITY WELL, DOING THE HARD THINGS WILL BECOME EASIER.

Craig Lawson, Research Vice President, Gartner.

Vulnerabilities, and the exploitation of them by threats, are still the root cause of most information security breaches today. However, too much focus is placed on high-profile exploits and malware, rather than these underlying root causes. Although not all breaches result from a vulnerability being exploited, most do. Within this majority, they also come from known vulnerabilities, rather than zero-day attacks.

Zero-day attacks made up only approximately 0.4% of vulnerabilities during the past decade, but the amount spent on trying to detect them is out of kilter with the actual risks they pose when compared with the massive numbers of breaches and infections that come from a small number of known vulnerabilities that are being repeatedly exploited.

This is like worrying more about great white sharks, rather than the humble mosquito. One consistently kills millions of people each year, while the other causes roughly the same number of deaths as being struck by lightning. Are zero days real? Absolutely. Are they the biggest issue for most organisations? No.

The top issue in vulnerability management is that organisations aren't prioritising their patching and compensating controls to align to commonly targeted vulnerabilities. Organisations need to align their vulnerability management priorities with what the threat actors are actually using.

Although Gartner is seeing persistent and advanced threats, most threat actors don't use overly sophisticated means to achieve their goals in most cases. Gartner believes that 99% of the vulnerabilities exploited by the end of 2020 will continue to be ones known by security and IT professionals at the time of the incident.

If you deal with the 'elephant in the room' first, then you'll have a better foundation. I'm not saying that you shouldn't stop with the idea of continually inching toward improvements with a vulnerability management program. However, we're clearly not executing well on the critical issue of reducing your attack surface by closing the biggest risks.

The number of exploited vulnerabilities year over year for the last decade is actually flat, despite the number of breaches increasing and the number of threats appearing. Essentially, more threats are leveraging the same small set of vulnerabilities.

As a critical operational security priority, focus your efforts on patching the vulnerabilities that are being exploited in the wild or have competent compensating control(s) that can. This is an effective approach to risk mitigation and prevention, yet very few organisations do this.

This pragmatic prioritisation reduces the number of vulnerabilities to deal with, which means more effort could be put into dealing with a smaller number of vulnerabilities for the greater benefit of your organisation's security posture.

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THE NBN FOR SMEs: NOT BUSINESS GRADE YET

Paul Brooks, Internet Australia

MANY BUSINESSES ARE STUCK WITH CONSUMER-GRADE NBN CONNECTIONS.

Small businesses, particularly home-based micro-businesses, often use standard, high-end, consumer-grade internet plans for their online connection to support the traffic demands of multiple people sharing the link, or a data-intensive business service. Many other businesses, however, look for higher levels of service and have different traffic demands to residential customers.

In light of the increasing volume of consumer complaints of poor performance, congestion and higher prices for little or no performance improvement than the previous network infrastructure, it is timely to look at whether an nbn connection can be 'business grade'.

MAKING PLANS

While SME business premises might require similar speeds to consumers, many are prepared to pay higher-than-consumer prices for better service levels — backed by explicit service level agreements (SLAs), such as 24x7 problem reporting and solutions, priority repairs in 4 or 6 hours, and traffic performance throughput guarantees.

While the nbn does have some options like this, these options are not being used. Most who have plans described as a 'Business Plan' have found their traffic is still treated as general consumer internet traffic and experience the same level of congestion, despite the higher prices of such plans.

Businesses place a high value on reliability and fast repairs when something breaks — faster than the standard 'repaired by the end of the next business day' — as one-and-a-half days of disconnection would cause a costly drop in productivity.

nbn does offer optional faster response and repair times designed for businesses, but few service providers make them available. For a meaningfully faster repair time SLA — which might get a broken connection running again by the next morning, eg, 6 hours repair, including outside business hours — the extra charges to the service provider could double the monthly cost.

A common alternative way of providing reliability, if a non-nbn option is available, is to have a second link from a different network that bypasses

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the nbn (using different technologies that won't break at the same time).

Another way is to select a service that includes a backup link, such as the recently announced Vodafone, Telstra and Optus offerings of nbn services with built-in backup over the 4G (and soon 5G) cellular networks.

CONGESTION

Much has been written about poor performance and 'CVC congestion', with nbn co accusing internet providers of not buying sufficient CVC capacity (which is pooled across all customers), while service providers accuse nbn co of excessive pricing of CVC bandwidth.

This network congestion and poor performance can cripple a business's operations — as well as provide questionable value for money for the service — and is a very real problem for businesses that have no choice but to use an nbn connection.

Rarely mentioned is that the congestion is primarily in Traffic Class 4 (TC-4) data, which is the lowest priority, 'best-efforts, no guarantees' traffic classification given to consumer-grade internet services. The nbn has two higher Traffic Class options — TC-2 for higher-priority, business-grade and video traffic, and TC-1 for even higher priority VoIP telephone data.

nbn provides options that classify a customer's data as TC-2 rather than TC-4, and which should cut through any TC-4 congestion without any disturbance. However, the TC-2 options are extremely high-cost and low-capacity, and are not being used.

Again, the problem is that the TC-2 option has not been supported by the service providers, who have been focused on residential services. Most of the major wholesale aggregators don't support TC-2 traffic at all, so none of the service providers that access the nbn through an aggregator can provide business-grade traffic performance and SLAs against congestion. Only recently (June 2017) did Optus Wholesale announce business products that use TC-2 traffic classes to overcome congestion problems.

Also, TC-2 options are severely limited by the nbn. Even on a fibre connection, a 50/20 plan is only permitted a maximum of 10 Mbps (symmetric) of TC-2 data, while 20 Mbps of TC-2 data requires a much larger 100/40 connection, severely limiting any ability to buy better performance. nbn co has released future roadmap plans to make higher capacity business-grade plans available, but not until the end of 2017.

ALTERNATIVES

In business parks and business-oriented suburbs and corridors in major cities, the high density of corporate offices, factories and warehouses means there are often alternative networks to the nbn that SMEs are using.

In this scenario, users bypass the nbn completely and access services that provide significantly better performance, consistency of throughput and value, with higher levels of business-grade response and repair service levels, and without having to wait until the nbn is rolled out.

For those located outside these precincts, the nbn may be beneficial in providing higher speeds and, in particular, much better upstream speeds than previous ADSL-based technologies services could do.

But while the nbn does have business-grade enhanced options at a wholesale level, very few internet providers are using them to better-than-consumer-grade experience, and these nbn retailers are unable to guarantee business-grade performance. There is still a large gap to be filled.

INTEGRATING BUSINESS:
THE KEY TO SUCCESSFUL MERGERS AND ACQUISITIONS

Michael Evans, Managing Director APJ, Dell Boomi

A STAGGERING VOLUME OF MERGERS AND ACQUISITIONS (M&As) HAVE TAKEN PLACE OVER THE LAST TWO YEARS. IN 2015, THE VALUE OF M&A TRANSACTIONS PEAKED AT US$4.5 TRILLION GLOBALLY, ACCORDING TO THOMSON REUTERS, WHILE 2016 SAW 46,000 TRANSACTIONS COMPLETED.

In Australia, M&A activity jumped 47% year-over-year in the fourth quarter of 2016, exceeding the Asia–Pacific regional average of 44%. While this doesn't measure up to rates in some developing areas — India experienced a 100% hike in the same period, while Southeast Asia saw an increase of 49% — the year ahead looks quite robust. Meanwhile, many companies are also pursuing divestitures as part of strategic re-evaluations (including those to shed underperforming assets).

Whatever the catalyst for M&As, there are instances aplenty where these initiatives have failed as a

result of ineffective technology adaptations. In many scenarios, these failures are a consequence of poor integration — organisations expect two environments to simply interoperate so long as high-level business strategies are aligned; this is a damaging misconception. In reality, the faster two or more entities can migrate into a stable, unified environment, the better the results for all parties.

It is, therefore, no surprise that as M&A activity intensifies there are a host of questions among business executives, who understand their companies can suffer unexpected costs and delays without sound strategic planning and technology choices. Post-M&A business disruptions can trigger customer churn, revenue loss and brand damage.

The big questions when it comes to M&As include:

- How we do we accelerate the transition during a merger or divestiture?
- How do we leverage the acquired company's data quickly?
- How do we align disparate applications out of the gate?
- How do we give our newly joint workforce a collaborative environment?

For a merger or a divestiture, a modern approach to app and data management is critical. While every company has its own set of mission-critical apps — usually both cloud apps and heavily customised legacy systems — it is vital that systems work together from day one.

In a divestiture, for example, the spun-off entity often has only a few months to move from the systems it previously used to a new app environment. That contractual deadline raises the stakes for a fast implementation of new apps. Those new apps need to hit the ground running with automated processes and data visibility.

With deal-making on the rise, we're seeing more companies turn to the integration platform-as-a-service (iPaaS) model as a catalyst for M&A success. iPaaS lets organisations connect apps and data far faster and more easily than point-to-point coding or on-premises middleware. That helps organisations move through a business transition as seamlessly and cost-effectively as possible.

To succeed with an acquisition or divestiture, companies not only need to move fast with their data integration to avoid business disruptions, but they also need to be able to govern and protect their data as it migrates from one entity to another.

American Express Global Business Travel is a great example of a company that has turned to iPaaS to streamline and speed its business transitions during a divestiture. Created in 2014, when American Express spun off 50% of its business travel unit, American Express GBT faced a tight timeline. It had to move from its traditional on-premises apps to a portfolio of modern cloud services for enterprise resource planning (ERP), customer relationship management (CRM) and human resources. The US$20 billion global company also needed to migrate existing data and ensure interoperability across a new set of cloud apps.

"We knew an integration platform was a prerequisite," said Prasant Panicker, engineering director at American Express. "We had a quick turnaround on investment — complex integrations were built in a compressed time frame with fewer resources."

In all, the company is now running 80 internal integrations and 240 business-to-business integrations, supporting about 320 million transactions a year.

A fast and seamless transition to the new state is critical in an M&A situation to mitigate not only the risk of disruption to the business, but also customer interactions. Effective and smart data integration that requires minimal resources plays a key role in ensuring this desired outcome, and subsequently mitigates the consequences of misaligned strategic execution of M&As.

MANAGING THROUGH MEASUREMENT

Jonathan Nally

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THE OLD ADAGE THAT YOU CAN'T MANAGE WHAT YOU CAN'T MEASURE IS NOWHERE MORE APT THAN IN DATA CENTRE ENERGY CONSUMPTION.

Energy management is one of the top priorities for data centre operators. Australia has roughly 50,000 data centres of all sizes, with around 100 of them considered to be large or enterprise-sized. Put together, they are responsible for around 4% of the nation's electricity usage — 7.3 TWh in 2014 figures. In 2006–07 it was 2 to 3 TWh, and about 1.5% of total consumption.

It's no wonder, then, that operators are keen to reduce their electricity consumption and concomitant power bills. One way to do that is to keep up with the latest storage, server and cooling technologies. Metronode's data centres, for example, consumed 40 GWh of energy in 2016, with an associated CO_2 emission generation of 37 kT. But those numbers would have been 56 GWh and 52 kT, had the company not employed BladeRoom technology and innovative designs.

According to the NABERS Energy standards, there are three relevant ratings for data centres: IT equipment, infrastructure and whole facility.

The IT equipment rating (according to NABERS' Reducing the Energy Consumption of Data Centres document) "is for organisations who own

or manage their IT equipment (including servers, storage devices, network equipment), who have no control over the data centre support services such as air conditioning, lighting and security, or only wish to measure their IT equipment. It benchmarks the greenhouse gas emissions associated with the energy consumed by the IT equipment and allows organisations to determine their equipment efficiency by comparing energy consumption with the capacity to compute and store data — the productive output."

The infrastructure rating "is for data centre owners and managers. It allows them to determine their facility's energy efficiency in supplying the infrastructure services to the IT equipment housed in the data centre. This rating is suitable for co-location centres where the operators do not have control of any tenant IT equipment but provide the cooling and power delivery systems."

And the whole facility rating "combines both the IT Equipment and Infrastructure tools and is designed for organisations that both manage and occupy their data centre or where internal metering arrangements do not permit a separate IT Equipment or Infrastructure rating".

Of course, the ability to achieve energy efficiency goals and comply with standards depends on reliable and accurate measurement of consumption. And that's where metering technology comes in.

According to Ron Davis, managing director of energy management specialists SATEC (Australia), many operators assume the data received from their energy management meters is correct, whereas in his opinion a high percentage of readings may not have been correctly validated.

"Correct validation starts with ensuring the devices have been programmed properly — it's garbage in, garbage out," Davis said. "Beyond this, the validation process should ensure the readings are accurate with respect to power, vector relationships, phase angles and so on to ensure the meter and the building management system (BMS) and/or SCADA are both reading correctly with respect to one another. The biggest error made is that the majority of validation is completed only by checking AC current loads and not considering the errors where the AC power is being measured."

Davis said the NABERS standards for data centres, as well as NMI-approved devices for sub-metering billing, have influenced metering and technology, with performance and KPI criteria enhanced. "The key benefits ensure the data made available is accurate and provides improved confidence in the information received," he said.

"Correct validation starts with ensuring the devices have been programmed properly — it's garbage in, garbage out" — Ron Davis, SATEC

"However, this is still heavily dependent on referring back to the programming and validation process," he added. "These increased objectives add costs but also are designed for the integrity of the measurement data. ISO17025 certification under the NMI rules has added further performance metrics for meter manufacturers that are willing to make the investment."

According to Davis, it is important that operators can have confidence not only in the data, but also that the data provides valuable information to confidently make informed decisions.

"Regardless of the KPI agenda, unless the data is accurate there can be no confidence with the information," he said. "Furthermore, where data centres are involved with energy consumption for billing purposes, it is important that this 'cash register' is measuring correctly. This is where NMI-approved metering provides the confidence of measurement. Furthermore, meters used for NABERS that have been certified with ISO17025 can only add further confidence for data centre operators."

So what type of metering devices and capabilities are we talking about?

"Generally for data centres, metering devices will include multiple applications such as NABERS ratings, NMI Energy Billing and devices to measure the quality of the incoming power to the facility," Davis said. "These devices should, as a minimum, incorporate interval data logging, event logs and real-time clocks to ensure no data is lost in the event of a power loss and/or communication loss, ensuring data is retained."

How important is validation in maintaining compliance with NABERS and other standards?

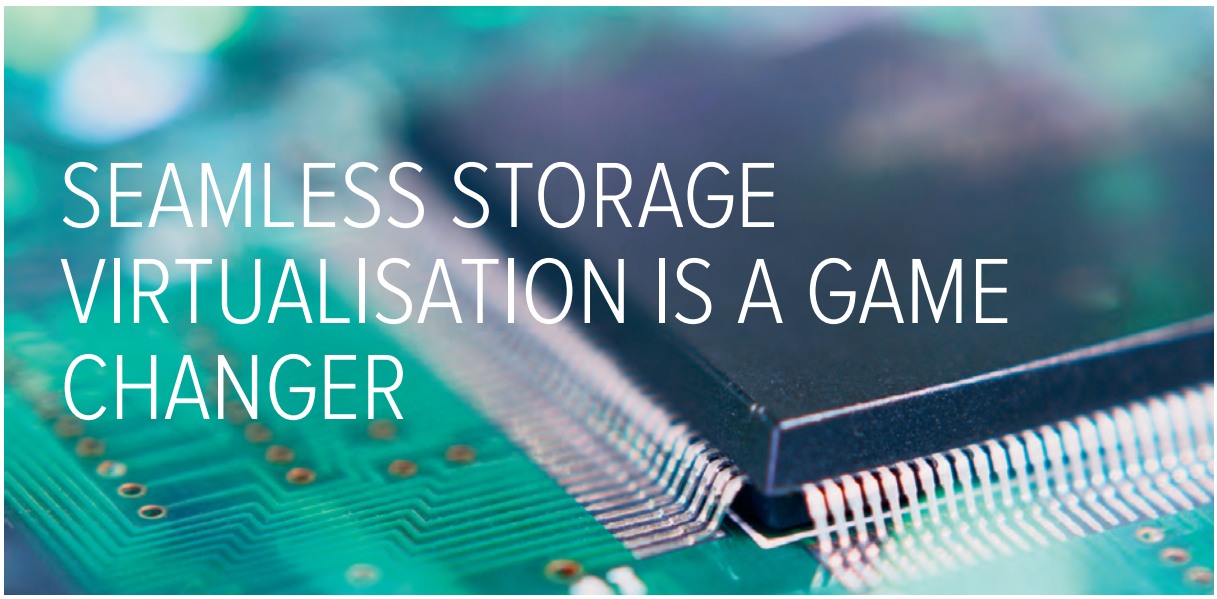
"Without correct validation processes, all metering data becomes irrelevant," Davis said. "It is not uncommon for many data centre operators — including at industrial and commercial sites — to find that the data they have been recording/reading from the meter for many years is incorrect.

"Again, this breaks down to the process of the validation and programming procedure completed on commissioning — not only of the meter, but verifying correctly the interface to the BMS and/or SCADA."

According to Davis, well-designed meters can last for many years, but technological changes and regulatory requirements can have significant effects. "Ensuring the metering deployed has functions and features to meet changes and challenges for the future is important," he said.

Things to consider include warranties, accuracy, whether the meter has event logs, interval logs and a real-time clock, and whether it supports Ethernet communication.

"Ensuring these basic features are covered will help reduce meter churn for the future," Davis said.



SEAMLESS STORAGE VIRTUALISATION IS A GAME CHANGER

Seccom Global selected ioFABRIC to solve the kind of storage problems that plague technology professionals every day.

Seccom Global is a Sydney-based company that offers cybersecurity consultancy and advisory services, digital transformation and managed services. The firm began in a garage in Baulkham Hills in 2003 and has since opened an office in Melbourne, and now serves 180 customers in more than 20 countries.

Updating storage infrastructure has been an ongoing focus for Seccom Global. However, due to the company's recent growth, it needed to reassess its infrastructure, which provided an opportunity to explore new technologies and saw it review an emerging virtualised data management technology called ioFABRIC.

Seccom Global Managing Director Michael Demery, said the decision to take on emerging technologies is never taken lightly, but innovation is not about following the pack.

"Our business is in a period of explosive growth, so we had to approach the challenge of storage in a more creative way, and part of that was exploring new and emerging technologies," he said.

Prior to ioFABRIC, Seccom Global was spending big on traditional storage products that didn't suit its heavily virtualised environments. As a result, Demery and his team realised they needed to make the inevitable transition to data virtualisation to drive an even stronger competitive advantage for their customers.

ioFABRIC proved to be an ideal solution as it enables any storage to be connected to Seccom Global's existing infrastructure, creating a single storage pool that is hardware agnostic. Vendors can no longer lock the company into their storage hardware.

"ioFABRIC enabled us to do to our storage what VMware did to our servers," said Demery. "ioFABRIC virtualises storage — just as VMware virtualises servers. The technology is a game changer."

Through the introduction of ioFABRIC, Seccom Global can utilise previously unused storage in less demanding roles, such as holding old and inactive data. ioFABRIC's ability to self-heal data on failed storage devices to other available storage enables the company to use storage until it truly fails or becomes uneconomical.

"We may never purchase another SAN, NAS or dedicated storage array thanks to ioFABRIC," said Demery.

Without user intervention, ioFABRIC moves hot data to RAM, warm data to SSD/flash and inactive data flows to the lowest-cost disks. All storage is managed from a single dashboard, regardless of storage vendor, make or model — which is invaluable, as network admins can instantly see any issues at a glance, even from a smartphone.

Performance is achieved simply by setting the IOPS or latency required by an application, and everything else is fully automated. Data moves to where it needs to be in order to deliver the performance, capacity and protection objectives required by the application workload.

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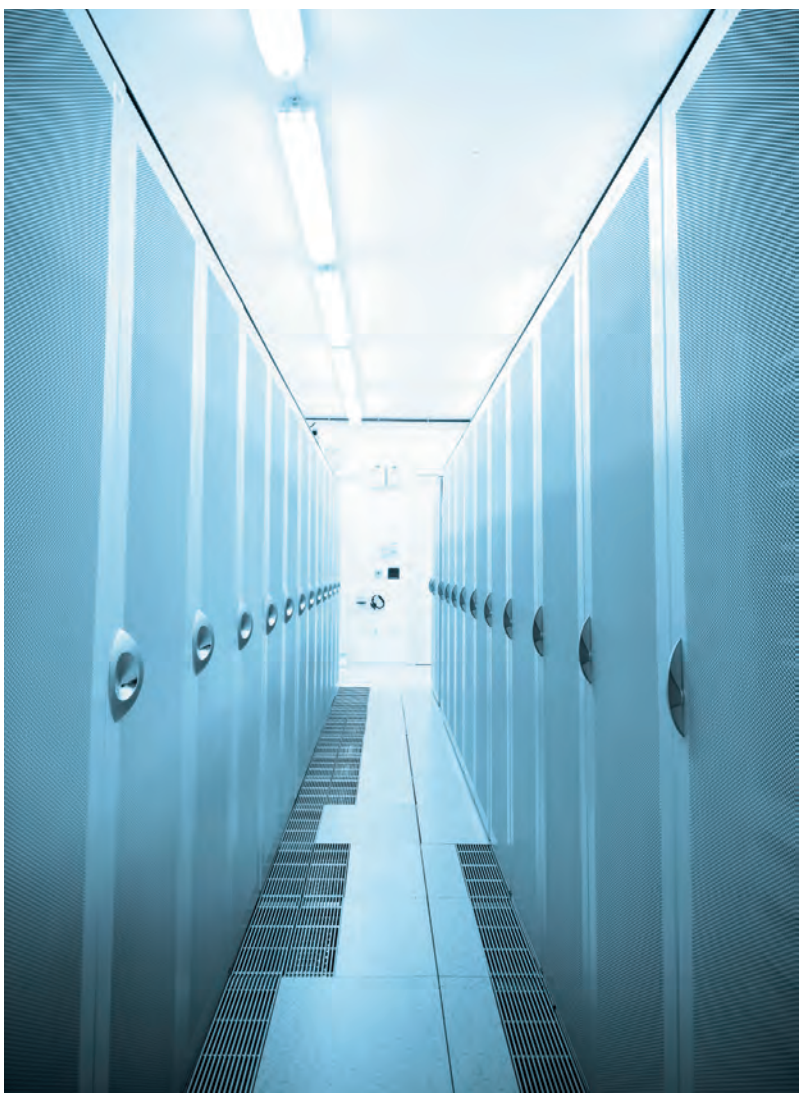
DATA CENTRE MIGRATION — ASK THE RIGHT QUESTIONS

Gavin Milton-White, CommScope

THE AUSTRALIAN DATA CENTRE SERVICES MARKET IS GROWING AT AN ASTONISHING SPEED, ACHIEVING A 12.4% COMPOUND ANNUAL GROWTH RATE (CAGR); AND IT IS EXPECTED TO REACH AN AU$2.055 BILLION MARKET VALUE BY THE YEAR 2021.



Heightened demand for cloud computing is one of the main drivers of growth in the market, and we are seeing an increasing number of enterprises jumping onto the cloud bandwagon. While this is great for businesses, data centre operators are grappling with increased bandwidth requirements — growing at 25 to 35% per year, a rate that is predicted to continue on into the foreseeable future. One very visible impact of this growth is the need to support increased bandwidth by migration to higher speeds.

For many enterprises in Australia, the data centre is the lifeblood of the business. Some use it to power their core business, whether in manufacturing or services, while for others the data centre itself is the business. Regardless of how an enterprise uses its data centres, it is almost certain that the speed at which data is accessible determines the organisation's ability to compete and deliver services in the marketplace. Furthermore, customer demands are evolving, with customers today expecting services delivered almost instantly. This translates to a dire need to ensure bandwidth is sufficient to meet demands. Enterprise data

centres in Australia that fail to do so will risk being overloaded — leading to increased latency and bottlenecks, which will ultimately impact the enterprise's ability to conduct day-to-day operations.

Having said that, migrating to higher speeds is easier said than done. The discussion surrounding migration to higher line rates is both complex and rapidly evolving. It includes a wide range of decisions that have to be made, including fibre type, modulation and transmission schemes, connector configurations and even cost considerations. The first step towards getting migration right is to carefully consider all aspects and decide what is right for one's organisation. Having said that, here are four of the most common questions we hear from our customers as they plan their migration.

1. 40 G or 25 G lanes?

Until recently, the accepted migration roadmap outlined a predicted jump from 10 G lanes to 40 G. Since the approval of the IEEE 802.3by standard, the industry has begun to shift towards 25 G lanes as the next milestone. This is due to several factors. For starters, migrating directly to 40 G optics is costly, while 25 G lanes enable data centres to maximise their existing 10 G infrastructure. Perhaps more important is that the 25G lane provides an easier migration to 50 G (2x25 G) and 100 G (4x25 G).

2. Pre-terminated vs field-terminated cables?

The ability to quickly turn up networking services has propelled pre-terminated cabling systems to a technology of choice in many data centre environments. By some estimates, the plug-and-play capability of pre-terminated cables translates to 90% time savings versus a field-terminated system.

In terms of network maintenance — particularly handling moves/adds/changes — pre-terminated systems are estimated to be 50% faster than field-terminated solutions. The value grows as the number of fibre connections within the network increases. Among pre-terminated solutions, MPO/MTP fibre is fast becoming the de facto system for both single and multimode connectivity due to its ease of use and speed, not to mention the high density.

3. Serial or parallel transmission?

As data rates have increased in response to more demanding applications, the market has gravitated to parallel optics. This trend is being supported by the consistent demand for MPO-based trunks, a data centre staple for more than a decade. Using laser-optimised multimode fibre (LOMMF), serial optics can cost-effectively support speeds of up to 10 G. But as the 10 G links make way for 25 G or 40 G, the only option with serial transmission would be to switch to costlier singlemode solutions.

Parallel optics, however, provide a more cost-effective solution for 40 G and 100 G Ethernet. The switch to parallel optics is also helping to drive the use of MPO connectors. However, the trend to parallel optics may soon reverse as more technologies — that make better use of individual fibres — are developed. A variety of new technologies such as PAM4 and WDM are expected to help lure more connections back to duplex in the future.

4. Singlemode, multimode or wideband multimode?

The cost of pluggable optics continues to limit the implementation of singlemode fibre (SMF) in data centres. Although new technologies and manufacturing efficiencies are helping to reduce the cost for SMF, the price drop is still not significant enough to justify the high cost of singlemode optics.

Multimode fibre (MMF) continues to offer a more attractive balance of performance, density and cost for enterprise data centres. However, MMF still faces challenges with distance — meaning that as data traffic grows and interconnectivity speed increases, the maximum distance for a communication link tends to decrease. But emerging higher quality components and engineered links can provide the link capacity to support the longer distances and new data centre topologies.

Lately, an improved option that may provide the optimal solution for fibre migration has emerged. Wideband multimode fibre (WBMMF), a new fibre type, has been approved under ANSI/TIA-492AAAE and is expected to be recommended by ANSI/TIA-942-B. WBMMF enhances the ability of short wavelength division multiplexing (SWDM) technology to provide at least a four-fold increase in usable bandwidth while maintaining compatibility with OM3 and OM4 fibres and supporting all legacy multimode applications. By multiplexing four wavelengths spaced in the 850–950 nm region, one strand of WBMMF can increase data capacity by a factor of four.

Robust infrastructure

Ultimately, we can conclude that there are many migration paths to higher speeds and data centre capacity, but sadly no single magic bullet approach. No matter the approach one chooses, the end goal should be obtaining a robust infrastructure; agile enough to respond to unexpected circumstances and flexible enough to scale and integrate tomorrow's game-changing technologies — a complete modular connectivity platform that keeps your network fast, future-ready and cost-efficient.

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Products

Single-mode media converter

The Black Box Gigabit Ethernet PoE+ single-mode media converter connects with fibre and provides power to remote PoE devices.

The tough media converter is a suitable way to extend a network over fibre and also power a PoE device. Use it to link to faraway PoE devices such as IP security cameras, wireless access points and VoIP phones.

The product features two 10/100/1000 Mbps copper ports and one 1000 Mbps fibre port. Both UTP ports are autosensing with Auto MDI/MDI-X; one UTP port supports 802.3at PoE.

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Weaving the right data solution

NetApp's Data Fabric approach enables IT organisations to safely span data centres and clouds, while retaining ownership and control of the data.

The application of cloud storage and computing to business functions is now ubiquitous, and often invisible to the end user, customer or consumer. Much of the present challenge is to also make the use of cloud painless and effortless to IT departments and business users. Part of the solution to that is selecting the right balance of public and private cloud. For many businesses, the answer increasingly is a hybrid solution. Allied to the cloud storage paradigm are open source, converged infrastructure, virtualisation, flash, container and software-defined considerations. Pulling them all together into a seamless whole can provide a seemingly limitless pool of resources for compute, network and storage applications. According to storage and data management solutions vendor, NetApp, the answer is an approach it calls Data Fabric, which it describes as enabling "customers to respond and innovate more quickly because data is free to be accessed where it is needed most. Customers can realise the full potential of their hybrid cloud and make the best decisions for their business… Over time, the Data Fabric will expand to cover more environments. With each new weave, the Data Fabric becomes more textured, more expansive, and more capable."

The Data Fabric architecture, based around hybrid cloud, helps customers manage data across diverse IT resources spanning flash, disk and cloud, providing the flexibility to choose the most appropriate set of resources to meet the needs of applications and the flexibility to change them when needed.

> Since deploying the solution, TechnologyOne has seen 7-figure dollar savings and a reduction in production data by 85% over three years.

The five principles of the Data Fabric approach, are:

- Retaining secure control and governance of data regardless of where it is held;
- A choice of cloud, application ecosystems, delivery methods, storage systems, and deployment models;
- Enabling the components in every layer of the stack to operate as one while extracting full value from each component;
- Easy access data to where applications when, where and how they need it; and
- Consistent management of data across multiple environments using common tools and processes.

Following are some examples of Data Fabric in action with Australian enterprises.

Dealing with the flood of data

High-profile Australian software vendor, TechnologyOne, was happy running its own data centres… until the devastating 2011 floods in Brisbane knocked them offline for three days. "We basically sat down and said, 'never again'," said the company's Group Director for Cloud, Iain Rouse. "From now on, we're going to buy Infrastructure-as-a-Service and manage the entire cloud services stack — end-to-end. Storage, compute and network."

A shift to Amazon Web Services overcame that particular vulnerability, but after four years the company realised it needed to vastly improve its cloud storage solution. It wanted 99.999% uptime, extremely high performance, synchronous data back-up in real-time across both data centres with no user disruption, and real-time data portability to accommodate one-off or seasonal workloads. And most importantly, it didn't want to manage the data centre. So it turned to NetApp and asked for all of this as a managed service.

The storage and network solution provided gives TechnologyOne the flexibility to seamlessly control its data across its storage systems in Equinix and AWS with no disruption. With the NetApp ONTAP Cloud operating system and FlexPod and MetroCluster solutions, "We can have archive storage, we can have object storage, we can have high-performing disk, and mid-tier performing disk," said Rouse.

Since deploying the solution, TechnologyOne has seen 7-figure dollar savings and a reduction in production data by 85% over three years, and it now out-competes AWS' fastest storage by a factor of 10. "Looking back at where we were in 2011, we have definitely achieved our business goals. And with NetApp technology, we've also exceeded customer expectations," said Rouse.

Beating the back-up blues

Since its founding in 2000, Nexon has grown exponentially to become one of Australia's leading IT solution providers. One example of its offerings is Backup as a Service, with which it helps customers mitigate risk and lower costs with a reliable backup service. For this service, Nexon chose NetApp's AltaVault cloud integrated storage with StorageGRID Webscale to build the flexibility and reliability needed.

"AltaVault with StorageGRID was a no-brainer for us. It made perfect sense to put it in our environment and offer it as a service to our clients. The efficiencies are outstanding," said Justin Bailey, Business Lead for Cloud Infrastructure at Nexon. "AltaVault compression and deduplication ratios really help our customers. They give us value-added services that some of our competitors aren't able to provide."

With AltaVault inline deduplication and compression, Nexon has achieved a 10:1 data reduction ratio—a capacity savings of 90%. And the integration of NetApp All Flash FAS into its FlexPod-based Agile Business Cloud brought immediate results, increasing performance of its cloud platform by 300%. The company also plans to use its StorageGRID Webscale solution to expand its offerings to provide more object storage services.

"We couldn't run our services without NetApp," said Bailey.

Conclusion

The Data Fabric approach is a collection of integrated technologies and services designed to deliver high-value data management solutions, which are greater than the sum of their parts. It can be applied to address real data management problems today, enabling IT organisations to safely span data centres and clouds, while retaining ownership and control of their data.

Platforms (physical and software-defined) establish the data store endpoints in various environments and link them together, while management tools, APIs and ecosystem integration make them easy to use collectively. Integrated applications and services provide overall visibility and control of business operations.

NetApp Data Fabric experts will be on-hand at Gartner Symposium/ITxpo on the Gold Coast, 30 October–2 November, to further explain the strategy and the ways in which it can meet the information challenges faced by different kinds of enterprises across all business sectors.

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