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Navigating the journey of cloud transformation

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It's a pleasure and honour to open this forum today, and help you as you navigate your journey of cloud transformation.

I think it's fitting that the organisers chose an Australian to open today's event. When you live in a country that doubles as a continent and stretches more than 4,000 kilometres from east to west, taking journeys is something I'm well equipped to comment on.

Why are we here?

You can't ignore cloud. It's a significant new way of thinking about how we as an industry deliver technology and services. For customers, it's an important new option as they optimise their IT and communications and will change the way they consume technology.

Regardless of your view, cloud is disruptive enough that every one of us needs to understand its impact on our own business. We must all pursue our own journey towards making cloud principles a key part of our products, services or systems.

But I don't need to tell you that. You're here today so you're obviously concerned about cloud computing and interested in how to make it work for you.

Over the course of today's event you'll be hearing from multiple speakers about cloud best practice, from service models to technologies and successful business strategies.

But I'm going to focus on that idea of the journey because cloud isn't a single destination. It's a transition from one paradigm of computing and communications to a new one.

I'll take you through the journey so far at my company, Optus. Optus is Australia's second largest telecommunications company. We were founded in 1992 to introduce competition to Australia and now have more than 9 million customers.

Our annual revenue is over A$9 billion and we provide a full suite of services including mobile, fixed, satellite and cable television. We are owned by Singapore Telecommunications, the telecommunications leader in this market and across Asia.

We first began our cloud journey in 2009 before launching an infrastructure-as-a-service cloud solution for business customers in October last year. I'll talk you through some of the lessons we've learned from creating that product. These lessons will relate to all of you as you consider your cloud journeys – whether you're a telco, vendor, systems integrator or an end customer.

Firstly, we found that cloud is not just about the technology. It's vital to consider how cloud will impact your people and processes and invest in them accordingly. We also believe everyone has a part of play in solving the security challenge. Security is the one big issue that is holding back cloud services – whether we're trying to use them or sell them.

Finally I'll touch on where we see the cloud going in the future.

So how did we get here?

Australian companies have been quick to embrace cloud. In fact, Australia is the Asia-Pacific region's leading adopter of cloud computing. A report last month from analyst firm Frost & Sullivan found 43% of Australian enterprises are now using cloud computing in some form.

We're seeing a similar picture across the region. IDC says 53% of organisations across the Asia-Pacific region are either researching and testing or actively using some form of cloud services.

What has suddenly changed to make a huge range of computing and communications technologies, many of which have been available for years or even decades, suddenly become 'the cloud'?

At Optus, we believe this shift is due to evolution of four key trends: virtualisation, networks, financing models and more recently the changing workplace.

Virtualisation

Virtualisation has made it possible for companies like us to slice and dice networking, processing and storage capacity and sell it dynamically. It has also enabled us to deliver multi-tenancy in a secure way for these technologies.

According to Gartner, the number of virtual machines is nearly doubling every year. In Australian and New Zealand alone the total number of virtual machines will increase five-fold from 2009 to 2012.

Networks

The second factor is networks. Externalising your computing and storage resources requires the pipes to access them or to run your applications remotely. So the cloud model has been enabled by increases in broadband speeds, the spread of our fixed and mobile networks and gains in quality of service.

There has also been an explosion in smartphones, tablets and other mobile devices that can access these services.

In Australia, Optus alone has spent more than $16 billion building our fixed, mobile and satellite networks since we launched in 1992. Today we spend more than $1 billion a year on these networks; half of that is on our mobile network.

Financing and capital efficiency

The third factor was the global financial crisis. The reduced availability of funds forced companies to limit their capital expenditure. Cloud presented them with a pay-as-you-go solution. The GFC has passed, but this new way of thinking has stayed.

At the same time, businesses have a renewed focus on how to increase their flexibility and agility. This fundamental requirement should see end customers remain very focused on the promise of cloud.

The changing workforce

The final driver, one that we're very focused on at Optus, is how consumer behaviour is changing the workforce and making the workplace increasingly mobile. And by "mobile" I mean a workforce that is no longer fixed to a single location.

We are already seeing early signs that this mobile workforce is increasing the demand for flexible cloud services.

Consider how many businesses are starting to use cloud services such as Dropbox for sharing data across locations. Just last month, our consumer division launched a cloud storage service called Optus SmartSafe to back up mobile and PC content.

People now want – and *expect* – to be able to access information and systems anywhere, anytime and from any device. And this is not just confined to the ranks of senior management, but is also the expectation amongst your field force and sales staff.

You don't need cloud solutions to make this possible, but they can help.

Optus Business has just completed a major piece of research in the Australian market looking at the future of the workplace within 3 to 5 years – I'm sure it mirrors the trends you're seeing in your markets.

We found that the notion of the workplace is going to move away from a particular PC at a particular desk in a particular building. Instead, the workplace will become whatever device a person is using – whether it's a mobile phone, a tablet or a PC – wherever they are using it.

The research found that:

- Businesses are going to issue more mobile working devices. 84% of the IT managers we spoke to expect to issue tablet computers that access the corporate network to at least some staff.

- Companies are planning to run more core business applications, not just email and Internet, on these mobile devices. They expect to at least double the number of applications they provide.

- Businesses are going to offer greater flexibility to allow more staff to work from remote locations according to 35% per cent of the HR people we spoke to.

These changes create challenges and opportunities that can be met well by cloud technology.

The major CRM vendors, for example, are developing cloud-based versions of their applications to be accessed from mobile devices. And the elastic, on-demand characteristics of cloud technology make it well suited to meeting the needs of this more mobile and flexible workforce.

The Optus cloud journey

Recognising these market shifts, Optus Business started its cloud journey two years ago.

Our goal was to build an infrastructure-as-a-service capability that made the most of our existing data centre facilities and our Evolve IP Network. This played to one of our key strengths as a telecommunications carrier: delivering network-centric services.

While this service was designed for business customers, other parts of our business have more recently launched consumer and small-business cloud services too.

To build our enterprise solution, we partnered with VMware, EMC and Cisco and worked with them to break a lot of new ground. In fact, we were the first site in the world to deploy the alpha code of VMware's vCloud Director when we installed it in February 2010. Apparently we beat GoDaddy by 48 hours!

We were also the first Cisco customer to receive its Unified Computing System, the next-generation networked server platform on which our cloud service is based. The serial number may not have been 00000001, but it was certainly Cisco's first production unit.

We signed up a number of customers for an extensive trial using pre-release technology to help us fine-tune the cloud platform. This is a really important step that I would recommend to all of you.

Curtin University of Technology in Perth was the first customer to join the beta test. Curtin wants to move towards accessing much of its technology from the cloud. It is looking to move from an asset-focused model to an information management model. It is evaluating how to use cloud to deliver innovative services, such as on-demand computing capacity to support research projects.

Curtin is also about as far away from Sydney as you can get in Australia! ur cloud service is delivered from a data centre in Sydney and Curtin University is in Perth – that's more than 3,000 kilometres away, with, if you know Australia, a whole lot of nothing in between!

This gave us a great opportunity to really explore the impact of distance on providing sophisticated infrastructure as a service. Curtin experienced only a 60-millisecond latency across the Optus Evolve network, which far exceeded its initial expectations.

We also worked with another trial customer, the property giant Savills, to test some different use cases for cloud technology such as externalising data recovery and test environments. Savills was maintaining a lot of infrastructure purely for disaster recovery and testing. In fact, this represented around 20% of its capital expenditure on servers and storage. Participating in the trial with Optus proved to Savills that it could maintain the same level of data recovery without needing any new infrastructure. This freed up capex and let the IT department focus on higher value IT services.

These trials were pivotal to launching our enterprise private cloud suite, Optus Cloud Solutions, in October 2010. We are selling processor capacity in half-gigahertz blocks and storage in gigabyte increments. Customers have complete control to orchestrate their own services – they can deploy new virtual machines in minutes using our vCloud Director portal.

We're seeing interest in cloud from a range of business sectors including retail, professional services, property, education, design and architecture.

Demand is mostly driven by the need to:

- Support disaster recovery

- Reduce data centre footprints

- Access more efficient testing and development environments

- Reduce capex and have greater IT flexibility to support business peaks and troughs.

These are great uses for cloud, by the way. Moving to a cloud environment can drive an organisation's speed to market – something all our cloud customers are interested in.

We're also seeing businesses take a hybrid approach to cloud. This means they use a combination of internal private cloud, public cloud and enterprise private cloud solutions.

Lessons

So, what have learned so far on our cloud journey? We have had to solve a lot of detailed technical challenges and we have confirmed that you can deliver cloud services across a continent. Two other things we've learned I think will apply to everyone here today.

<u>People and processes</u>

The first is that the journey to cloud is not just about technology. You also need to make major changes in people and business processes. Many organisations underestimate the investment they need to make in their people.

In terms of <u>people</u>, we had a lot of network expertise and a lot of storage expertise. However, we quickly discovered that we needed to develop and buy in new technical expertise to create our infrastructure-as-a-service offering.

This one caught us a little by surprise. You would think that creating and selling cloud services would be business as usual for a telco.

The bigger surprise was, we discovered this need for different expertise and processes extended right across the business, beyond the technical and IT staff. Our lawyers had to create new types of contracts and service-level agreements, with new parameters and a much greater need for flexibility than before. Our finance teams had to develop new investment and pricing models. As a telco, we're used to spending big chunks of money to build networks then charging people by usage. Yet even we discovered we needed new financial models. We also needed to re-educate our sales teams on how to engage customers in conversations about cloud.

When it came to <u>process</u>, we learned that it's impossible to directly map out your entire cloud journey at the beginning. You need to be flexible and agile to adapt to this evolving technology.

When you are building services for emerging markets, you are executing more like a start-up. If you don't have the mechanism to correct the course on your journey, you simply won't keep up with the pace of innovation and agility in the evolving cloud environment.

We had to correct course several times during our journey to adapt to changing customer and market requirements. We had to demonstrate to customers that we were willing to change. Change to this extent requires an internal cultural shift. Executives need to agree upfront that programs may have to correct mid-course. I am one executive who embraced this idea.

So, the technology was only the first step on the journey. It also required considerable adjustments in our people and processes.

As you look at your journey, I would encourage you to get all the other stakeholders involved early. Look at your existing skillset and establish whether you need a training program in your firm. Also, review your existing process and policies to accommodate and integrate cloud technology within your business.

How many of you brought your financial, legal or sales people here today? Hopefully quite a few, because they will be critical to your journey.

Security

The second big lesson is in security. Every survey about cloud highlights the fact that security remains the number one concern for customers. It is the number one challenge we in the industry need to solve.

Here is the security challenge:

- Customers don't know where there data is.

- Customers can't see their data.

- Customers worry about people hacking into their data.

Ernst & Young completed a global survey about cloud last year. It spoke to nearly 1,600 organisations across 56 countries and found that 45% of them were already using – or planned to use – cloud computing in the next 12 months.

Ernst & Young then asked them what new or increased risks they had identified. Here's what they found.

Data leakage risks – 52%

The concern here is typically about the security of the provider's virtualisation techniques.

Loss of visibility of what happens to company data – 39%

The problem with cloud-based services today is customers simply can't see the security surrounding their data. They lose visibility. As an industry, we're asking them to trust us. As a telco, I believe that customers can trust us. We already carry massive amounts of people's data every day over our networks. But this is a big ask in a new area of technology. I think that as an industry we have to prove our trustworthiness and find ways to give customers greater visibility into the cloud services they use.

Unauthorised access – 34%

The idea that your data can be hacked is always a concern. However, this has been heightened by the recent scandals experienced by players such as Sony, even though this breach is unrelated to cloud services.

These are all valid concerns. Yet the argument for cloud computing is also very compelling. In a recent global CIO survey, 88% of IT decision-makers said they would use cloud services more if they could achieve the same or better security as their internal data centre.

To bridge this gap, we have been talking to customers about distinguishing between the types of data they hold. Today, many organisations follow what you could call the 'single

bucket' principle. This means that they treat all their data as if it is contained within a single bucket, then they apply common security policies to all of it.

Organisations traditionally processed and stored all their data in house. It made sense to have a single policy that protected all their data as much as possible. Also, just handling data growth was enough of an effort!

However, we believe organisations now need to recognise that they have different types of data, ranging from the highly sensitive such as customer credit card details to less sensitive, such as public data posted on their website. There are also many gradients between these two extremes.

By categorising data differently, organisations can better decide which workloads to outsource to cloud providers. Starting with less sensitive data, they can learn and gain confidence in the security of cloud solutions.

However, service providers and vendors also need to do their bit. We need to agree on standards and systems for how data is handled and described and to embed that into our products and services. Security will need to be more inherent in data management and in cloud platforms.

One example is that cloud security currently tends to be at the network edge – like the doors of a building. We are looking for ways to offer sophisticated security functions at the virtual machine level – much closer to the data.

This is the only way we're going to be able to give customers the level of security they are – quite reasonably – demanding, at an affordable price. And this is the issue. We can make cloud services both highly secure and highly visible, but the cost is so high that it doesn't make economic sense.

As an industry, we need to think about how we can provide high-level security to increase confidence in cloud while meeting customers' price points and delivering cost efficiencies. We don't have all the answers yet.

Who will 'own' the cloud?

Finally, I'd like to look at who is going to 'own' the cloud. The short answer is that we believe it is too early to tell. Who would have thought that today the world's number one provider of infrastructure as a service would be a business that started by selling books: Amazon?

The good news is, the playing field is still wide open, whether you're a service provider, a vendor, an intermediary or a customer. Further, I don't believe any one company will come to own the whole cloud. Some mega-players might like the idea, but we believe end customers want to buy from a range of providers.

I'll start close to home and talk about telcos. Telcos have the natural opportunity in cloud for at least three reasons:

- First, cloud is very network dependent and telcos have the networks.
- Second, we are used to building utility-style technology products.
- Third, customers already trust us to transport their data.

The second big group is the big technology companies. This is where the likes of Amazon Google Fujitsu, HP, IBM and Microsoft come in.

Then there are the vendors of the hardware and software than enable the cloud. Here success will go to those that can offer cloud service providers highly scalable and reliable products

at a reasonable price. Consider them the general supply stores from the gold-rush era. More recently, Cisco performed this role during the first internet boom of the 1990s.

In the supply space, there are opportunities around security solutions and also for vendors that can help make the idea of a hybrid cloud work more easily for customers.

Technologies such as VMware's vCloud Director and vCloud Connector make it possible to port virtual workloads between internal and external cloud environments. This enables customers to manage a single 'super cloud' environment using a single-pane view.

There will also be a huge need for expertise-driven niche cloud offerings. These might be highly specialised infrastructure services, such as supercomputing capacity for scientists. Or it might be specialised software-as-a-service offers that can't be delivered as a utility.

We also think there will be significant demand for novel pricing structures. We expect cloud pricing models to go down the same route as mobile phone plans – a model for every need and every person. Again, this might present opportunities for new and niche players.

This need for expertise also suggests an ongoing role for intermediaries such as systems integrators. There will be disruption – you might lose the ability to mark up software licences for instance or take a cut on hardware sales. But we expect the cloud to be sufficiently complex that business customers will always need specialist advice.

So, everyone is in for a change.

In fact, even end customers need to change. If they don't embrace the competitive advantages offered by cloud, they may well find themselves out of business.

Just glance at some of the amazing, cloud-powered businesses that are emerging out of Silicon Valley at the moment. They aren't buying infrastructure. They aren't buying software. They're renting what they need and they're growing at speeds never seen in the history of business.

And this mindset isn't limited to Silicon Valley - I was in Beijing last week and met with an iPhone games developer that is relying on cloud to expand into new markets, without owning any physical IT infrastructure outside of China. Similarly a local Chinese start-up found that investors now expect them to offer cloud services as part of their product offerings.

But everyone has an opportunity. As I said at the start, cloud isn't going to change *everything*. But it will bring disruption and it will bring change, and that change presents threats and opportunities to every one of us here today.

Personally, I'm excited by the changes we can see coming. Cloud is a new and more efficient way of operating. It's a smarter way to store and process information. It promises fantastic productivity benefits, which should in turn power our businesses and our entire economies. It will open the way to people being able to perform ICT tasks anywhere, anytime and on any device.

I hope you're also excited by this possible future. And I wish you the very best of luck on your cloud journey.

Thank you.