ANALYST INSIGHT

Why government agencies need the cloud

Cloud services offer an edge in the unsustainable game of ICT Snakes and Ladders played by many agencies

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SUMMARY

Catalyst

The ICT capabilities of government agencies are under increasing pressure from fiscal constraints, ageing assets, and skill shortages. Meanwhile, cloud computing is emerging as a practical ICT sourcing alternative. Cloud services are maturing rapidly in Australia, with early adopters reporting positive experiences with cloud adoption. Agencies have, however, been relatively slow to embrace cloud services. This report explains why agency executives should include cloud services in their ICT strategy thinking in 2012.

Ovum view

Ovum's assessment of the pattern of audit reports in recent years is that many government agencies are stuck in a game of ICT Snakes and Ladders, unable to sustainably develop strong ICT capabilities because of funding, resource and skill constraints. Governments' demands for ICT-enabled policy and service innovation are outstripping their capacity to fund the ICT capabilities of agencies.

Mature, enterprise-grade cloud services provide a solution to this dilemma. They deliver a cloud innovation edge to agencies, enabling them to benefit from access to sustainable world-class ICT capabilities at a lower cost than would otherwise be possible.

This report recommends that agencies:

- Include cloud services in their ICT strategy. A strategic perspective is required to position cloud services as part of a transformation of the agency's approach to sourcing and managing ICT.
- Discover the cloud services available from trusted enterprise ICT vendors. Agencies may find that the most expedient way into the cloud is to leverage and evolve with existing trusted vendor relationships and procurement arrangements.
- Analyse application and data portfolios to identify cloud services opportunities. One of the advantages of cloud services is that they create both the imperative, and the opportunity, for agencies to focus on information and data rather than technology and software.
- Get hands-on experience with cloud services. Agencies should put selected applications and/or infrastructure services to the test and see the reality of cloud services for themselves.
- Don't compromise on enterprise-grade compliance requirements. When it comes to procurement time, not all cloud services are equal in terms of their ability to meet agency reliability and security requirements. The biggest risk mitigation is the choice of a high-quality enterprise-grade cloud services provider.

Key message

Agencies should consider using cloud services as an alternative way to access the ICT capabilities required to sustainably boost innovation and cut costs.

This report is a precursor to a more in-depth analysis of the realities of the adoption of cloud services in the Australian public sector. A follow-up report will be published in mid-2012 to explore case studies of how agencies are using cloud services and to share lessons learned from the front line of cloud adoption.

TABLE OF CONTENTS

Summary 1

Catalyst 1

Ovum view 1

Key messages 2

The ICT snakes and ladders game in government 4

Developing and maintaining ICT capabilities is a perpetual challenge 4

In-house shared services are no panacea 6

Agencies are caught in an innovation/efficiency dilemma 7

Cloud computing changes the rules of the game 7

Cloud computing creates alternative options for agencies 7

Governments in other countries are embracing the cloud 7

Australian governments are adopting a more conservative stance 8

Momentum is building in public sector cloud adoption 8

Feedback from the front line of cloud adoption 10

The cloud innovation edge 11

Cloud services offer agencies an edge in the game of ICT Snakes and Ladders 11

The cloud innovation edge will be a long-term trend 13

Recommendations 14

Five steps agencies should take to prepare a path to the cloud in 2012 14

Appendix 17

Bibliography 18

Further Ovum reading 18

Author 19

Methodology 19

THE ICT SNAKES AND LADDERS GAME IN GOVERNMENT

Developing and maintaining ICT capabilities is a perpetual challenge

Government agencies across all jurisdictions, federal, state, and local, face a perpetual challenge as they seek to develop and maintain the ICT capabilities needed by governments to support policy and service delivery innovation. The opportunities for technology to drive innovation in citizen service, education, healthcare, and internal productivity are limitless, but have always been constrained by limited resources available to build and operate the new systems.

The balancing of demand and supply for services is an eternal challenge throughout the public sector, but the issue of over-stretched ICT capabilities is starting to become a critical problem. ICT has become integral to virtually all public services. The ability of governments to drive innovation in society is increasingly dependent on the ICT capabilities of agencies

However, the troubling observation is that the ICT capabilities of agencies are under increasing stress. Reports published by auditor generals and review bodies over the past few years (see Bibliography) provide a troubling health report for the maturity and sophistication of agency ICT capabilities.

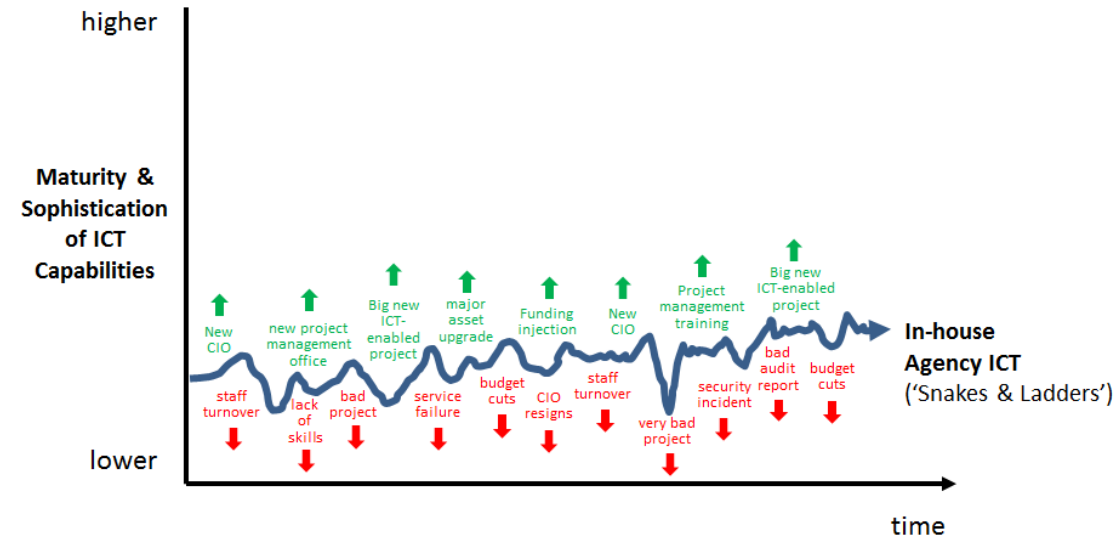
- The Auditor-General of Queensland in his financial and compliance audit report to parliament in June 2010 expressed disappointment with agency progress towards strengthening information technology network security weaknesses identified in previous audit reports.
- The WA Auditor General's Information Systems Audit Report of June 2011 found that none of the 15 agencies tested had adequate systems or processes in place to detect, manage or appropriately respond to a cyber-attack and all but one had multiple information system controls weaknesses.
- Most recently, the Victorian Ombudsman issued a scathing report in November 2011 on the major ICT-enabled project delivery capabilities of Victorian agencies.

The reality is that none of these reports are news to agency ICT executives. Budget pressures constrain the ability of most agencies to fully develop the skills, processes, systems, and infrastructure necessary for high quality, reliable, and secure ICT operations. Agencies simply do the best they can with the resources available. Well-funded agencies where ICT is critical to service delivery have relatively strong ICT capabilities. Smaller, less ICT-centric, financially stressed agencies struggle.

For most agencies the management of ICT is like a game of Snakes and Ladders (see Figure 1). Progress is good some years when experienced staff are present, when major projects are under way, and when new methodologies and technology assets are rolled out. In other years, however, progress is stymied by legacy complexity and the diversity and fragmentation of the agency ICT environment, and hard-won gains are lost in ageing assets, budget cuts, staff turnover, skill shortages, and project failures.

It is very difficult for individual agencies to make consistent upward progress in the development of the maturity and sophistication of all of the ICT capabilities required to deliver their policy and service outcomes, and to meet the growing expectations of ministers and citizens.

Figure 1: The snakes and ladders of maintaining agency ICT capabilities



Source: Ovum

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The pattern of critical auditor general reports is a symptom of the fact that the demands on most agencies are perpetually in excess of their resources and capabilities. Even though aggregate ICT spend has risen year on year in most jurisdictions, ICT capabilities are spread too thinly across governments' diverse needs and fragmented, constantly changing organisation structures. Demands for ICT infrastructure, applications, people, and skills exceed supply.

Ovum believes that the current approach to ICT is failing to create sustainable and reliable ICT capabilities and is leading to a growing crisis of confidence in governments' capacity to drive ICT-enabled transformation.

In-house shared services are no panacea

Consolidation, standardisation and rationalisation have often been proposed as one way to end the Snakes and Ladders game - share and reuse before buy and before build. Strategies include creating jurisdiction-wide procurement arrangements, panels, common systems, and shared services arrangements. These arrangements aim to reduce unit costs by aggregating demand and leveraging buying power and operational economies of scale across agencies.

While shared procurement arrangements have proven to be effective ways to harness government's buying power, the experience with more operational shared services has been at best "mixed", and at worst disastrous. WA and Queensland have experienced high-profile shared service failures. Victoria's CenITex shared ICT services centre, one of Australia's shared services exemplars, is currently under review by the State Services Authority. Many local government associations and clusters of councils have also had mixed results with shared services.

Shared services can work, but all too often don't, or unravel over time, because of the practical challenges created by the devolved structures and governance arrangements in the public sector. In practice, it is very difficult for agencies to agree, and sustain, the precursor of traditional shared services - common one-size-fits-all processes. The unfortunate reality is that a government shared service must support diverse processes, uncoordinated demands and conflicting priorities.

Shared services arrangements are also seldom well enough funded to actually create the solutions needed to support diverse agency needs efficiently. Legacy software and hardware assets and resources are aggregated to form the shared service but too often are not adequately reengineered or modernised to support multiple agencies efficiently. The shared service provider is in the 'no win' position of being stuck with old and inflexible technology in a closed internal market. Shared services struggle to compete with the pace of investment and innovation in the wider competitive ICT market - where multi-tenant cloud services are emerging as the 'state of the art' way for a single service provider to meet the needs of a large and diverse customer base.

Agencies are caught in an innovation/efficiency dilemma

This situation leaves many agencies caught between a rock and a hard place - in an innovation/efficiency dilemma. Expectations that ICT will enable policy and service delivery innovation are rising … but budget pressures constrain agency's ability to sustainably develop and maintain the required ICT capabilities. Efficiency strategies such as shared services and common systems offer a potential solution to budget constraints … but are empirically high risk and also tend to constrain agency flexibility and ability to innovate.

CLOUD COMPUTING CHANGES THE RULES OF THE GAME

Cloud computing creates alternative options for agencies

The innovation/efficiency dilemma means that agencies at all levels of government, local, state and federal, need better ways to source ICT capabilities in ways that sustainably enable flexibility and innovation, while also costing less than dedicated ICT capabilities for each agency. The cloud provides a new way to source shared world-class ICT capabilities as a service.

Governments in other countries are embracing the cloud

Some of the countries that Australia tends to look to for leadership and peer interaction are wholeheartedly embracing cloud computing. The primary driver for cloud adoption is to take advantage of the evolution of large-scale shared ICT service models as an alternative to sub-scale, fragmented, and duplicative agency-by-agency investments in applications and infrastructure.

- The US Cloud First strategy explicitly sanctions cloud computing as a catalyst for improving the efficiency of the government's ICT operations across the board, targeting about 25% of the total government IT budget. The largest 25 agencies have so far identified 78 systems to migrate to the cloud in the first year of the strategy, most commonly email, website hosting, collaboration/portal and geospatial applications, and data centres. Significant investments have been made in an apps.gov portal, standards frameworks and procurement process to facilitate cloud adoption by agencies. The current CIO has since reframed Cloud First as “Shared First”, with cloud services at the core of a broader shared services strategy.
- The UK is implementing a Government Cloud Strategy similar in intent to that in the US, and is currently reviewing many hundreds of submissions from vendors seeking

to become part of G-Cloud infrastructure and software as a service application store arrangements.

- The New Zealand government has included cloud computing as a key element of its ICT Directions and Priorities, recently establishing a panel contract arrangement for infrastructure-as-a-service (IaaS) and commissioning development of a business case for broader adoption of cloud services.
- Asian governments including Hong Kong, Singapore, South Korea, and Taiwan have made significant investments in the establishment of cloud computing services, which are primarily focused on boosting the competitiveness of local ICT industries.

Australian governments are adopting a more conservative stance

By contrast, the Australian Federal Government's stance on cloud computing has been slower to develop and more conservative, with the policy position being “The Australian Government and its agencies may choose cloud based services if they demonstrate value for money and adequate security”. Momentum for more decisive leadership of a cloud strategy, however, is growing with a data centre as a service strategy underway and Cloud Better Practice Guidelines developed.

State and local governments have so far been even more reserved, with few having issued any public policy statements on cloud strategy. These reservations stem mainly from concerns that global public cloud services will store data offshore and may not meet government's security, legal and regulatory compliance requirements. Agencies would prefer to use onshore cloud services, but these have been slow to develop at scale because of the small size of the Australian market.

However, as cloud services, particularly those of the leading Australian ICT providers, mature we expect to see the procurement policy settings of federal and state government shift to more positively embrace cloud services as they have in other countries. Tightening fiscal imperatives and a growing crisis of confidence in the ICT capabilities of agencies will increase the motivation for Australian governments to pursue the productivity opportunities of cloud services.

Momentum is building in public sector cloud adoption

Adoption of cloud computing services by agencies is, in practice, in its early stages in Australia but is picking up momentum. For example:

- Several universities, including the University of Western Australia, are known to be transitioning data centres to externally hosted private cloud IaaS arrangements.

- A range of agencies are moving toward private cloud infrastructure sourcing arrangements, typically as an evolution of existing managed services and outsourcing arrangements with trusted vendors. The Federal Government's Personally Controlled Electronic Health Record project, for example, will host data in a private cloud IaaS arrangement provided by Telstra.
- Local Government Association of Queensland has created GovCloud, a community cloud services portal for councils (www.govcloud.com.au).
- The use of Microsoft Online Services and Google Apps by universities has been an interesting evolution. Cloud email was an early and obvious opportunity because of the large number of student users and the immediate applicability of relatively simple consumer market style email services such as Gmail and live@edu. However, the evolution of universities to using one cloud collaboration platform for both students and staff (at Monash University, for example) is a powerful demonstration of the fact that these public cloud services have actually now fully measured up to enterprise-grade requirements and can fully satisfy Australian regulatory obligations.
- A Victorian state government agency has been using Salesforce.com for several years. The system is fully compliant with regulatory requirements and has proven to be highly cost-effective. Its usage is expanding into new areas within the agency as it becomes the preferred platform for driving innovation.
- The Open Windows Contract Lifecycle Management system, widely used by councils and other agencies, is now being implemented as a cloud service by the Brisbane City Council and LaTrobe City Council, deployed on Microsoft's Azure cloud infrastructure.
- Use of Yammer as a social networking and collaboration platform is increasing throughout the public sector. Yammer's low entry cost, “good enough” functionality, usability, and ubiquitous availability mean that adoption grows quickly, in many cases more quickly than with traditional on-premise collaboration platforms.

The adoption of cloud services by councils and federal and state agencies, however, is something of a best-kept secret. Sensitivities around regulatory compliance and offshore data storage in public cloud services mean that agencies prefer to keep their early-stage use of cloud services out of the public arena to minimise any potential for adverse publicity.

Feedback from the front line of cloud adoption

Ovum has discussed cloud computing with many hundreds of executives over the past few years, and has interviewed many public and private sector executives that have implemented cloud services.

Overall the feedback is very positive. Cloud computing is regarded as a welcome, and even exciting, addition to the enterprise ICT portfolio by those with hands-on experience. Cloud services were widely viewed as better and faster, not just less expensive, than traditional ICT sourcing options. All of the executives interviewed were positive about their cloud deployment experience, particularly when compared to previous disappointments with on-premise ICT projects and out-of-date infrastructure and software.

One of the most strongly valued benefits of cloud services was their iterative functional evolution. This was valued because it addressed user frustrations with the slow cycle of innovation of past solutions. It also met user expectations that modern Internet applications should be constantly evolving in terms of their functionality and support for new technology developments, such as social networking and mobile devices.

Concerns about security and regulatory compliance were felt to have become overstated. In practice, these were regarded as requirements that could be accommodated by private cloud arrangements and in public cloud services with due attention to information categorisation and management, process design, and the usual contractual and technical risk mitigations.

Cloud computing does introduce some new risks, but in practice these are variations on risks that most agencies have experienced under previous outsourcing arrangements. Not all cloud services are equal in terms of their ability to meet public sector reliability and security requirements, so the biggest risk mitigation is the choice of a high-quality enterprise-grade cloud services provider.

The overwhelming sense from our discussions with cloud adopters is that the cloud decision needs to be seen as a strategic move toward a new model of sourcing ICT capabilities to drive innovation, not simply as a tactical initiative to cut costs.

THE CLOUD INNOVATION EDGE

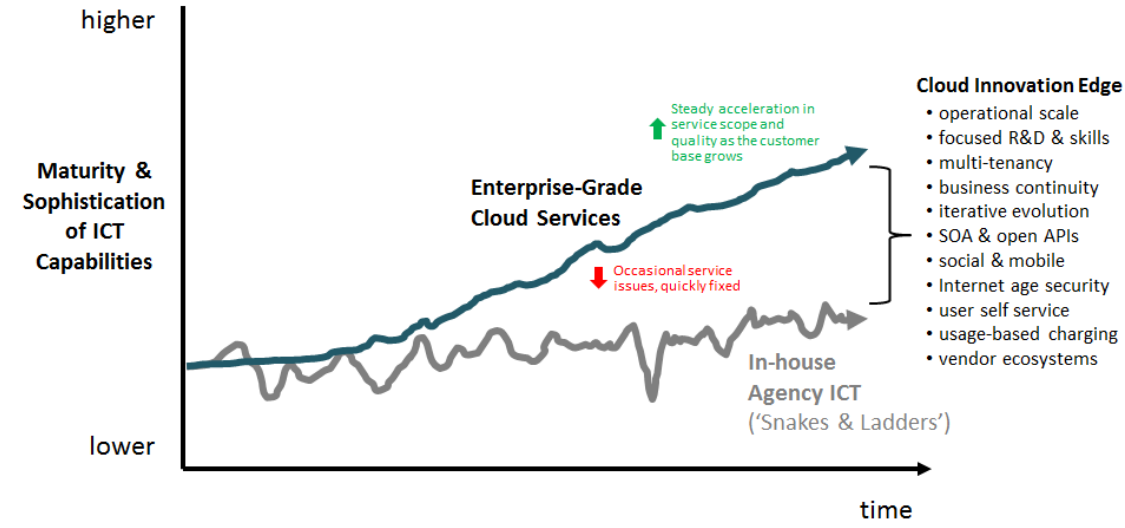
Cloud services offer agencies an edge in the game of ICT Snakes and Ladders

The benefits of the cloud model revolve primarily around a range of attributes, which distinguish cloud providers from the internal ICT capabilities of all but the very largest and most capable agencies. This can be thought of as the cloud innovation edge. The key attributes of the cloud innovation edge are scale, focus, multi-tenancy, resilience, iterative evolution, use of SOA, social and mobile technologies, Internet age security, self service, usage-based charging, and vendor ecosystems.

These attributes are described in Table 1 in the Appendix, which also poses a hypothetical comparison between a market-leading enterprise-grade cloud services provider and a typical agency ICT department. Agency ICT departments aspire to many of these attributes but can seldom achieve or sustain all of them due to resource and skill constraints and the challenges of supporting diverse and fragmented legacy infrastructure and applications. Cloud service providers have the advantage of being able to define a catalogue of services that are optimised to run in a standardised infrastructure to world-class best-practice levels of performance.

Figure 2 depicts the cloud innovation edge as an alternative to the ICT snakes and ladders game within agencies. The graph is for the purpose of illustrating broad trends based on practical observations, and should not be taken literally as generated from empirical data.

Figure 2: The cloud innovation edge



Source: Ovum

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The large-scale and focused architectures of the leading cloud providers mean that they are capable of sustaining a rapid and continuous development in their capabilities. They are making the biggest investments in technology, can attract and retain the best skilled staff, can focus on optimising the functionality, security, and performance of their services, and can attract the most vibrant ecosystems of vendors to "value-add" their core services.

While it is inevitably true that cloud services providers will also encounter occasional snakes (technical and operational issues), the scale of their operations means that when technical and service issues occur they are fixed quickly and decisively. The cloud provider incurs the collective wrath of all of customers in the multi-tenant service environment, so the performance incentives for cloud providers are very direct and intense and most have hyper-transparent online performance reporting scorecards. The pattern of Snakes and Ladders development seen in agencies is not an option for cloud service providers.

Figure 2 does not suggest that cloud services can ever fully replace the in-house ICT capabilities of agency ICT departments, or that all applications and infrastructure can necessarily be sourced from the cloud. However, where application-by-application and service-by-service comparisons

can be made, Ovum's view is that there is a growing gap between the maturity and sophistication of average agency ICT capabilities and those of the leading cloud services providers.

The cloud innovation edge will be a long-term trend

The cloud innovation edge is an important strategic perspective on the long-term benefits of the cloud computing model versus in-house ICT for selected applications and infrastructure services. In the medium term, Ovum expects that the maturity and sophistication of the leading cloud providers will increase rapidly and sustainably. Unfortunately, the outlook for the maturity and sophistication of the in-house ICT capabilities of most agencies is a continuation of Snakes and Ladders development. Increasing fiscal austerity further compounds the likelihood that this will be the case.

The benefits of cloud services range much further than just the ability to provide lower-cost services. Indeed, as we noted earlier based on feedback from agencies with hands-on experience of using cloud services, the main benefits are that cloud services are a better and faster way to drive innovation, not just a less expensive way to source ICT.

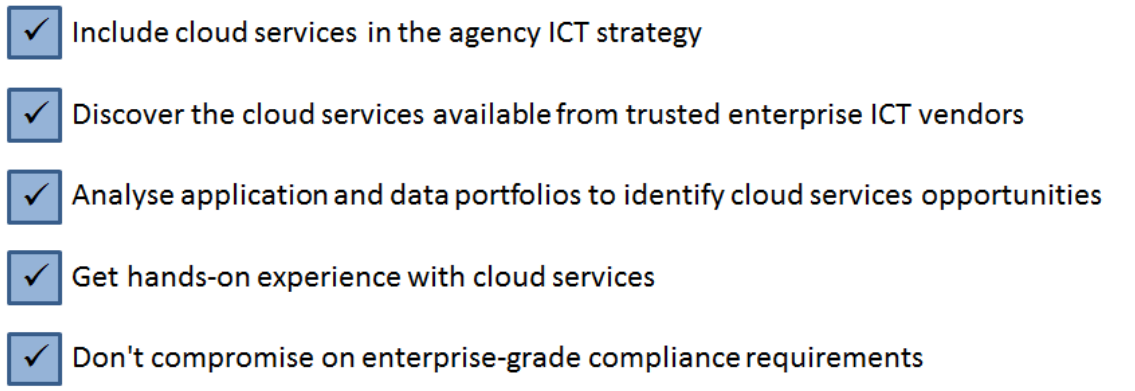
The cloud innovation edge offers agencies at all levels of government, local, state, and federal, an alternative strategic path forward to address their innovation/efficiency dilemmas.

RECOMMENDATIONS

Five steps agencies should take to prepare a path to the cloud in 2012

Agencies are advised to actively investigate cloud services in 2012 and to consider how to create a path to the cloud for selected applications and infrastructure services. Figure 3 outlines a checklist of activities for starting on this path.

Figure 3: Agency cloud services checklist



Source: Ovum

Include cloud services in the agency ICT strategy

The maturity and trustworthiness of the leading, enterprise-grade, cloud services are evolving rapidly. Agencies should have cloud services on their strategic planning radar and should be considering how and where cloud services could replace and augment existing ICT capabilities.

It is important to approach consideration of cloud computing from a strategic perspective, rather than a tactical or narrow cost-cutting perspective. Cloud services can comprise a more radical externalisation of ICT capabilities than agencies have previously contemplated. The standardised, arms-length, nature of cloud services requires some new tradeoffs, and a willingness to "think outside your boxes". The tradeoffs between "owning and controlling" resources and "accessing and participating in" cloud services and their ecosystems require new mindsets and skills. Managing a shift in the balance of these tradeoffs is part of a strategic transformation of the agency's approach to sourcing and managing ICT, not simply an expedient way to source a new point solution.

Discover the cloud services available from trusted enterprise ICT vendors

The popular perception is that the cloud market is dominated by public cloud vendors such as Amazon, Google, and Salesforce. However, most of the leading enterprise ICT service providers, such as Fujitsu, HP, IBM, Microsoft, and Oracle, are now making significant investments in the development of cloud services, both to meet customer demands and because the cloud delivery model is the most efficient and scalable way for them to provide their services.

Cloud computing is also accelerating the long-heralded convergence of telecommunications and computing. It now makes just as much sense for cloud computing services to be provided by telecoms companies as by traditional IT companies because the network and the data centre are becoming indivisible, and both are increasingly driven by software. Global telcos are racing to develop cloud computing services, and in Australia, Telstra, Optus, and Macquarie Telecom are at the forefront of the implementations of cloud computing services. Telstra, for example, is estimated to have spent over AUD$100 million establishing its IaaS and T-Suite offerings and announced a further commitment of AUD$800 million in mid-2011.

Agencies should request briefings from their existing trusted vendors regarding their cloud strategies, service offerings, and investment roadmaps, paying particular attention to the past and future commitment to the onshore hosting of cloud services. Agencies may find that the most expedient way into the cloud is to leverage and evolve with existing trusted vendor relationships and procurement arrangements.

Analyse application and data portfolios to identify cloud services opportunities

Understanding the opportunities for cloud computing is all about understanding application and data portfolios. Which applications could be sourced as a service and which applications could be run in an IaaS arrangement? What data may be stored in a cloud service, and under what security, identity management, and access control arrangements? What applications need to share data?

One of the advantages of cloud services is that they create both the imperative, and the opportunity, for agencies to focus on information and data rather than technology and software. Agencies need to understand and document their information management landscape. They then need to get on to the front foot with activity to rationalise data repositories and information management arrangements in anticipation of a move to a portfolio of in-house and cloud-sourced applications.

Get hands-on experience with cloud services

Ovum has for many years advocated the need for agencies to get hands-on experience with using cloud services, to understand the reality of both the services on offer and how they should be procured and managed.

When we interview executives about cloud services there is always a stark contrast between those with practical experience of the cloud and those without. Agencies with hands-on experience are generally positive about the role that cloud services can play in their ICT portfolio, and have a practical view of the benefit/risk tradeoffs involved. Agencies with no experience of the cloud tend to overstate the theoretical risks of cloud services versus their agency's ICT status quo.

One of the defining characteristics of cloud services is "cloudy is as cloudy does" in that they are already operating and waiting to be consumed with minimal financial commitment. Agencies should put selected applications and/or infrastructure services to the test and see the reality of cloud services for themselves.

Don't compromise on enterprise-grade compliance requirements

While gaining hands-on experience is advocated, the apparent ease of adoption of cloud computing is no reason to lower expectations for security and regulatory compliance. Global one-size-fits-all services and “take it or leave it” contract terms and conditions are a characteristic of consumer and small business market cloud services, but these are usually unrealistic for government agencies.

Agencies need to ensure that cloud service providers are contractually and operationally capable of meeting security and regulatory compliance obligations through measures such as:

- Assurances on compliance with process quality and security standards.
- Assurance on compliance with information privacy and public record obligations.
- Access to routine external audit reports.
- Strong data encryption to accommodate differing categories of data protection.
- Onshore storage and/or replication of data in Australia.
- Assurances on how data will be made available or deleted on service termination.

When it comes to procurement time, not all cloud services are equal in terms of their ability to meet agency reliability and security requirements. The biggest risk mitigation is the choice of a high-quality enterprise-grade cloud services provider.

APPENDIX

The table in Figure 4 defines the key attributes of the cloud innovation edge and poses a hypothetical comparison to a typical in-house agency ICT department.

Figure 4: Attributes of the cloud innovation edge

ATTRIBUTE	MARKET LEADING, ENTERPRISE-GRADE, CLOUD SERVICES PROVIDER	TYPICAL IN-HOUSE AGENCY ICT DEPARTMENT
Operational Scale	Large operational facilities that pool investment and resources across many customers to create economies of scale and to provide customers with services that can scale up and down on demand.	Facilities sized to meet current agency needs with a high degree of inertia. Scaling up takes time and requires capital spending, while scaling down is not a practical option as assets are either owned or under long term contract.
Focused R&D and Skills	Tightly architected applications and infrastructure environments that enable R&D and skills to be focused on service optimization.	Diverse and complex application and infrastructure environments that have evolved ad hoc over many years and that require a wide range of skills to maintain and to implement new applications.
Multi-tenancy	Applications and infrastructure that are explicitly designed to support multiple customers efficiently and securely.	Applications and infrastructure designed for, and dedicated to, one or a few agencies and customized to agency-specific requirements.
Operational Resilience	Operational facilities designed and built for the highest standards of availability and reliability because the service provider's reputation and viability depends on it.	Operational facilities and assets ageing. Backup and DR facilities non-existent, underinvested and/or untested.
Continuous Iterative Evolution	Infrastructure that can be incrementally expanded easily and agile development methodologies that enable regular releases of new functionality in the service – many times a year.	Infrastructure and applications that are complex and difficult to expand and upgrade – with core systems updated infrequently due to the high costs of software licenses and difficulties of implementation and roll-out to users.
Service Oriented Architecture and Open APIs	Applications designed as web services that integrate via published and open application interfaces.	Applications designed in less flexible client-server architectures and with proprietary and hard coded application interfaces.
Social & Mobile	Services that are designed to take advantage of the latest developments in social networking, mobile devices and advanced analytics.	Diverse hardware and software environments which mostly pre-date the new technologies and are difficult and expensive to integrate with and retrofit to align with the latest devices.
Internet Age Security	Technical and processes measures for user authentication, authorisation and activity logging that are explicitly designed to maintain high levels of security and trust transparency over the Internet and that are independently certified and audited.	Security approaches that rely heavily on the perimeter security of the network and the integrity of the standard operating environment software in access devices. Periodic auditing often reveals significant security weaknesses, many of which remain unaddressed for extended periods or are incapable of being addressed due to budget constraints.
User Self Service	Process automation and online portals that enable faster and easier ordering from a service catalogue and self-service provisioning and administration – with services able to ordered and provisioned in minutes.	Manual and time consuming service ordering, provisioning and administration processes – sometimes taking weeks and months.
Usage Based Charging	Processes and systems that enable the full operational TCO of the service to be charged on a per-transaction and/or per-user pay-as-you-go basis.	Limited ability to accurately measure service cost drivers and to pass these on to users in defensible usage-based charges.
Vendor Ecosystems	Applications and platforms which are explicitly designed to attract and retain diverse ecosystems of vendors that co-produce innovative and integrated suites of services.	An eclectic portfolio of technologies and vendors with largely transactional relationships that provide no particular incentives for vendors to partner and co-produce services.

Source: Ovum

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Cloud Computing: From Patriot Act to Parochial Marketing (OI00127-076) November 2011.

Revisiting the NIST definition of cloud computing (OI00127-074) November 2011.

Cloud computing in the US federal government - the state of a market at tipping point (OI00130-026) June 2011.

2011 Trends to Watch: cloud computing technology - one of the most important IT trends of the decade has barely started (OI00001-011) January 2011.

Planning for cloud computing - understanding the organizational, governance, and cost implications (OI00005-006) November 2010.

Cloud-computing quality of service in perspective (OVUM052345) July 2010.

The role of multi-tenancy in a cloud environment (OVUM052476) June 2010.

Cloud computing costs in perspective (OVUM052010) March 2010.

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Methodology

This research report was sponsored by Telstra and is based on a wide-ranging set of inputs including insights gained by Ovum from discussions about cloud computing with more than 400 public and private sector enterprise and vendor executives over the past two years. Our research was complemented by online research and Ovum's extensive prior research insights.

Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum’s consulting team may be able to help you. For more information about Ovum’s consulting capabilities, please contact us directly at consulting@ovum.com.

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