User Awareness and Policy Compliance of Data Privacy in Cloud Computing

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Introduction

Cloud computing is currently in the IT spotlight, promising many benefits such as enhanced scalability and cost efficiency. However, the technology is just like any other form of outsourcing and with that distinction comes the unavoidable issue of data privacy. The recent debates about the National Broadband Network (NBN) combined with the ongoing reform of Australian privacy legislation has also generated a lot of interest in this topic.

Research Aims

Exploratory study aimed at investigating the data privacy issues brought about by cloud computing with specific focus on two aspects, namely:

- **Policy compliance**
  How does cloud computing affect organisations' compliance to Australian privacy and data protection regulations?
- **User awareness**
  To what extent are end users aware of how cloud computing technologies affect their privacy?

Cloud Computing

What is cloud computing?

"Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction" - NIST [1]

Service Models

- **Software-as-a-Service (SaaS)**
  Applications running on cloud infrastructure and accessed through a thin client interface e.g. GoogleDocs and Salesforce.com
- **Platform-as-a-Service (PaaS)**
  Application development environments accessed and utilised via the Internet e.g. Google App Engine and Microsoft Azure
- **Infrastructure-as-a-Service (IaaS)**
  Full computer infrastructure, processing capacity, storage, networks etc., provided via the Internet e.g. Amazon EC2 and Amazon S3

Deployment Models

Cloud infrastructure can take the form of **public** clouds, **private** clouds or a combination of both (**hybrid** clouds)

Privacy Protection in Australia

*"**Privacy** is the interest that individuals have in sustaining a 'personal space', free from interference by other people and organisations"*

*"**Information Privacy** is the interest an individual has in controlling, or at least significantly influencing, the handling of data about themselves"* - Roger Clarke [2]

The ***Privacy Act 1988 (Cth)*** protects the privacy of people's ***personal information*** i.e. any information where an individual is reasonably identifiable. Businesses covered by the Privacy Act are either bound by an approved privacy code, or they will need to comply with the **National Privacy Principles (NPPs)** [3]. Designed to be technology neutral, the NPPs do not specifically address cloud computing-related privacy issues and it is a matter of applying existing privacy laws to this new technology.

Research Design

Interviews with cloud providers

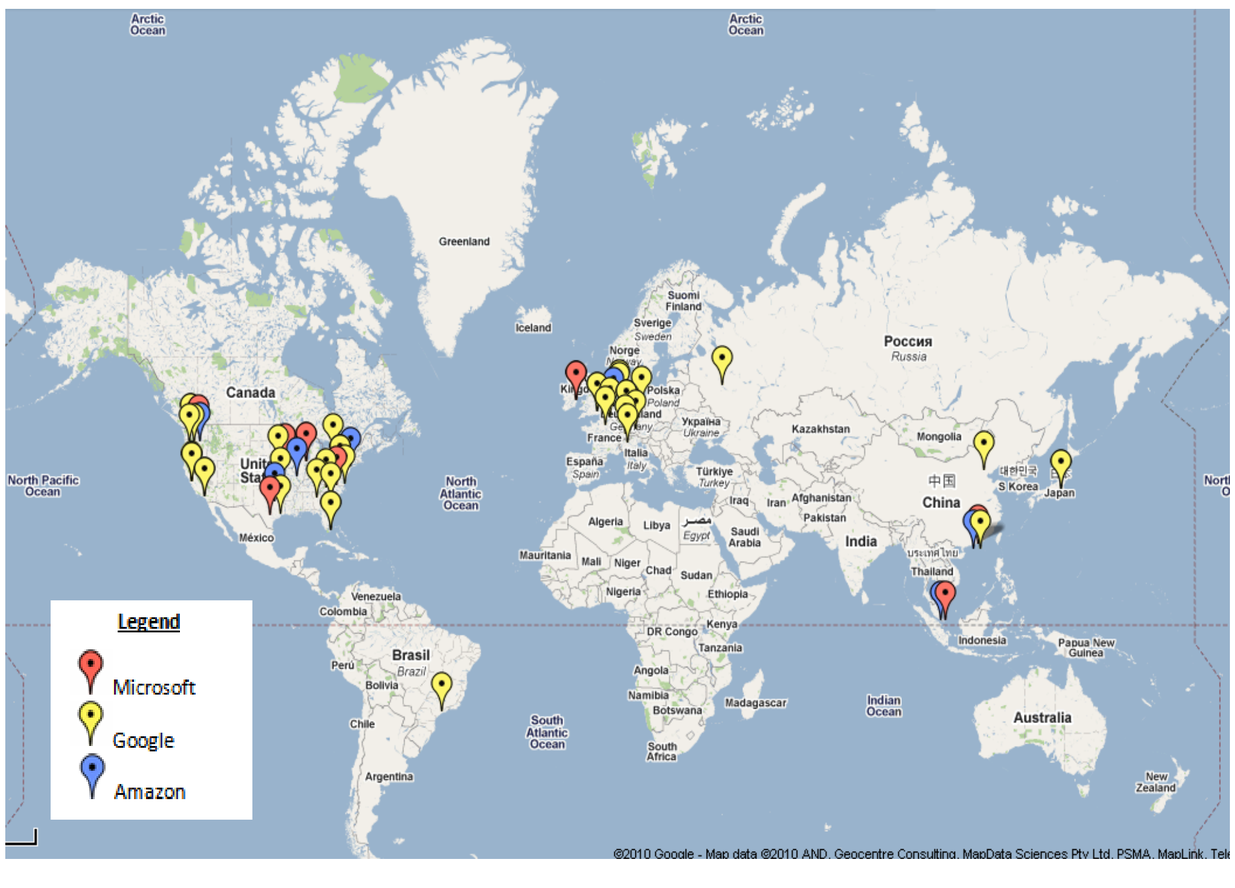
Sample: Representatives from Google, Amazon, and Microsoft
Purpose: Explore cloud services being offered and the providers' views on data privacy issues in the cloud

Online Survey

- **End User**
  Sample: 153 Internet users in Australia
  Purpose: Investigate end user concerns about data privacy in the cloud, and whether or not their actions reflect this
- **Enterprise**
  Sample: 17 IT managers from medium- to large-sized companies in Australia
  Purpose: Investigate current enterprise adoption of cloud computing, their data privacy concerns and practices

Data Centre Locations

These locations are often kept secret by the providers thus the markers only represent the compilation of best available information. Also, the locations shown may not necessarily be utilised to provide cloud computing services. As illustrated, there is currently a lack of cloud infrastructure in Australia and this has been a challenging issue for enterprise adoption in the country due to privacy concerns on transborder data flow [4-5].



References

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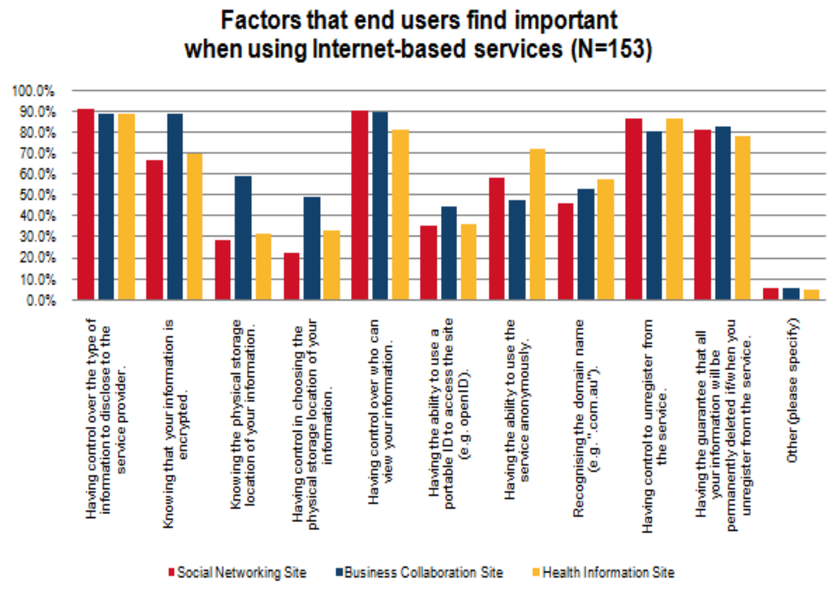
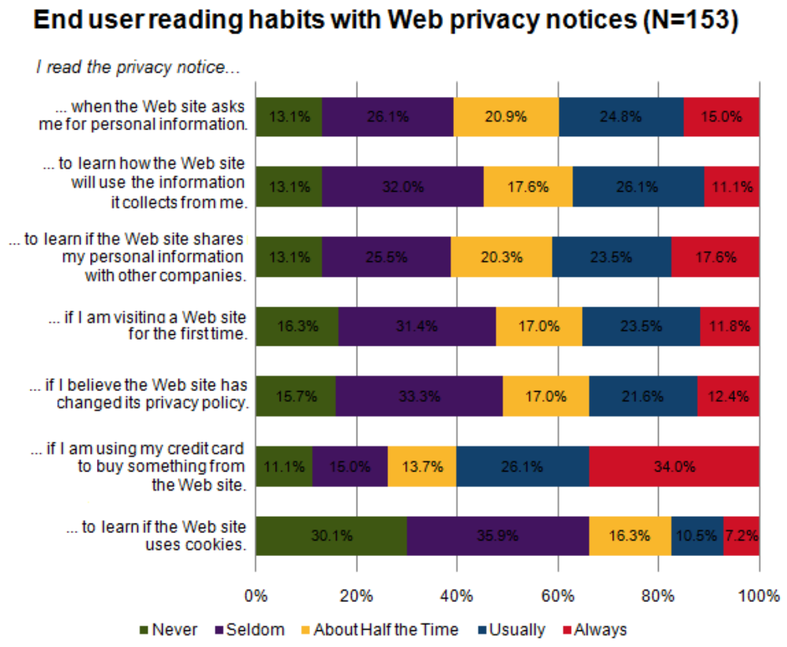
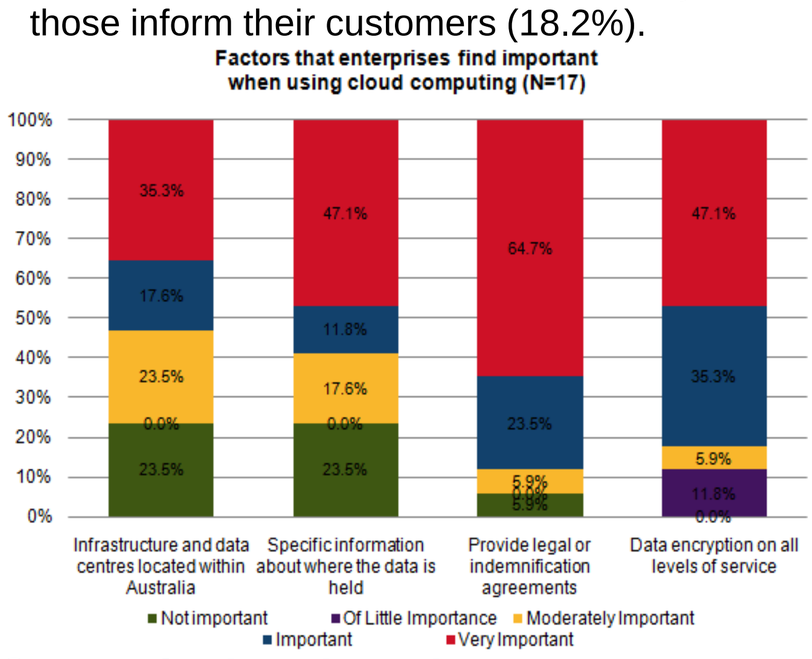
Findings

- **End User**
- 45.8% reported that they did not know what cloud computing meant. After being told what the technology encompassed, 85.6% said they used cloud services today.
- 90.6% agreed that companies need to inform customers if they store and process personal customer information in the cloud.





- **Enterprise**
- 12 of the 17 enterprise respondents (70.6%) reported using cloud computing services in their organisations today.
- Of the 11 enterprise respondents that store customer information in the cloud, only 2 of those inform their customers (18.2%).



Some closing thoughts…

- Although these findings cannot be generalised to a larger population due to non-random sampling, the analysis provides informative insights regarding Australian attitudes towards data privacy in cloud computing.
- It will be interesting to observe how the implementation of the NBN and the reform of Australia's privacy laws will affect the future of cloud computing in the country.
- Future work includes developing a set of guidelines to help Australian enterprises decide on the suitability of cloud computing based on their organisation's data privacy requirements.