Sixth bi-annual conference on the economics of intellectual property, software and the Internet – Toulouse, Jan 2011

Cloud Computing Contracts and Services:
What's Really Happening Out There?

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Some questions we will tackle today…

- Why is cloud computing such a hot topic?
- Is cloud computing 'mature' and is it 'safe'?
- Who is responsible for data in clouds?
- What should you watch out for in 'off the shelf' cloud contracts?
- Can you negotiate custom deals for cloud computing?
- Whose laws apply if you have a cloud dispute?
- Can you control where your data are stored in clouds?
- What practical steps can be taken to manage cloud-related risks?
- And finally… "What's the forecast?"

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But first… what is cloud computing?

- Cloud computing usually involves the provision of scalable IT resources (such as data storage, application hosting, *etc.*) on demand, delivered via the Internet
- There seem to be as many specific concepts and definitions as there are cloud vendors, consultants and researchers but a common starting point is often this Gartner definition:

  "A style of computing where scalable and elastic IT capabilities are provided as a service to multiple customers using Internet technologies"
- Prominent examples include:

  •Amazon Web Services
  •Gmail and GoogleApps
  •IBM Smart Business + CloudBurst (previously Blue Cloud)
  •Microsoft Hotmail + Office 365 + Windows Azure
  •Safesforce.com
  •AND …Facebook, Apple, PayPal and other cloud app platform providers

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Why is cloud computing such a hot topic?

- Various factors are transforming remote computing, including high-bandwidth low-cost connectivity, the development of large server farms and virtualisation
- In the current economic climate, cloud computing may be attractive as a means of:
  - achieving rapid outsourcing efficiencies
  - cost reduction / converting capex to opex
  - simplifying hardware and software maintenance
  - smoothing fluctuations in demand levels
  - delivering public sector services more efficiently, see *eg.*
    - ➤ In the UK - *Digital Britain* and the *G-Cloud*
    - ➤ In the US - *apps.gov*

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So, does everyone think cloud computing is great?

"It's stupidity. It's worse than stupidity: it's a marketing hype campaign"

Richard Stallman (Founder of the Free Software Foundation)

"If you believe the hype, cloud computing is the future. Hype aside, cloud computing is nothing new."

Bruce Schneier, writing in the Guardian, June 2009

"'Cloud computing' takes hold as 69% of all internet users have either stored data online or used a web-based software application"

Pew Internet & American Life Project, September 2008

"The rise of the cloud is more than just another platform shift that gets geeks excited. It will undoubtedly transform the information technology industry, but it will also profoundly change the way people work and companies operate. It will allow digital technology to penetrate every nook and cranny of the economy and of society, creating some tricky political problems along the way."

The Economist, October 2008

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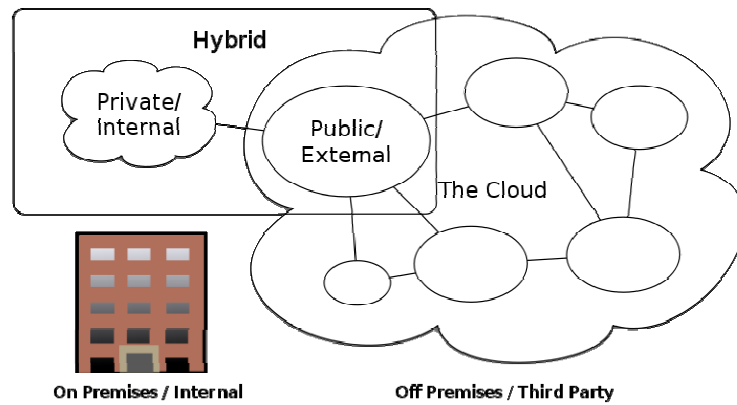Centre for Commercial Law Studies

Is cloud computing 'mature' and is it 'safe'?

- Some vendors are major players with resilient service offerings backed by robust Service Level Agreements (SLAs)
- Cloud processes may be more secure than local processing, especially for SMEs and individuals (and, history suggests, some governments!)
- Plenty of cloud offerings are, however, provided by startups which may, or may not, prove to be reliable
- Many cloud services, both consumer and business, are launched while still in development and are often provided long-term on an "as is" basis remaining in 'Beta' for a very long time
- Many services, again both consumer and business, are wholly dependent on third-party owned / controlled infrastructure
- So … whether a particular cloud computing service arrangement is appropriate in a particular case will depend on many factors

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Some key concepts and terminology…

- Infrastructure as a Service (IaaS) = delivery of servers, software, storage, *etc* as a fully outsourced service, typically billed on a utility computing basis (*eg.* Amazon Web Services)
- Platform as a Service (PaaS) = web-based environment for developing applications (*eg.* Microsoft Azure or Force.com which provides a set of tools and applications for customising the Salesforce.com apps)
- Software as a Service (SaaS) (*eg.* Oracle CRM on demand)
- Storage as a Service (also SaaS!) = convenient way of storing / backing-up data online (*eg.* box.net)
- Virtualisation = many things but in this context mainly involves multiple "virtual machines" running on shared hardware via the Internet
- Private, Community, Public and Hybrid Clouds

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The public / private cloud mix…

Do things actually go wrong?

What happened?

*[Ma.gnolia founder] Halff informed users that a specialist had been unable to recover any data from **the corrupted hard drive**. "Unfortunately, database file recovery has been unsuccessful and I won't be able to recover members' bookmarks from the Ma.gnolia database," he wrote.*

With the benefit of hindsight…

• It turns out that Ma.gnolia was pretty much a **one-man operation**, running on two Mac OS X servers and four Mac minis

• Don't assume that online services have plenty of staff, lots of servers and secure backups. **If it matters, take due diligence + contracts seriously**

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Major cloud players have substantial infrastructure…

• Massive data centres are being built, often containing sealed shipping containers, themselves containing pre-configured servers: "The trucks back 'em in, rack 'em and stack 'em" (Ray Ozzie: Microsoft's Chief Software Architect)

• Huge requirements for power / cooling / connectivity

• Google has patented a "water-based data center" - a system that includes "a floating platform-mounted computer data center comprising a plurality of computing units, a sea-based electrical generator in electrical connection with the plurality of computing units, and one or more sea-water cooling units for providing cooling to the plurality of computing units."

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So just when we thought we had identified all the technical, commercial and legal risks associated with outsourcing and offshore data processing …

…we have to tackle maritime law

…and the risk of meeting real pirates on the high seas!

1 Databarges will be moored 3-7 miles off the coast

2 Electricity is generated by wave power

3 Electricity will power the ship and computers. Pumps will suck up cold sea water and circulate it around computers to keep them cool

● As the sections move against each other, hydraulic rams resist the movement. The power produced is used to drive generators

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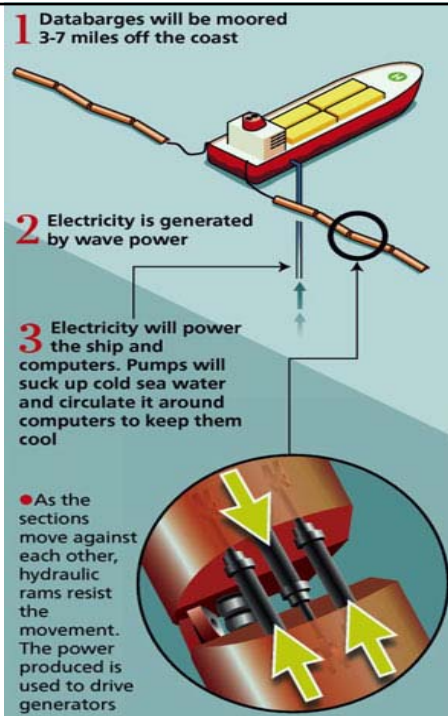
But… do 'old world' laws apply to global networks?

"Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather… Your legal concepts of property, expression, identity, movement, and context do not apply to us. They are based on matter, There is no matter here... We must declare our virtual selves immune to your sovereignty, even as we continue to consent to your rule over our bodies. We will spread ourselves across the Planet so that no one can arrest our thoughts..."

John Perry Barlow (Electronic Frontier Foundation)
"Declaration of the Independence of Cyberspace" (Feb 1996)

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Cyberspace and the 'no regulation' fallacy

"There are innumerable law, statutes and regulations which apply to the development, financing, and operation of, as well as the content transmitted via such networks, even though most people who use and operate these networks are unaware of many of the various laws which apply to their activities…"

Millard (1995), "Cyberspace and the 'no regulation' fallacy"
Developed further in Millard and Carolina (1996),
"Commercial transactions on the global information infrastructure: A European perspective"

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Rumours of the death of national sovereignty turned out to be greatly exaggerated…

- Different countries / governments care about different things and to varying degrees but it soon became clear that Barlow's appeal for cyberspace to be left alone was hopelessly naïve. Indeed, when asked in 2004 about that earlier optimism and the "nothing can stop us now" attitude, he simply commented: "We all get older and smarter"

- The Yahoo! Nazi memorabilia case in France (2000-2001) marked a watershed in the assertion of territorial controls over web content

- Targeting based on geo-location technologies is now commonplace as are filtering / censorship / localisation / tax collection…

- See generally: Goldsmith + Wu (2006, "Who Controls the Internet: Illusions of a Borderless World"

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"Contracts for clouds: comparison and analysis of the terms and conditions of cloud computing services", Bradshaw, Millard & Walden (2010)

- Work began as a data gathering exercise to support analysis of specific legal issues relating to cloud computing
- It quickly became clear that examination and assessment of the terms and conditions would be a substantial exercise in its own right
- We reviewed 31 sets of standard T&Cs (defined broadly)
  - An initial overview survey highlighted 20 main categories into which T&C elements fell
  - Each set of T&C was then mapped against these categories
  - During the detailed analysis further patterns emerged

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"Contracts for clouds" (continued)

- Hypothesis = that where significant variations exist between terms of service, differences would correlate significantly to:
  - Type of service
  - Target market
  - Commercial and technological legacy (if any) of the provider
- Key findings include:
  - The T&C for particular services could be predicted in advance to a significant extent based on the variables above
  - The relative immaturity of the market for cloud computing services is reflected in contracts that are currently in widespread use which include many clauses that appear to be inappropriate and / or unenforceable and in some cases illegal
  - Cloud infrastructure and services are often complex (often with multiple dependencies) and few contracts reflect this adequately

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Contracting in the clouds: 'off the shelf' arrangements

- Many cloud service providers use 'click-wrap' terms of business
- Such terms of business sometimes state, for example, that:
  - the service provider has minimal, or even no, liability for loss or damage caused by failure of the cloud computing service
  - subcontracting may be unrestricted
  - the service may be modified or be discontinued without cause, without notice and without liability to users
  - customers may have limited / no ability to recover data following termination of service
- Depending on the circumstances, the enforceability of some of these terms may be subject to challenge (!)

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Who is responsible for data in clouds?

"...you acknowledge that you bear sole responsibility for adequate security, protection and backup of Your Content and Applications. We strongly encourage you, where available and appropriate, to (a) use encryption technology to protect Your Content from unauthorized access, (b) routinely archive Your Content, and (c) keep your Applications or any software that you use or run with our Services current with the latest security patches or updates. We will have no liability to you for any unauthorized access or use, corruption, deletion, destruction or loss of any of Your Content or Applications."

Q. Will that be good enough?
A. It depends what you are going to use the service for (and how)

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What about disclosure of your data to third parties?

Would you feel more comfortable signing up to this…

"The Receiving Party [Salesforce.com] may disclose Confidential Information of the Disclosing Party [the customer] if it is compelled by law to do so, provided the Receiving Party gives the Disclosing Party prior notice of such compelled disclosure (to the extent legally permitted) and reasonable assistance, at the Disclosing Party's cost, if the Disclosing Party wishes to contest the disclosure."

… or this?

"You authorize ADrive to disclose any information about You to law enforcement or other government officials as ADrive, in its sole discretion, believes necessary, prudent or appropriate, in connection with an investigation of fraud, intellectual property infringement, or other activity that is illegal or may expose ADrive to legal liability."

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Whose laws apply if you have a cloud dispute?

Choice of law specified by cloud provider…	Number *
US State: California (most common), Massachusetts (Akamai), Washington (Amazon), Utah (Decho), Texas (The Planet)	15
English law, probably because service provider based there	4
English law, for customers in Europe / EMEA	4
Other EU jurisdictions (for European customers): eg. Ireland (Apple), Luxembourg (some Microsoft services)	2
Scottish law (Flexiant)	1
The customer's local law	2
No choice of law expressed or implied, or ambiguous choice (eg. "UK Law" for g.ho.st)	3
* Number in each category is out of 31 contracts analysed by QMUL Cloud Legal Project http://www.cloudlegal.ccls.qmul.ac.uk/	

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Can you control where your data are stored in clouds?

- **It depends!**
- Some service providers can't, for technical reasons, or won't, for commercial reasons, let you choose (*eg.* Google… though see City of LA)
- Other service providers are designing their clouds so as to offer customers a choice between 'regions' (*eg.* Amazon Web Services)
- Other service providers, if asked, say they currently store customer data by default in the customer's local region (*eg.* Decho Mozy Inc)
- Geolocation may become a critical differentiator for customers concerned about where their data are stored (*eg.* because of disclosure risks associated with litigation or regulators) or subject to restrictions on data transfers (such as national rules based on Articles 25 + 26 of the DP Dir.)
- An amorphous cloud may not be appropriate for regulated data, *eg.* if you don't know where the data will be processed and by whom

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Contracting in the clouds: custom deals

- Although not generally advertised, major cloud vendors with standard contracts are prepared to go *off piste* if a deal merits it
- One-off contracts are usually confidential but…
- A high-profile negotiated deal, for which extensive documentation has been published, is the CSC / Google / City of LA transaction. This includes provisions that appear to depart in significant ways from Google's 'standard' position, including:

  "Google agrees to store and process Customer's email and Google Message Discovery (GMD) data only in the continental United States. As soon as it shall become commercially feasible, Google shall store and process all other Customer Data, from any other Google Apps applications, only in the continental United States." (cl. 1.7)

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Practical tips for managing cloud-related risks…

- Read the contract! (inc. TOS, T&C, SLA, Privacy Policy, AUP, etc)
- Consider due diligence questions like these…
    - Is the infrastructure multi-layered and, if so, in what way?
    - Where will your data be processed (inc. storage / replication)?
    - Who is running the critical infrastructure (and from where)?
    - How easily can third parties get access to your data?
    - What happens if your cloud provider / their provider goes bust?
    - How easily could you move your data to another cloud service (or back to your own systems) and how long would it take?
    - How confident are you that you could regain control of your data without leaving behind copies and / or key metadata?

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Forecast: cloudy and changeable… but bright!

- Putting data / processes into clouds may save money and facilitate risk management but it may also have unintended adverse effects
- Physical location can remain highly significant in virtual environments and legal / regulatory obligations certainly don't end when data are handed over to one or more cloud service providers
- Some cloud services are much more sophisticated than others in terms of security (*eg.* encryption options) and facilitating compliance (*eg.* providing commitments regarding data location, if required, and support for audit, mandatory disclosure processes, etc)
- Risks of compelled disclosure and other external disruptions are real – *eg.* SWIFT and now Wikileaks (involving Amazon / PayPal / Twitter / etc)
- It may take some time and effort to get regulators (privacy and others) comfortable with specific cloud arrangements
- Cloud contracts may evolve rapidly in response to competitive positioning, customer demands and interventions by regulators and courts

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Thanks for listening!

Any questions…

Contracts for Clouds is at:

http://ssrn.com/abstract=1662374

http://www.cloudlegal.ccls.qmul.ac.uk/

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